PEOPLE
SYSTEMS
SOLUTIONS
A HEALTHIER TOMORROW

PUBLIC HEALTH REIMAGINED

Six Competencies for a Disrupted World

NEW THINKING
FOR A HEALTHIER,
MORE RESILIENT
WORLD



- SYSTEMS THINKING
- DATA FLUENCY
- IMPLEMENTATION AGILITY
- STAKEHOLDER NAVIGATION
- ETHICAL FORESIGHT
- NARRATIVE COMPETENCE

IDEAS
COMPETENCIES
PRACTICE
A FAIRER
HEALTHIER
FUTURE

Eric Kwasi Elliason

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PUBLIC HEALTH REIMAGINED

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Copyright

Public Health Reimagined: Six Competencies for a Disrupted World

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First edition, 2026

Published by AARAI Publications

ISBN: 978 – 9988 – 9708– 6 – 4

DOI: https://doi.org/10.64261/aarai.book.006

For publication enquiries: aarai.publications2025@gmail.com

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Dedication

To the public health professionals who keep showing up when the answers are not clear.

To the students who are still learning, the practitioners working with limited resources, the researchers asking difficult questions, and the communities whose lived experiences remind us why public health matters.

And to everyone who believes that better health does not come from knowledge alone, but from the courage to think differently, work together, listen carefully, and act when action is needed.

This book is for you.

Acknowledgements

No book is written in isolation.

Although my name appears on the cover, this book has been shaped by many people, conversations, experiences, questions, disagreements, and observations gathered over years of teaching, research, public health practice, and engagement with communities.

I am especially grateful to the students I have had the privilege of teaching and mentoring. Their questions have often been more valuable than their answers. Students have a way of exposing the places where theory becomes difficult in practice. They ask what happens when the resources are not available, when a community does not trust an intervention, when evidence conflicts, or when the decision that looks right on paper does not work on the ground. Many of the questions that shaped this book began in those conversations.

I am equally grateful to colleagues and fellow professionals who have challenged my thinking. Public health is too complex for any one discipline, institution, or individual to have all the answers. Conversations with people working across research, education, healthcare, policy, community development, and leadership have reinforced one lesson that runs throughout this book: the most difficult public health problems rarely arrive in disciplinary categories.

I acknowledge the communities and populations whose experiences give meaning to the work of public health. Behind every dataset is a person. Behind every prevalence estimate is a family. Behind every policy decision are people who will live with its consequences. This book was written with a deep respect for that reality. Public health should never become so focused on methods, models, indicators, or institutions that it forgets the people those things are meant to serve.

I am grateful to the researchers and scholars whose work has contributed to the knowledge on which this book rests. Their ideas, evidence, debates, and disagreements have helped shape the arguments presented here. Where this book questions established approaches, that questioning is part of an ongoing scholarly conversation rather than a rejection of the work that came before.

I also appreciate the institutions and professional environments that have provided opportunities for teaching, research, leadership, and reflection. Each setting has offered different lessons about what public health can achieve, where systems fail, and what happens when good intentions meet the realities of limited resources, competing priorities, institutional interests, and human behaviour.

My gratitude also goes to the people who have supported my work beyond the academic and professional spaces. Writing a book requires time, patience, and persistence. The people around an author often carry some of the cost of that process without appearing anywhere on the cover. Their encouragement and understanding matter more than can easily be expressed here.

I am particularly thankful to the young professionals and emerging public health leaders who continue to ask what public health should become. Their energy gives me hope that the field does not have to remain confined to the ways in which it has traditionally been taught or practised. The future of public health will depend not only on preserving what we know, but also on preparing people to respond to problems that previous generations could not have fully anticipated.

Finally, I acknowledge the limits of my own perspective. This book reflects what I have learned, observed, questioned, and come to believe through my own experiences. It is not presented as the final word on public health education or practice. I hope instead that it becomes part of a larger

conversation about how we prepare people for the realities of public health in a world that is increasingly complex, interconnected, uncertain, and disrupted.

To everyone who has contributed, directly or indirectly, to my journey as an educator, researcher, practitioner, mentor, and author, thank you.

This book carries my name, but many voices have helped shape it.

How to Use This Book

This book can be read from beginning to end, but it does not have to be. It is designed to be used, not simply read. Some chapters introduce ideas, others ask you to make decisions, and many provide tools you can return to when you encounter a difficult problem in practice.

The six competencies at the centre of the book are not meant to be memorised. They are ways of thinking and working that become useful through practice.

Start With Part I

Part I: The Mindset provides the foundation. It explains why public health needs to think differently about complex challenges and introduces the six competencies.

As you read, consider:

- How have I been taught to think about public health?
- Where does that approach work well?
- Where does it begin to break down?
- What might I need to do differently?

Work Through the Missions

Part II: The Core Missions is where the book becomes practical.

The missions place you in situations that require you to examine evidence, identify problems, consider stakeholders, make decisions, and justify your reasoning. Do not rush to the answer. Try to solve the problem before reading further.

You may have incomplete information, competing priorities, and no solution that satisfies everyone. That is intentional. Real public health practice often requires sound judgement under uncertainty.

When working through a mission, ask:

- What is the actual problem?
- What information do I have, and what is missing?
- Who is affected, and who has influence?
- What assumptions am I making?
- What are the possible consequences?
- Which competencies do I need?
- What would I recommend, and why?

The goal is not to produce the same answer as everyone else. The goal is to learn how to reason through difficult public health problems.

Use the Toolkit

Part III: The Toolkit provides practical support for the six competencies.

Use Systems Mapping to understand relationships and the wider system. Use Data Fluency to interrogate evidence. Use Implementation Agility to think about what happens when interventions meet real-world conditions. Use Stakeholder Navigation to understand interests, influence, and power. Use Ethical Foresight to work through difficult decisions. Use Narrative Competence to communicate evidence and health messages effectively.

You do not need to read these chapters in sequence. Turn to them when a mission or professional problem requires a particular way of thinking.

Bring Your Own Context

Public health problems do not look the same everywhere. Resources, institutions, cultures, communities, and priorities differ.

As you work through the book, ask:

- What would this look like in my setting?
- Who would need to be involved?
- What resources would actually be available?
- Which assumptions would not hold here?

The purpose of the book is not to give you a script for every situation. It is to help you develop the judgement to respond to situations you have not encountered before.

Bring Everything Together

Part IV: The Practitioner's Lab brings the competencies together through more demanding application, reflection, and future-oriented scenarios.

Part V: The Anthology provides deeper reference material across major areas of public health. You do not need to read it in sequence. Use it when you need to strengthen your understanding of a particular subject.

The appendices provide additional tools, including self-assessment resources, a glossary, further reading, templates, checklists, case studies, and competency development resources.

Use the Book Your Way

Students can use the book to connect knowledge with application. Practitioners can begin with a problem and turn to the competency or tool they need. Educators can use the missions, toolkit, and reflection activities for teaching, discussion, simulation, or assessment.

You can also work through the book with colleagues, classmates, or mentors. Compare your decisions, question each other's assumptions, and be willing to change your position when better evidence or stronger reasoning emerges.

You do not have to read this book the same way twice. Your understanding will change as your experience develops.

The point is not simply to finish the book.

The real test comes when you encounter a difficult public health problem after you close it.

Can you see the wider system? Question the evidence? Recognise power and competing interests? Adapt when your plan does not work? Anticipate ethical consequences? Communicate what matters without losing the complexity?

If your answer to these questions becomes increasingly yes, then the book has done what it was intended to do.

Use this book as a companion, not a script. The knowledge matters. The tools matter. But the real goal is developing the judgement to know when, where, and how to use them.

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Preface

I wrote this book because I kept watching students graduate from public health programmes with impressive disciplinary knowledge but without some of the skills they actually needed on the ground.

They could calculate an odds ratio. They could design a study. They could explain the social determinants of health. They could discuss epidemiological concepts and interpret statistical results. Yet many were less prepared for what happened when the work became complicated.

What happens when a community does not trust the programme you have been asked to implement?

What do you do when the evidence is incomplete but a decision cannot wait?

How do you respond when resources suddenly disappear, political interests begin to shape the discussion, or the intervention that worked in one setting fails in another?

How do you bring together people from different sectors who do not share the same priorities?

These are not unusual situations in public health. They are part of the job.

The gap between what we teach and what practitioners actually do is wide. This book is my attempt to help close that gap.

For much of the twentieth century, public health education was organised around established disciplines. Epidemiology, biostatistics, environmental health, health policy and management, and social and behavioural sciences gave the field its intellectual foundation. These disciplines remain important. They have given us many of the methods and bodies of knowledge on which modern public health depends.

But the problems we face today do not stay inside disciplinary boundaries.

A disease outbreak can become an economic crisis. Climate change can become a mental health issue, a food security issue, a migration issue, and a health systems issue at the same time. Antimicrobial resistance connects clinical practice, agriculture, environmental health, behaviour, regulation, and global governance. Digital technologies and artificial intelligence are changing how health information is produced, how decisions are made, and how people experience healthcare.

The challenge, therefore, is not that public health needs less knowledge. It needs people who can use knowledge across boundaries.

That is the central argument of this book.

Public health professionals need more than technical competence. They need to know how to see the whole system, work with imperfect information, adapt when circumstances change, understand competing interests, make difficult decisions responsibly, and communicate in ways that people can understand and trust.

I have organised these abilities into six competencies:

1. Systems Mapping, the ability to see relationships, feedback loops, structures, and forces that shape a public health problem.

2. Data Fluency, the ability to interrogate evidence, recognise its strengths and limitations, and use data to support sound decisions.
3. Implementation Agility, the ability to move from evidence to action while adapting to real-world constraints.
4. Stakeholder Navigation, the ability to understand interests, power, relationships, and competing priorities and work effectively across them.
5. Ethical Foresight, the ability to recognise ethical consequences, anticipate difficult choices, and make decisions responsibly under uncertainty.
6. Narrative Competence, the ability to communicate public health evidence and ideas in ways that are meaningful to different audiences.

These six competencies are not intended to replace the foundational disciplines of public health. They are meant to help practitioners bring that knowledge together when facing problems that do not arrive neatly packaged as epidemiology, policy, behaviour, or environmental health.

The structure of the book reflects this approach.

Part I, The Mindset, explains why public health education and practice need to evolve and introduces the six competencies.

Part II, The Core Missions, places you in complex public health situations. These missions are not simply case studies to read. They are simulations designed to make you think, decide, defend your choices, and deal with consequences.

Part III, The Toolkit, provides practical frameworks, checklists, decision aids, and approaches that can be used when working on real public health problems.

Part IV, The Practitioner's Lab, brings the competencies together through a capstone simulation and a series of futures scenarios. The purpose is not to predict exactly what the future will look like, but to develop the ability to think about what might happen and prepare for uncertainty.

Part V, The Anthology, provides foundational knowledge across the major areas of public health and related fields. It is there as a reference. You do not have to read it from beginning to end. Return to it when you need to strengthen your understanding of a concept, method, field, or debate.

The appendices provide additional tools for reflection, self-assessment, further reading, templates, and case-based learning.

This book is therefore not meant to be read passively.

I want you to question it.

Work through the missions. Make decisions before looking for the suggested direction. Challenge the assumptions. Draw your own systems maps. Interrogate the data. Ask who benefits from a particular decision and who may carry its costs. Think about what you would do differently if you had fewer resources, less time, or stronger opposition.

Most importantly, connect what you read to the world around you.

Public health is practised in communities, hospitals, schools, laboratories, government offices, research institutions, humanitarian settings, workplaces, and increasingly in digital spaces. The problems encountered in these settings rarely have simple answers. They require judgement.

That is ultimately what this book is about.

Judgement.

Knowledge tells us what is known. Competence helps us decide what to do with what we know.

There will always be uncertainty. There will always be competing interests. Evidence will sometimes be incomplete. Resources will sometimes be inadequate. Policies will sometimes lag behind the problem. Communities will sometimes disagree with experts. And sometimes, despite careful planning, things will simply go wrong.

The goal is not to produce public health professionals who have an answer for everything.

The goal is to prepare professionals who can think clearly when the answer is not obvious.

I am grateful to the students, colleagues, practitioners, researchers, and communities whose questions and experiences have shaped my thinking over the years. Many of the ideas in this book grew out of conversations about the distance between what looks right in a textbook and what actually happens in practice.

I also recognise that this book is one contribution to a much larger conversation. Public health is changing, and no single framework can capture everything the field will need. The six competencies proposed here are offered as a practical way of thinking about that change, not as the final word.

My hope is simple.

I hope this book helps students become more confident practitioners. I hope it gives experienced professionals a useful way to reflect on their own practice. I hope educators find new ways to connect knowledge with action. And I hope it encourages all of us to ask a more difficult question about public health education:

Are we preparing people to pass courses, or are we preparing them to face the problems that actually matter?

The answer to that question will shape the future of the profession.

Welcome to Public Health Reimagined.

Introduction

What Is Public Health For?

Before we talk about how to do public health, perhaps we should ask a more difficult question:

What is public health actually for?

It is tempting to answer with the language we have become accustomed to using. Public health prevents disease. It promotes health. It protects populations. It addresses health inequalities. It uses evidence to improve the health of communities.

All of these answers are true.

But they do not fully answer the question.

Public health is not practised in classrooms, textbooks, or examination papers. It is practised in communities, hospitals, schools, workplaces, governments, laboratories, households, streets, and increasingly, online spaces. It is practised when a health worker tries to persuade a community to accept an intervention. It is practised when a policymaker has to make a decision before all the evidence is available. It is practised when a researcher discovers that the people represented by a dataset are not experiencing the problem in quite the way the numbers suggest.

This is where public health becomes difficult.

You can know the theory and still not know what to do.

You can have good evidence and still fail to convince people.

You can design an excellent programme and discover that it does not work in the setting where you have been asked to implement it.

You can have the right answer scientifically and still face a difficult ethical question about whether it is the right thing to do.

That gap between knowing and doing is where this book begins.

The World Has Changed

Public health has never been static, but the pace and nature of change have become difficult to ignore.

Many of the traditional disciplines that shaped public health education developed in a very different world. Infectious diseases were a dominant concern in many low income countries. Chronic diseases were becoming increasingly important, but their present scale had not yet been reached. Climate change was not part of everyday public health planning. Digital technology had not transformed the way people communicated, worked, learned, and made decisions. Health systems were largely organised within national boundaries.

Today, these assumptions are much harder to maintain.

A disease outbreak can move across borders rapidly. A flood can affect housing, sanitation, food security, livelihoods, mental health, and access to healthcare at the same time. Climate change can turn what once looked like an environmental problem into a health systems problem. Social media

can influence health behaviour within hours. Antimicrobial resistance can undermine treatments on which health systems depend.

And these problems do not arrive neatly separated.

Consider what happens after a major flood.

There may be contaminated water, damaged health facilities, displaced families, interrupted food supplies, increased risk of infectious disease, psychological distress, misinformation, political pressure, and demands for immediate action.

Which public health discipline owns that problem?

The honest answer is that none of them does.

It belongs to all of them.

That is one of the central challenges facing public health today. The problems have become increasingly connected while our systems of education and professional practice can still encourage us to think in separate categories.

The world does not organise its problems according to university departments.

Neither does a community.

The Problem With Knowing More

There is an uncomfortable possibility that we do not always need more public health knowledge.

Sometimes we need to become better at using the knowledge we already have.

This distinction matters.

A student may understand epidemiological concepts and still struggle to interpret what a changing disease pattern means for a particular community. A practitioner may know the recommended intervention and still be unable to implement it because funding has changed, staff are exhausted, or the community does not trust the organisation delivering it.

A researcher may produce statistically convincing findings and still struggle to explain why those findings matter to a policymaker.

A health professional may understand the ethical principles involved in a decision and still have to choose between two options, neither of which is entirely satisfactory.

These are not unusual situations.

They are ordinary parts of public health work.

Yet our training can sometimes give the impression that the main task is to acquire enough knowledge to eventually arrive at the correct answer.

Real public health rarely works that way.

The information may be incomplete.

The resources may be limited.

The stakeholders may disagree.

The political environment may change.

The community may respond differently from what was expected.

And sometimes the evidence itself may not give us a clear answer.

The professional still has to decide what to do.

That is why judgement matters.

From Disciplines to Competencies

This book proposes a different way of thinking about public health education.

I am not arguing that epidemiology, biostatistics, environmental health, health policy, social and behavioural sciences, or the other established areas of public health are no longer important. They remain essential.

The question is what happens when we bring them together.

What does a public health professional actually need to be able to do?

That question led to the six competencies at the centre of this book:

Systems Mapping

Seeing how different parts of a health problem connect and recognising relationships that may not be obvious at first.

Data Fluency

Going beyond reading numbers to question their meaning, limitations, uncertainty, and relevance to decisions.

Implementation Agility

Knowing how to adapt when an intervention meets the realities of resources, institutions, communities, and changing circumstances.

Stakeholder Navigation

Working with people and organisations whose interests, responsibilities, power, and priorities may not always align.

Ethical Foresight

Thinking carefully about consequences, competing values, uncertainty, fairness, and the people who may be affected by a decision.

Narrative Competence

Communicating health evidence and ideas in ways that people can understand, trust, and use.

These competencies are connected.

A practitioner mapping a health system needs data.

Data without context can mislead.

Implementation without an understanding of stakeholders can fail.

Stakeholder engagement without ethical reflection can become manipulation.

And even a technically sound programme can struggle if people do not understand or trust the message behind it.

The competencies therefore should not be treated as six isolated skills. They are different ways of approaching the same difficult task:

making better public health decisions in the real world.

Public Health Is About People

There is another question that should remain in the background of everything we do:

Who is this work actually for?

Public health can become very technical.

We talk about prevalence, incidence, risk ratios, confidence intervals, indicators, targets, surveillance systems, interventions, policies, programmes, and performance measures.

All of these have their place.

But behind every number is a person.

Behind every prevalence estimate is someone's experience.

Behind every policy is a group of people who will live with its consequences.

Behind every programme target are communities that may experience success, failure, inconvenience, benefit, or harm.

This is why public health cannot be reduced to technical competence.

We also need to ask who is being heard and who is being ignored. Who benefits from a decision? Who carries the burden? Whose knowledge is treated as legitimate? Whose experience is missing from the data?

These questions become particularly important when working with communities that have historically been marginalised or poorly served.

Listening is therefore not an optional addition to public health practice.

It is part of doing public health well.

A Critical Way of Looking at the Field

This book takes a critical perspective on public health.

That means I am interested not only in whether something works, but also in the conditions surrounding it.

Who has the power to make decisions?

What assumptions are built into a policy or intervention?

Who benefits from the way a problem has been defined?

Who may be harmed?

What knowledge has been prioritised?

What knowledge has been overlooked?

These questions do not mean that evidence is unimportant. Quite the opposite. They are questions that help us use evidence more responsibly.

Public health operates within social, economic, political, and institutional systems. Pretending otherwise can make our analysis less accurate, not more neutral.

The book therefore pays attention to issues such as inequality, structural racism, the commercial determinants of health, power, marginalisation, and the unequal relationship between the Global North and Global South.

But the purpose is not to tell the reader what political position to hold.

The purpose is to encourage better questions.

Good public health should be able to examine itself as critically as it examines the problems it is trying to solve.

Who Is This Book For?

This book is primarily for people who want to become better public health practitioners, not simply people who want to know more public health facts.

For students, it provides opportunities to practise applying knowledge to difficult situations.

For practitioners, it offers a way to reflect on decisions they already make in their work.

For educators, it provides a different way of connecting disciplinary knowledge with practical problem solving.

For policymakers and public health leaders, it offers a framework for thinking about the capabilities people need when working in complex and changing environments.

But the book is not limited to these groups.

If you have ever found yourself thinking, I know what the textbook says, but what do I actually do here?, then this book is for you.

An Invitation

Public health is entering a period in which certainty will be harder to find.

New technologies will create new possibilities and new risks. Climate change will continue to reshape health. Diseases will emerge and re-emerge. Health systems will face competing pressures. Communities will demand greater participation. Information will become easier to access, but not necessarily easier to trust.

We cannot prepare public health professionals for every problem they will encounter.

We can, however, prepare them to face unfamiliar problems with curiosity, discipline, humility, and judgement.

That is what this book is trying to do.

It is not a replacement for the foundational knowledge of public health. It is an attempt to connect that knowledge with the messy work of using it.

So as you begin, I invite you to resist the urge to look for the perfect answer.

Instead, ask better questions.

Look for connections.

Interrogate the evidence.

Listen to the people affected.

Consider the consequences.

Adapt when reality demands it.

And when you finally have to make a decision, be prepared to explain not only what you decided, but why.

Because that is where public health becomes more than a body of knowledge.

It becomes practice.

PART I

THE MINDSET

Why Public Health Must Change

Before we ask how public health should be practised, we need to ask a more fundamental question:

What is public health for?

It is a simple question, but the answer is no longer as straightforward as it once seemed.

Public health was built around a world that was very different from the one we inhabit today. When the major disciplines of public health took shape in the mid-twentieth century, many of the problems facing populations could be understood within relatively clear boundaries. Infectious diseases were a major concern, chronic diseases were becoming increasingly important, health systems were largely organised within national borders, and the technologies available to collect, analyse, and communicate health information were limited.

That world has changed.

Today, a public health problem can begin in one place and affect people thousands of kilometres away. A virus can cross borders before health authorities fully understand what they are dealing with. Climate-related events can disrupt food systems, housing, sanitation, livelihoods, and mental wellbeing at the same time. Digital platforms can influence health behaviour faster than public health institutions can respond. Artificial intelligence is changing how health information is produced and used. And decisions made in areas such as transport, trade, housing, technology, food, and energy can have profound consequences for health.

The problem is not that public health knows too little.

In many respects, we know more than ever before.

The problem is that knowing more does not automatically make us better at acting.

This is where Part I begins.

Rather than starting with another definition of public health or another review of its history, we begin by examining the field itself. What has changed? Where are traditional approaches still useful? Where are they becoming insufficient? And what do public health professionals need to be able to do when the problem in front of them does not fit neatly into a single discipline?

Chapter 1 examines why the traditional discipline-based model is under pressure. It considers the forces reshaping public health and the growing gap between what people are taught and what they are expected to handle in practice.

Chapter 2 responds to that challenge by introducing the competency framework that guides this book. The framework centres on six competencies:

Systems Mapping, Data Fluency, Implementation Agility, Stakeholder Navigation, Ethical Foresight, and Narrative Competence.

These competencies do not replace the knowledge of epidemiology, biostatistics, environmental health, health policy, behavioural science, or the other foundations of public health. They provide another way of thinking about how that knowledge is brought together and used.

That distinction matters.

A public health professional may understand the statistics behind an outbreak and still struggle to decide what to do next. They may know that an intervention is evidence-based and still be unable to implement it in a community that does not trust the institution delivering it. They may understand a policy perfectly and still fail to communicate why it matters. They may have excellent data and yet overlook the political, cultural, ethical, or human factors that determine what happens in practice.

Public health requires more than knowing the right answer. It requires knowing how to work with complexity, uncertainty, people, evidence, institutions, and competing priorities.

That is the mindset this part of the book begins to develop.

The chapters that follow are therefore not simply an introduction to the rest of the book. They are an invitation to reconsider what it means to be prepared for public health practice.

Read them with an open mind.

Question the assumptions.

And, where necessary, question the way public health itself has traditionally been taught.

The world has changed. Public health has to change with it.

Chapter 1

The End of Business as Usual

Learning Objectives

By the end of this chapter, you will be able to:

Identify the six forces reshaping population health in the twenty first century

Explain why the traditional five discipline model of public health is structurally insufficient

Describe the gap between what public health textbooks teach and what practitioners actually do

Assess your own mental model of public health and its assumptions

1.1 The Six Forces Reshaping Health

Public health has always responded to the challenges of its era. The sanitary revolution of the nineteenth century addressed urban filth and infectious disease. The mid-twentieth century saw the rise of epidemiology and the conquest of vaccine-preventable diseases. The late twentieth century grappled with chronic disease, tobacco, and the social determinants of health.

But the twenty-first century has brought forces that are qualitatively different, not just in scale, but in complexity. They are interconnected, nonlinear, and increasingly global in reach. Figure 1.1 provides a visual overview of these six forces and their interconnections. Climate change, digital disruption, ageing populations, widening inequity, antimicrobial resistance, and geopolitical instability do not operate in isolation. They interact with and amplify each other in ways that demand integrated, systems-level responses.

A changing climate disrupts food systems, displaces populations, and creates conditions for infectious disease spread. Digital technologies can both expose and entrench health inequities. Ageing populations place new demands on health systems already strained by chronic disease and antimicrobial resistance. Geopolitical instability undermines the multilateral cooperation needed to address these challenges collectively.

Public health professionals can no longer afford to work within disciplinary silos. The forces reshaping health require professionals who can think across boundaries, understand feedback loops, and design responses that address root causes rather than symptoms. The following sections examine each force in detail, but the message is clear from the start: these forces are not separate problems to be solved one at a time. They are interconnected elements of a system that demands a new kind of public health practice.

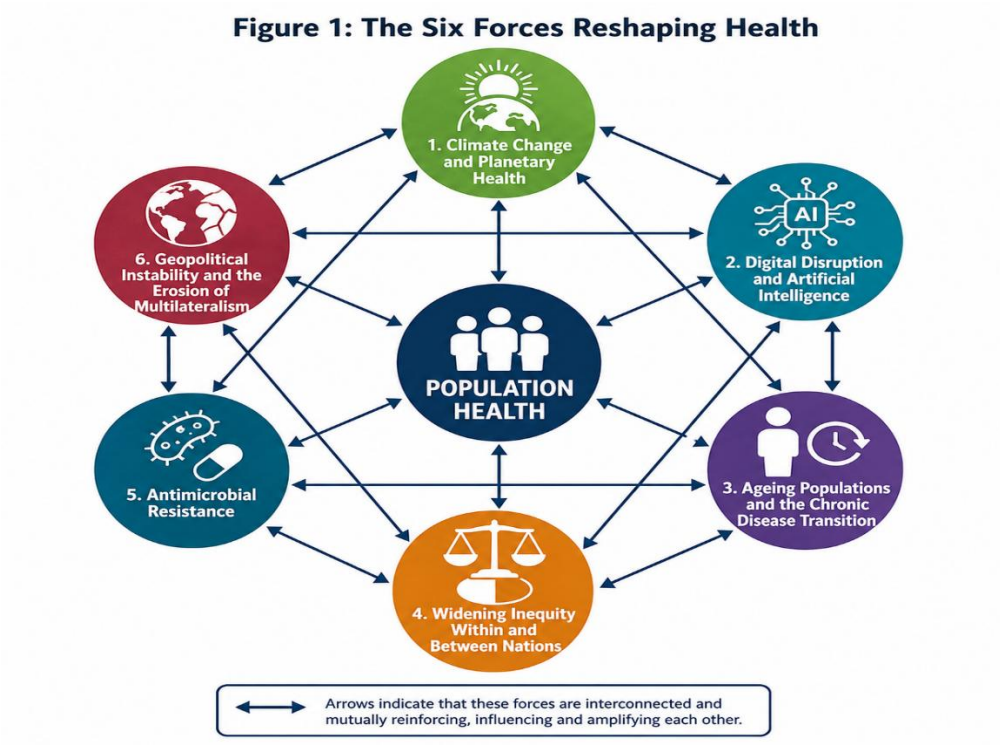


Figure 1.1: The Six Forces Reshaping Health. These six forces are interconnected and mutually reinforcing. Addressing any one force requires understanding its relationships with the others.

1.1.1 Climate Change and Planetary Health

The Intergovernmental Panel on Climate Change has documented that global temperatures have risen by approximately 1.2 degrees Celsius above pre-industrial levels, with further warming locked in regardless of emissions trajectories (IPCC, 2023). The health consequences are already visible. Heat related mortality among older adults increased by 68 percent between 2000 and 2004 and 2017 and 2021 (Lancet Countdown, 2024). Vector borne diseases such as dengue and malaria are expanding their geographic range (Rocklöv & Dubrow, 2020). Food and water insecurity are worsening in vulnerable regions (WHO, 2021).

The concept of planetary health, the understanding that human health depends on the health of natural systems, has moved from the margins to the mainstream (Whitmee et al., 2015). Public health professionals can no longer ignore agriculture, energy policy, urban planning, or biodiversity. These are no longer environmental health subissues. They are central to population health.

Box 1.1: Climate Change is Not a Future Problem

In 2023, the United States experienced 28 separate billion dollar weather and climate disasters, the highest number on record (NOAA, 2024). Each disaster disrupted health services, displaced populations, and created mental health crises that will persist for years. Public health systems are now expected to prepare for, respond to, and recover from climate related emergencies while maintaining routine services.

1.1.2 Digital Disruption and Artificial Intelligence

The digital transformation of health is occurring faster than governance structures can keep pace. Electronic health records, wearable devices, genomic sequencing, and AI driven diagnostics are generating unprecedented quantities of health data. By 2025, it was estimated that the global volume of health data would exceed 10 zettabytes (IBM, 2020).

Artificial intelligence offers extraordinary promise. Algorithms that detect pathology earlier than human radiologists (McKinney et al., 2020). Predictive models that identify high risk patients for intervention (Rajkomar et al., 2018). Systems that optimise drug discovery and clinical trial design.

But AI also introduces profound challenges. Algorithms can perpetuate and amplify existing inequities if trained on biased data (Obermeyer et al., 2019). Black box models may be accurate but inscrutable, undermining trust and accountability. The digital divide, both within and between countries, threatens to create a two-tiered health system where the data rich benefit and the data poor fall further behind (WHO, 2021).

Public health professionals must develop data fluency. Not just statistical literacy, but the ability to interrogate algorithmic assumptions, identify bias, communicate uncertainty, and ensure that digital tools serve health equity rather than entrenching disadvantage.

Box 1.2: The Algorithm That Missed Black Patients

Obermeyer and colleagues (2019) found that a widely used predictive algorithm in US healthcare systematically underestimated the health needs of Black patients. The algorithm used healthcare costs as a proxy for health need. But Black patients with the same level of illness had lower healthcare costs due to structural barriers to access. The algorithm, in effect, penalised patients for their lack of access.

1.1.3 Ageing Populations and the Chronic Disease Transition

Global life expectancy has increased from 46.5 years in 1950 to 73.4 years in 2022 (UN, 2022). This is a triumph of public health. But it has also created unprecedented demographic pressures. By 2050, one in six people globally will be aged 65 or older, up from one in eleven in 2019 (UN, 2019).

The epidemiological transition from infectious to chronic diseases has shifted the burden of disease. Noncommunicable diseases, including cardiovascular disease, cancer, diabetes, and chronic respiratory disease, now account for 74 percent of all deaths globally (WHO, 2023). These conditions are not acute and episodic. They are long term, complex, and require health systems that can manage multimorbidity and functional decline.

Simultaneously, traditional family-based care structures are eroding in many parts of the world. The empty nests of Mission 2 are not a European or North American phenomenon. They are increasingly visible across Asia, Latin America, and Africa as migration patterns change and family sizes shrink.

Public health must shift its focus from saving lives to supporting lives. Maintaining function, independence, and quality of life across the lifespan. This requires integration across health services, social care, housing, transport, and community infrastructure.

Box 1.3: The Challenge of Multimorbidity

Among older adults in high income countries, 65 percent have two or more chronic conditions (Barnett et al., 2012). Disease specific guidelines, developed for single conditions, often conflict or create excessive treatment burdens. Public health professionals need a person centred, not disease centred, perspective.

1.1.4 Widening Inequity Within and Between Nations

Despite decades of progress, global health inequities are persistent and, in some cases, worsening. Life expectancy in Sierra Leone, at 54.3 years, is more than three decades shorter than in Japan, at 84.5 years (UN, 2022). Within countries, the gaps are equally stark. In the United States, life expectancy for the wealthiest 1 percent exceeds that of the poorest 1 percent by approximately 15 years for men and 10 years for women (Chetty et al., 2016).

The COVID-19 pandemic exposed and amplified these inequities. Marginalised populations, including racial and ethnic minorities, people in poverty, and those in congregate settings, experienced disproportionately high infection and mortality rates (Karmakar et al., 2021). The global vaccine rollout was marked by vaccine apartheid, with high income countries securing the vast majority of early doses while low income countries waited (WHO, 2022).

Health inequity is not an isolated issue. It intersects with every force discussed here. Climate change affects the poor most severely. AI bias harms those already marginalised. Chronic disease burdens are highest among those with the least access to prevention and care. Public health, if it is to remain a moral enterprise, must place equity at its centre. Not as an afterthought, but as a core evaluative criterion for all policies and interventions.

Box 1.4: The Marmot Principles

Sir Michael Marmot's work on the social determinants of health established that health inequities are not inevitable but are produced by unequal distribution of power, money, and resources (Marmot et al., 2020). Addressing inequity requires action across all sectors, not just health services.

1.1.5 Antimicrobial Resistance

Antimicrobial resistance, the ability of bacteria, viruses, fungi, and parasites to withstand treatments that once killed them, has been described as a silent pandemic (O'Neill, 2016). The misuse and overuse of antibiotics in human medicine and agriculture have accelerated the evolution of resistant pathogens. The World Health Organization has declared AMR one of the top ten global public health threats facing humanity (WHO, 2021).

The numbers are sobering. An estimated 1.27 million deaths were directly attributable to bacterial AMR in 2019, more than HIV/AIDS or malaria (GBD AMR Collaborators, 2022). Without concerted action, this figure is projected to rise to 10 million annually by 2050, with an economic cost of 100 trillion dollars (O'Neill, 2016).

AMR is the archetypal One Health problem. It demands coordinated action across human, animal, and environmental sectors. It requires not only new drugs but also better stewardship of existing ones, improved infection prevention and control, and global surveillance. It also raises profound equity questions. Low income countries, where antibiotics are often accessed without prescription,

bear a disproportionate burden, while high income countries have driven much of the consumption in agriculture.

Box 1.5: A Post-Antibiotic World

Routine surgeries, cancer chemotherapy, and premature infant care all rely on effective antibiotics. The loss of antimicrobial efficacy does not merely mean more infections. It threatens the entire foundation of modern medicine. This is why AMR is a public health issue, not just a clinical one.

1.1.6 Geopolitical Instability and the Erosion of Multilateralism

Public health is inherently international. Disease does not respect borders. The global health architecture, including the World Health Organization, bilateral aid programmes, pharmaceutical supply chains, and international health regulations, depends on cooperation and trust among nations.

Yet the past two decades have seen a marked erosion of multilateralism. Geopolitical rivalries, the rise of nationalist movements, and the fragmentation of global governance have weakened the institutions that coordinate pandemic preparedness, health financing, and humanitarian response (Gostin & Wiley, 2020). The WHO's budget is smaller than that of many mid sized hospitals in high income countries.

Conflicts in Syria, Yemen, Ukraine, Sudan, and Gaza have devastated health systems, displaced millions, and created conditions for communicable disease outbreaks. The health workforce itself is under threat. Attacks on healthcare workers and facilities have become increasingly common (Safeguarding Health in Conflict Coalition, 2023).

Public health professionals increasingly operate in environments of uncertainty, resource constraint, and political contestation. Technical competence is not enough. They must navigate complex political landscapes, build trust across divides, and advocate for evidence-based policies in settings where evidence is not always the deciding factor.

Box 1.6: The Ukraine Response

The invasion of Ukraine in 2022 caused the largest displacement of people in Europe since World War II. Health systems across the region were overwhelmed. Public health professionals had to coordinate cross border responses, manage trauma and mental health, and maintain chronic disease care during active conflict. Tasks for which few were trained.

1.2 The Limits of the Discipline Model

The public health curriculum, for much of the past century, has been organised around five core disciplines.

1. Epidemiology, the study of disease distribution and determinants
2. Biostatistics, the application of statistical methods to health data
3. Environmental Health, the study of physical, chemical, and biological factors in the environment
4. Health Policy and Management, the organisation, financing, and delivery of health services

5. Social and Behavioural Sciences, the study of social determinants and health behaviours

This framework was codified in the 1980s and 1990s as graduate public health programmes proliferated, particularly in the United States. The Council on Education for Public Health established these disciplines as the core, and most schools organised their curricula accordingly (CEPH, 1986, revised periodically).

Why did this model make sense?

In the twentieth century, public health challenges were often more contained. Infectious disease outbreaks were local or national, not global. Environmental exposures were primarily industrial or occupational. Health systems were primarily national. The separation of disciplines allowed for depth of expertise. Epidemiologists who could design rigorous studies. Environmental health scientists who understood toxicology. Health policy experts who could analyse financing mechanisms.

Why does this model no longer serve?

The problems of the twenty first century do not fit neatly into these compartments. Consider climate change. It requires environmental health science, epidemiology to track health impacts, policy to design mitigation, behavioural science to promote adaptation, and systems thinking to understand feedback loops.

Consider AMR. It spans epidemiology, microbiology, environmental health through agricultural runoff, health policy through regulating antibiotic use, behavioural science through clinician prescribing habits, and global governance through WHO coordination.

Consider AI in healthcare. It requires data science, not just biostatistics. Ethics, not taught in most core curricula. Implementation science, not historically a core discipline. Communication to build public trust.

The discipline model fragments what is inherently integrated. It teaches students to think in silos, even though their careers will demand cross silo thinking. It privileges methodological depth over problem solving breadth. It focuses on what we know rather than how we decide.

Box 1.7: The Fragmentation Problem

A survey of early career public health professionals found that 78 percent felt their graduate training had not adequately prepared them for the cross sectoral coordination demanded by their roles (DeSalvo et al., 2018). They had mastered the tools of their discipline but lacked the skills to bring disciplines together.

1.3 The Gap Between Textbooks and Practice

This structural limitation is reflected in public health textbooks. Most are organised along disciplinary lines. A typical text includes a section on epidemiology and study design, a section on statistical methods, a section on environmental and occupational health, a section on health policy and systems, and a section on health promotion and behaviour change.

What is often missing?

Decision making frameworks. How do you weigh evidence against feasibility? How do you prioritise when resources are limited?

Implementation science. How do you adapt interventions from controlled trials to real world, under resourced settings?

Interdisciplinary collaboration. How do you communicate with engineers, economists, urban planners, and community organisers?

Ethical reasoning under pressure. How do you make triage decisions? How do you balance individual liberty against collective good?

Political navigation. How do you advance evidence-based policy when evidence is contested or ignored?

Failure analysis. What do you learn from what went wrong?

Practitioners report that their real work involves constant negotiation, tradeoffs, stakeholder management, and rapid adaptation to changing circumstances (Peters et al., 2016). Yet textbooks teach them as though they will work in stable, resource rich environments with clear evidence and unambiguous mandates.

The result is a gap, sometimes called the know do gap or the translation gap, between what students learn and what they are expected to do. This gap is not just an academic concern. It has real consequences for population health.

> **Box 1.8: The Know Do Gap in Action**
>
> During the COVID-19 pandemic, many countries had strong epidemiological surveillance systems. Yet the public health response was often chaotic. The problem was not lack of knowledge about the virus. It was lack of implementation capacity. The ability to rapidly organise testing, tracing, isolation, and communication across fragmented systems. Implementation science, a field often absent from core curricula, could have helped. But it was rarely taught.

1.4 Mission 0: Diagnostic Self-Assessment

Before we proceed, we invite you to take a step back and examine your own mental model of public health.

Where did you learn what you know?

Was it from textbooks, from courses, from fieldwork, or from lived experience?
Were you taught the five disciplines as a coherent framework?
Were you taught systems thinking, implementation science, or policy navigation?

What assumptions do you bring?

Do you assume that more evidence will lead to better policy?
Do you assume that public health is primarily a technical enterprise?
Do you assume that health systems are rational and responsive?

What are your blind spots?

Do you feel less confident engaging with politics than with data?
Do you feel less confident communicating to the public than to your peers?
Do you feel less confident navigating ethical tradeoffs than designing studies?

What are your values?

What do you believe public health is for?
Whose health matters most to you? Why?
What tradeoffs are you unwilling to accept?

These questions are not intended to be answered quickly. They are intended to be held in mind throughout this book. Your answers will evolve, and that is the point.

1.5 Chapter Summary

The six forces reshaping health, climate change, digital disruption, ageing populations, widening inequity, AMR, and geopolitical instability, are interconnected, nonlinear, and demand integrated responses.

The five-discipline model that has structured public health education for decades was developed for a different era. It fragments what should be integrated and privileges methodological depth over problem solving breadth.

The gap between textbooks and practice is wide and consequential. Students graduate with knowledge but often without the competencies, implementation, communication, navigation, ethical reasoning, they need to make decisions in complex, uncertain environments.

Mission 0 invites you to assess your own mental model, assumptions, blind spots, and values.

1.6 Reflection Questions

1. Which of the six forces do you feel best prepared to address? Which do you feel least prepared for? Why?
2. Think of a public health problem you have studied or worked on. How would you have approached it differently if you had been taught systems thinking alongside epidemiology?
3. What is the most important thing you have learned about public health that was not in any of your textbooks?
4. If you were designing a public health curriculum from scratch, what would you keep from the traditional model, and what would you discard?

Chapter 2

A Competency Framework for the 21st Century

Learning Objectives

By the end of this chapter, you will be able to:

Define the six core competencies proposed for twenty-first-century public health practice

Explain the evidence base for competency-based education in public health, drawing on major global frameworks

Compare the competency framework with the traditional discipline model and evaluate the strengths of each

Use this book's structure to develop your own competency portfolio through active learning

2.1 Introducing the Six Competencies

The previous chapter made the case that the traditional five-discipline model, while valuable, is no longer sufficient for the complex, interconnected challenges of the twenty-first century. This chapter offers an alternative.

We propose that public health education should be organised around competencies rather than disciplines. A competency is not merely knowledge. It is the ability to apply knowledge, skills, and judgment to solve real-world problems. Competencies are what professionals actually do. They represent the integration of cognitive, technical, and interpersonal capacities that enable effective practice in complex and uncertain environments.

Drawing on global competency frameworks developed by the World Health Organization, the Association of Schools of Public Health in the European Region (ASPHER), and the Council on Education for Public Health (CEPH), we have identified six core competencies that we believe are essential for modern public health practice. These six competencies distil the extensive work of these organisations into a teachable, integrated framework that addresses the realities of a disrupted world.

Table 2.1: The Six Competencies for Twenty-First-Century Public Health

Competency	Definition	Why It Matters Now
Systems Mapping	The ability to visualise and analyse the interconnected elements of a health problem, including feedback loops, delays, and leverage points	Health problems no longer fit into neat compartments. Climate change, AMR, and chronic disease require understanding of complex adaptive systems
Data Fluency	The ability to interrogate, interpret, and communicate quantitative and qualitative data, including algorithmic outputs	AI and digital health are generating unprecedented data. Professionals must identify bias, question

		assumptions, and present uncertainty clearly
Implementation Agility	The ability to adapt evidence-based interventions to real-world constraints and learn from failure	The gap between what works in trials and what works in practice is wide. Implementation science is essential for translating knowledge into action
Stakeholder Navigation	The ability to identify, engage, and build coalitions across diverse interests and sectors	Public health is inherently multi-sectoral. Professionals must work with politicians, communities, industry, and other professions
Ethical Foresight	The ability to anticipate and reason through ethical trade-offs in surveillance, resource allocation, and liberty restrictions	New technologies and crises create novel ethical dilemmas. Professionals must balance individual rights against collective good
Narrative Competence	The ability to frame health issues persuasively for different audiences and counter misinformation	Public health is contested. Professionals must communicate risk, build trust, and advocate for evidence-based policy

These six competencies are not arbitrary. They reflect a synthesis of the most comprehensive efforts to define what public health professionals need to know and be able to do. Let us now examine the evidence base that supports this approach.

2.2 The Evidence for Competency-Based Education

The shift from discipline-based to competency-based education is not a passing trend. It reflects a growing recognition that what students know is less important than what they can do. Competency-based education focuses on outcomes: it asks what graduates should be able to accomplish, then designs curricula backwards from those goals. This approach has gained traction across health professions education, and public health is no exception (Kundapur et al., 2024).

The WHO-ASPHER Competency Framework

In 2020, the World Health Organization and the Association of Schools of Public Health in the European Region published a comprehensive competency framework for the public health workforce (ASPHER, 2020). The framework was developed to meet the need of member states to build public health workforce capacity and can be usefully applied in numerous situations, including developing measures to strengthen education and performance, assessing existing capacity and identifying training requirements, and planning public health workforce recruitment, retention, and skill mix (ASPHER, 2020).

The framework identifies 84 competencies organised into 10 domains. Each domain represents a distinct area of professional practice, and the competencies within each domain specify what professionals should be able to do. The framework also provides detailed descriptions of competence at different levels, allowing for differentiation between expert, proficient, and competent practitioners (WHO Regional Office for Europe, 2020).

Table 2.2: WHO-ASPHER Competency Domains

Domain	Focus	Number of Competencies
Science and Practice	Epidemiology, biostatistics, research methods, evidence-based practice	10
Promoting Health	Health education, community engagement, health literacy	8
Law, Policies and Ethics	Legal frameworks, policy development, ethical practice	6
One Health and Health Security	Human, animal, and environmental health integration	12
Leadership and Systems Thinking	Vision, change management, complexity	9
Collaboration and Partnerships	Stakeholder engagement, coalition building	6
Communication, Culture and Advocacy	Audience-specific messaging, advocacy, diplomacy	8
Governance and Resource Management	Financial planning, quality assurance, economic evaluation	10
Professional Development and Ethical Practice	Lifelong learning, ethical conduct, accountability	7
Organisational Literacy and Adaptability	Technology, digital health, entrepreneurship	8

Note: Adapted from the WHO-ASPHER Competency Framework for the Public Health Workforce in the European Region (ASPHER, 2020).

Each competency is described at three levels of proficiency—competent, proficient, and expert—allowing the framework to be used for both educational design and workforce development. For example, within the Science and Practice domain, the competency "knows how to retrieve, analyse and appraise evidence from all data sources to support decision-making" is specified at the competent level as knowing how to search the literature, conduct a simple review, and use routinely available data; at the proficient level, it includes the ability to conduct a critical review and perform competent analysis; and at the expert level, it encompasses complex analysis and advanced searching (WHO Regional Office for Europe, 2020).

The WHO Global Competency and Outcomes Framework

In 2024, the World Health Organization published a global competency and outcomes framework oriented to the delivery of the Essential Public Health Functions (WHO, 2024). This framework provides evidence-based guidance and an international reference set of competencies and educational outcomes, aligning education with employment and public health needs to build and maintain the workforce required to deliver essential public health functions (WHO, 2024).

The framework addresses the need to strengthen the public health workforce in the face of diverse challenges, including the repercussions of the COVID-19 pandemic, preparing for and preventing the next pandemic, climate change, natural and man-made disasters, the escalating burden of

noncommunicable diseases, and antimicrobial resistance (WHO, 2024). It recognises that achieving and sustaining national progress towards universal health coverage, health security, and the health-related Sustainable Development Goals cannot be achieved without a health workforce that can deliver the full range of both essential health services and essential public health functions (WHO, 2024).

The CEPH Foundational Competencies

In the United States, the Council on Education for Public Health has established foundational competencies for all Master of Public Health graduates. These competencies are organised across eight domains of professional practice and represent the minimum skills that all MPH graduates should possess, regardless of their area of specialisation (CEPH, 2021).

CEPH competencies are organised into eight domains, each with specific competencies that graduates must demonstrate. These competencies are regularly reviewed and updated to reflect changes in the field (CEPH, 2021; George Mason University, 2024; Western Kentucky University, n.d.). A recent analysis of how these competencies are taught across accredited programmes found that traditional core discipline courses remain the primary mechanism for delivering competency-based education. For example, 81.7% of programmes use biostatistics courses and 81.2% use epidemiology courses to teach evidence-based approaches, while health policy and management courses are used in 42.1% of programmes for public health and healthcare systems competencies (CEPH, 2021).

Table 2.3: CEPH Foundational Competency Domains

Domain	Focus	Number of Competencies
Evidence-Based Approaches to Public Health	Epidemiological methods, data collection, analysis, interpretation	4
Public Health and Healthcare Systems	Organisation, structure, function of systems; structural bias and equity	2
Planning and Management to Promote Health	Needs assessment, cultural values, programme design, evaluation	5
Policy in Public Health	Policy process, stakeholder engagement, advocacy, policy evaluation	4
Leadership	Leadership principles, negotiation, mediation	2
Communication	Communication strategies, audience-appropriate content, cultural humility	3
Interprofessional and/or Intersectoral Practice	Cross-sectoral integration	1
Systems Thinking	Systems thinking tools and visual representation	1

Note: Adapted from CEPH Foundational Competencies (CEPH, 2021; George Mason University, 2024; Western Kentucky University, n.d.).

What These Frameworks Share

Despite their differences in scope and geography, these frameworks share common themes that are instructive for our purposes. They emphasise integration across traditional disciplinary boundaries, application of knowledge to real-world problems, communication with diverse audiences, collaboration across sectors and professions, ethical reasoning in complex situations, and adaptability to changing circumstances.

A recent study evaluating a structured competency-based curriculum for health programmes among community medicine postgraduates found that students who experienced competency-based education scored significantly higher on critical evaluation tasks compared to those taught through conventional methods (Kundapur et al., 2024). The study reported that students' narratives reflected that they could understand as well as integrate concepts better in the field, and there was enhanced satisfaction and encouragement (Kundapur et al., 2024). Structured curriculum helped make learning more student-centric and boosted creativity (Kundapur et al., 2024).

Similarly, the WHO and ISS European Public Health Leadership Course, delivered in blended modality over three weeks, was structured according to the competency-based education model and problem-based learning methodology (Barbina et al., 2025). Thirty-eight participants passed all summative tests out of 39 enrolled, and analysis of multiple-choice questions showed an increase in knowledge, with survey results showing a high level of satisfaction. The course offered a mix of both theoretical and practical approaches, allowing participants to gain in-depth knowledge and develop skills applicable to their daily work (Barbina et al., 2025).

These shared themes directly inform our proposed six competencies.

2.3 Why These Six Competencies?

We have distilled the global evidence into six competencies for three reasons.

First, parsimony. A framework with 84 competencies, while comprehensive, can be overwhelming for students and educators. The six competencies we propose are broad enough to encompass the essential skills but focused enough to be teachable and assessable. Our goal is not to replace the detailed work of WHO, ASPHER, and CEPH but to translate it into an accessible, usable framework for this book.

Second, integration. Each competency cuts across traditional disciplinary boundaries. Systems mapping, for example, requires epidemiological thinking, policy analysis, and behavioural insight. Data fluency demands statistical knowledge and critical thinking about bias. Narrative competence draws on communication theory, psychology, and an understanding of cultural context. This integration is precisely what is missing from discipline-based curricula. The WHO-ASPHER framework explicitly recognises this integrative need, with its Leadership and Systems Thinking domain calling for the application of "the principles of systems thinking within systematic enquiry to analyse, model and improve public health organisations and services" (WHO Regional Office for Europe, 2020).

Third, future-readiness. The six competencies are not tied to current topics. They are transferable habits of mind. Systems thinking will remain relevant even as specific health challenges evolve. Narrative competence will matter whether the issue is vaccines, climate, or AI. The competencies prepare students for problems we cannot yet foresee. The WHO's global framework emphasises this, noting that whether "dealing with the repercussions of the COVID-19 pandemic, preparing for and preventing the next pandemic, or addressing diverse challenges such as climate change and

natural and man-made disasters, the escalating burden of noncommunicable diseases and/or antimicrobial resistance, there are economic, health, ethical and moral imperatives to strengthen the public health workforce" (WHO, 2024).

Table 2.4: How the Six Competencies Map to Global Frameworks

Our Six Competencies	WHO-ASPHER Domains	CEPH Foundational Competencies
Systems Mapping	Leadership and Systems Thinking (Domain 5)	Systems Thinking
Data Fluency	Science and Practice (Domain 1)	Evidence-Based Approaches
Implementation Agility	Science and Practice (Domain 1)	Planning and Management
Stakeholder Navigation	Collaboration and Partnerships (Domain 6)	Interprofessional and Intersectoral Practice
Ethical Foresight	Law, Policies and Ethics (Domain 3)	Policy in Public Health
Narrative Competence	Communication, Culture and Advocacy (Domain 7)	Communication

2.4 Competencies and Disciplines: A Reorientation, Not a Replacement

We are not suggesting that the traditional disciplines—epidemiology, biostatistics, environmental health, health policy, and social and behavioural sciences—should be abandoned. They remain the foundation of public health knowledge. In fact, the CEPH data show that these disciplines remain the primary vehicles through which competency-based education is delivered: 81.7% of programmes use biostatistics courses to teach evidence-based approaches, 81.2% use epidemiology, 69.0% use environmental health courses, and 61.9% use social and behavioural health courses (CEPH, 2021).

What we are suggesting is that these disciplines should be taught in service of competencies, not as ends in themselves. The discipline-centred model asks students to learn epidemiology, then policy, then communication, and then, at some point, to see how they fit together. The competency-centred model presents a problem and draws on the disciplines as needed to solve it.

This distinction has profound implications for how students learn. A structured competency-based curriculum, when evaluated against conventional methods, has been shown to produce significantly better outcomes in critical evaluation, with a 0.001 significance level (Kundapur et al., 2024). Students also report that they can understand and integrate concepts better in practice (Kundapur et al., 2024).

Table 2.5: Discipline-Centred versus Competency-Centred Education

Dimension	Discipline-Centred	Competency-Centred
Organising Principle	What do we know?	What can we do?
Curriculum Structure	Separate courses by discipline	Integrated missions and problems

Assessment	Knowledge tests	Performance-based tasks
Student Role	Passive recipient	Active problem-solver
Instructor Role	Content expert	Facilitator and coach
Relationship to Practice	Theory first, application later	Application drives theory

Competency-based education is not a rejection of disciplinary knowledge. It is a recognition that knowledge alone is insufficient. The WHO-ASPHER framework makes this explicit: the competencies are specified as what professionals should be able to do, built upon the underlying knowledge and skills that disciplines provide (ASPHER, 2020; WHO Regional Office for Europe, 2020). The competency-based curriculum must be "given a definite shape so as to make health programs more intensive and integrative" (Kundapur et al., 2024, p. 812).

2.5 Chapter Summary

Competency-based education focuses on what professionals can do, not just what they know. This shift reflects a growing recognition that knowledge alone does not equip graduates for the complex, uncertain, and politically contested realities of public health practice.

Global frameworks from WHO, ASPHER, and CEPH provide robust evidence for competency-based public health education. These frameworks share common themes: integration across disciplinary boundaries, application to real-world problems, communication, collaboration, ethical reasoning, and adaptability.

Our six competencies—Systems Mapping, Data Fluency, Implementation Agility, Stakeholder Navigation, Ethical Foresight, and Narrative Competence—distil the global evidence into a teachable, integrated framework. They are not arbitrary but are grounded in the competencies identified by leading global and national organisations.

Competencies complement, not replace, the traditional disciplines. The disciplines provide foundational knowledge; competencies provide the ability to apply that knowledge to real problems. A structured competency-based approach produces better outcomes in critical evaluation and integration compared to conventional methods.

This book is organised to develop competencies through active learning, with missions, a toolkit, a lab, and a reference anthology. It is designed to be used, not just read, and to build judgment, not just knowledge.

2.7 Reflection Questions

1. Which of the six competencies do you feel most confident in? Which do you feel least confident in? Why? Consider your prior education and professional experience.
2. Think of a public health professional you admire. Which of the six competencies do they demonstrate most strongly? What can you learn from how they practice?
3. Look at the curriculum of your current or past public health programme. How well does it develop these six competencies? What is missing? What would need to change to develop them better?

4. If you had to drop one of the six competencies, which would it be? What would replace it? This is a difficult question, but it forces you to clarify your priorities for public health education.
5. How might the six competencies look different in a low-income country setting compared to a high-income setting? Are they universal, or do they need adaptation?

Part II

The Toolkit: Building the Six Competencies

Introduction to Part II

Part I made the case for change.

We looked at why the traditional discipline-based model of public health is no longer enough for the complex and interconnected challenges of the twenty-first century. We also introduced six competencies that can help public health professionals think more clearly, make better decisions, and act effectively in a disrupted world.

Part II is where those competencies become practical.

The six competencies introduced in Part I are not simply ideas to understand. They are ways of working. They shape how you examine a problem, interpret evidence, make decisions, work with people, anticipate consequences, and communicate with others.

This part provides the practical toolkit for developing each of them.

The six chapters focus on:

1. Systems Mapping: seeing the relationships, structures, feedback loops, and unintended consequences that shape a public health problem.
2. Data Fluency: knowing how to question, interpret, and use data rather than simply report numbers.
3. Implementation Agility: turning evidence and good ideas into action while adapting to real-world constraints.
4. Stakeholder Navigation: understanding interests, power, relationships, resistance, and opportunities for collaboration.
5. Ethical Foresight: thinking beyond the immediate decision to consider consequences, competing values, uncertainty, and who may bear the risks.
6. Narrative Competence: communicating evidence and health issues in ways that different audiences can understand, trust, and use.

Each chapter is deliberately practical.

You will encounter frameworks, questions, checklists, templates, decision aids, and exercises that can be used to develop the competency and apply it to real situations.

The aim is not to give you a formula that works every time. Public health problems are too varied for that. The aim is to give you a set of tools that can improve the quality of your thinking and help you decide which tool is appropriate for the situation in front of you.

For example, a systems map may help you understand why an apparently simple intervention is producing unexpected consequences. A data interrogation checklist may reveal that an impressive headline finding does not tell the whole story. A stakeholder map may show that the person with

the greatest formal authority is not necessarily the person with the greatest influence. An ethical decision framework may help you recognise a consequence that was invisible when you considered only efficiency. A narrative tool may help you communicate the same evidence differently to a minister, a clinician, a community leader, or a member of the public.

You do not need to use every tool in every situation.

Good practice is not about using more tools. It is about knowing which tools are useful, when to use them, and what their limitations are.

The chapters are therefore designed to be useful in two ways.

First, you can work through them sequentially to develop your understanding and strengthen your skills.

Second, you can return to individual chapters when you encounter a problem that calls for a particular competency. A practitioner preparing a complex intervention may return to the implementation chapter. Someone working through conflicting interests may revisit stakeholder navigation. A team trying to understand why a programme is producing unexpected results may return to systems mapping.

The practical exercises can also be adapted to your own setting. You may use them individually, with colleagues, in a classroom, or as part of a professional development programme.

Do not treat the toolkit as a script.

Mark it up. Question it. Add examples from your own experience. Adapt the templates to your context. If a framework does not fit the problem you are facing, examine why. If you develop a better approach, record it.

The purpose of the toolkit is not to make every public health professional work in exactly the same way.

It is to help you develop better judgement.

That becomes particularly important in the next part of the book.

In Part III, The Core Missions, you will be placed in complex public health situations and asked to make decisions. The missions will draw on several competencies at the same time. You will need to decide which tools are useful, apply them under pressure, recognise their limitations, and defend the choices you make.

You will not be learning the competencies for the first time there.

You will be using them.

That distinction matters.

Part II gives you the tools.

Part III puts those tools under pressure.

And that is where you will begin to see whether you can move from knowing what a competency means to actually using it when the situation is uncertain, resources are limited, and the decision still has to be made.

Chapter 3

How to Map a System

Learning Objectives

By the end of this chapter, you will be able to:

Construct a causal loop diagram to visualise feedback loops in a health problem

Map stakeholders, their interests, and their influence

Identify leverage points where interventions can have the greatest impact

Use systems thinking to anticipate unintended consequences

3.1 Why Systems Mapping Matters

Public health problems do not occur in isolation. They are embedded in complex systems of causes, effects, feedback loops, and unintended consequences. A child's malnutrition is not just about food; it is about agricultural policy, market access, maternal education, water and sanitation, cultural practices, and household economics. An outbreak of antimicrobial resistance is not just about prescribing; it is about agricultural practices, pharmaceutical supply chains, regulation, economics, and behaviour. Climate change is not just an environmental issue; it is about energy policy, transportation, urban planning, food systems, and human behaviour (Meadows, 2008; Sterman, 2000).

Systems mapping is the competency of visualising and analysing these interconnections. It helps you to:

- See the whole picture, not just the parts
- Identify feedback loops that amplify or dampen problems
- Anticipate unintended consequences of interventions
- Find leverage points where small changes can produce large effects
- Communicate complexity to decision-makers and communities

Traditional public health training often focuses on linear cause-and-effect relationships: A causes B, which causes C. But most public health problems are not linear. They are circular. Obesity leads to diabetes, which leads to disability, which leads to poverty, which leads to food insecurity, which leads to obesity. This is a reinforcing loop. Understanding these loops is essential for designing effective interventions (Meadows, 2008).

3.2 Causal Loop Diagrams

A causal loop diagram is a visual representation of the feedback loops in a system. It shows how variables are connected and how changes in one variable affect others over time. Causal loop diagrams were developed as part of systems thinking methodology and have been widely applied in public health to understand complex problems (Sterman, 2000).

Basic Elements

- Variables: The key factors in the system (e.g., "antibiotic use," "resistance," "farmer income")

Links: Arrows showing causal relationships between variables

- Polarities: Positive (+) or negative (-) signs indicating the direction of the relationship
    - Positive: an increase in A leads to an increase in B (or a decrease leads to a decrease)
    - Negative: an increase in A leads to a decrease in B (or a decrease leads to an increase)

Feedback Loops: A circular chain of cause and effect

- Reinforcing loops (R): self-amplifying; produce growth or decline
- Balancing loops (B): self-correcting; produce stability or equilibrium

Example: AMR and Antibiotic Use

Consider the relationship between antibiotic use and antimicrobial resistance. This is a classic reinforcing loop:

text

Farmer Income (+) → Antibiotic Use (+)

Antibiotic Use (+) → Resistance (+)

Resistance (-) → Antibiotic Effectiveness (-)

Antibiotic Effectiveness (-) → Farmer Income (because effective treatment is needed) (-)

This creates a reinforcing loop: as antibiotic use increases, resistance increases, effectiveness decreases, and farmers may use even more antibiotics to compensate. The system is trapped in a vicious cycle (Adhikari et al., 2025; Tesema & Birhanu, 2024).

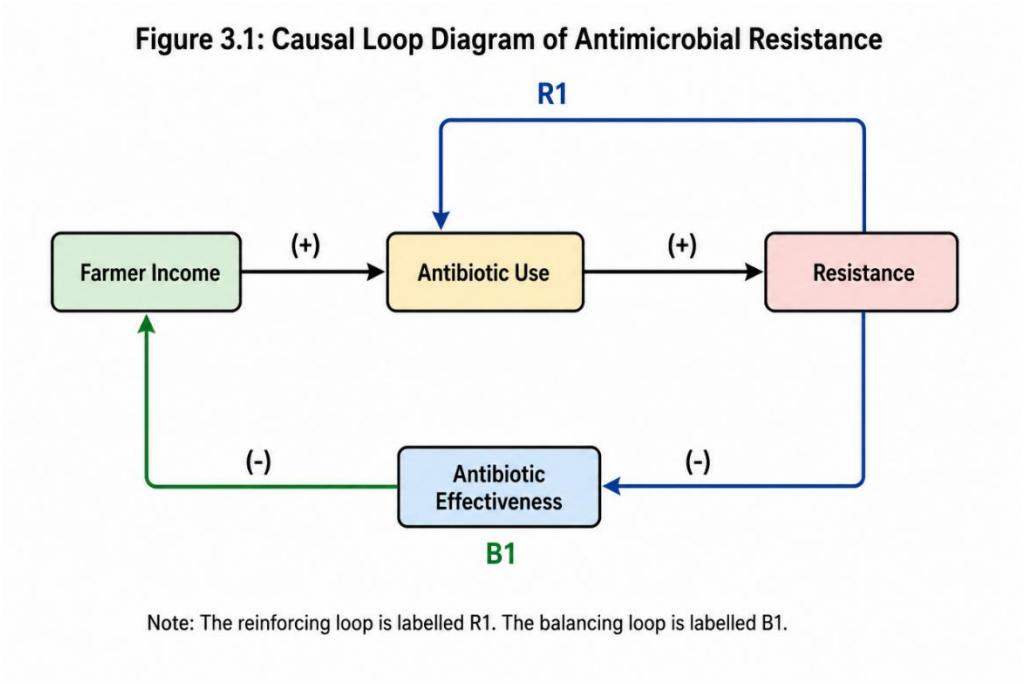


Figure 3.1: Causal Loop Diagram of Antimicrobial Resistance

Note: The reinforcing loop is labelled R1. The balancing loop is labelled B1.

Steps to Create a Causal Loop Diagram

1. Identify the problem: What is the issue you are trying to understand or address?
2. Brainstorm variables: What factors influence or are influenced by the problem?
3. Identify relationships: How do these variables affect each other?

Draw links: Connect variables with arrows showing direction of influence

Add polarities: Indicate whether the relationship is positive or negative

Identify feedback loops: Find circular chains of cause and effect

Label loops: Mark reinforcing (R) and balancing (B) loops

4. Identify leverage points: Where could a small change produce a large effect?

Practical Tip: Start with a small number of variables (5-10) and expand as you understand the system better. Complex diagrams with 30 variables are difficult to interpret and communicate (Meadows, 2008).

3.3 Stakeholder Mapping

Stakeholder mapping is the process of identifying who has an interest in or influence over a health problem or intervention, and understanding their perspectives, incentives, and relationships. This is essential for designing effective and sustainable interventions (Bryson, 2004).

The Stakeholder Matrix

A stakeholder matrix helps you analyse stakeholders along two dimensions: interest and influence. This helps you determine how to engage each stakeholder (Bryson, 2004).

Interest	Influence	Engagement Strategy
High	High	Engage closely; partner in decision-making
High	Low	Keep informed; involve in implementation
Low	High	Keep satisfied; manage potential opposition
Low	Low	Monitor; minimal engagement

Steps to Create a Stakeholder Map

1. Identify stakeholders: Who is affected by or can affect the issue?
2. Analyse interests: What does each stakeholder want? What are their concerns?
3. Analyse influence: How much power does each stakeholder have?
4. Map relationships: How are stakeholders connected to each other?
5. Determine engagement strategy: How should you engage each stakeholder?

Example: Stakeholder Mapping for AMR Control

Stakeholder	Interest	Influence	Engagement Strategy
Ministry of Health	High	High	Partner; co-design strategy
Ministry of Agriculture	Medium	High	Engage; align with agricultural goals
Pharmaceutical Industry	High	High	Negotiate; provide incentives
Farmers	High	Low	Inform; involve in implementation
Pharmacies	High	Medium	Regulate; train; provide incentives
Patients/Public	High	Low	Inform; build health literacy
WHO/International	High	Medium	Align; leverage resources

Note: Adapted from Adhikari et al. (2025) and Hassan et al. (2025).

Practical Tip: Stakeholder mapping is not a one-time exercise. Stakeholders' interests and influence change over time. Revisit your map periodically as the context evolves (Bryson, 2004).

3.4 Identifying Leverage Points

A leverage point is a place in a system where a small change can produce a large effect. Donella Meadows (2008), a pioneer of systems thinking, identified twelve types of leverage points, from the least effective to the most effective. Understanding these helps you focus your efforts where they will have the greatest impact.

Meadows' Leverage Points (Ranked from Least to Most Effective)

12. Constants, parameters, numbers (e.g., subsidies, taxes, standards)
    Example: Increasing the tax on sugar-sweetened beverages
13. Buffer sizes (e.g., stock levels, storage capacity)
    Example: Increasing vaccine stockpiles
14. The structure of material stocks and flows (e.g., supply chains, infrastructure)
    Example: Building new health facilities in underserved areas
15. The length of delays (e.g., feedback delays)
    Example: Accelerating diagnostic testing to reduce treatment delays
16. The strength of negative feedback loops (e.g., regulation, enforcement)
    Example: Strengthening enforcement of prescription requirements
17. The gain around positive feedback loops (e.g., incentives for success)
    Example: Providing financial incentives for prudent antibiotic use
18. The structure of information flows (e.g., who has access to what information)
    Example: Public reporting of hospital infection rates
19. The rules of the system (e.g., laws, regulations, incentives)
    Example: Banning over-the-counter antibiotic sales
20. The power to change rules (e.g., governance, democracy)
    Example: Giving communities veto power over industrial poultry operations
21. The goals of the system (e.g., what the system is designed to achieve)
    Example: Reorienting agriculture from maximising production to maximising health
22. The mindset or paradigm (e.g., the assumptions and beliefs that shape the system)
    Example: Shifting from "antibiotics are a quick fix" to "antibiotics are a precious resource"
23. The power to transcend paradigms (e.g., the ability to question and shift mindsets)
    Example: Creating a culture of continuous learning and adaptation

Example: Leverage Points for AMR Control

Leverage Point	Example Intervention	Effectiveness
Parameters	Tax on antimicrobials	Low
Feedback loops	Surveillance and feedback to prescribers	Medium
Information flows	Public reporting of prescribing rates	Medium
Rules	Banning over-the-counter sales	High
Goals	Making AMR a national security priority	High
Paradigm	Recognising AMR as a One Health issue requiring collective action	Very high

Note: Based on Meadows (2008) and adapted for AMR.

Practical Tip: Most interventions target low-level leverage points (taxes, standards, parameters) because they are easier to implement. But the most powerful interventions target higher-level leverage points (rules, goals, paradigms). Aim high, but work within what is feasible (Meadows, 2008).

3.5 Applying Systems Thinking to Public Health

Systems thinking has been applied to numerous public health challenges with important insights.

Example 1: The Obesity System

Obesity is not simply a matter of individual willpower. It is driven by a complex system involving food production, marketing, pricing, urban design, transport, social norms, and stress. A causal loop diagram of obesity might include:

- Food price (+) → Food consumption (+) → Body weight (+)
- Body weight (+) → Chronic disease (+) → Healthcare costs (+)
- Healthcare costs (+) → Poverty (+) → Stress (+)
- Stress (+) → Emotional eating (+) → Food consumption (+)

This reveals that treating obesity requires interventions at multiple levels: food policy, urban planning, social support, and stress reduction (Finegood et al., 2010; Swinburn et al., 2011).

Example 2: Climate Change and Health

Climate change is a complex system involving energy production, transportation, agriculture, urban design, and human behaviour. Health impacts include heat stress, malnutrition, vector-borne diseases, and mental health. A systems map can reveal feedback loops: climate change reduces agricultural productivity, which drives migration, which increases urban population density, which

increases energy consumption, which accelerates climate change (Watts et al., 2021; Whitmee et al., 2015).

Example 3: Vaccine Hesitancy

Vaccine hesitancy is not simply a knowledge deficit. It is driven by trust in government, social norms, access to services, historical grievances, and misinformation. A systems map can reveal reinforcing loops: mistrust of government leads to vaccine refusal, which leads to outbreaks, which lead to blame, which reinforces mistrust (Brewer et al., 2017; Larson et al., 2011).

3.6 Common Systems Archetypes

Systems thinkers have identified common patterns that appear across different problems. Recognising these archetypes can help you understand your system more quickly.

The "Shifting the Burden" Archetype

The problem is addressed by a quick fix (symptomatic solution) rather than addressing the underlying cause (fundamental solution). Over time, the quick fix weakens the capacity to implement the fundamental solution.

Example: Using antibiotics for viral infections (quick fix) rather than investing in infection prevention and vaccination (fundamental solution). The quick fix reinforces antibiotic use, driving resistance and making the fundamental solution less effective (Tesema & Birhanu, 2024).

The "Tragedy of the Commons" Archetype

Individuals acting in their own self-interest deplete a shared resource, to the detriment of everyone.

Example: Overuse of antibiotics in agriculture. Each farmer benefits from using antibiotics, but collective use drives resistance, making antibiotics ineffective for everyone (Figuié et al., 2024).

The "Limits to Growth" Archetype

A reinforcing loop creates growth, but eventually a balancing loop kicks in (resource depletion, oversaturation, resistance) and slows or reverses growth.

Example: Pharmaceutical companies developing new antibiotics. Initially, growth is rapid. But as resistance spreads, the market for new antibiotics shrinks, reducing R&D investment (O'Neill, 2016).

The "Success to the Successful" Archetype

One group's success comes at the expense of another's. Resources flow to the successful group, reinforcing their advantage.

Example: Wealthy patients access new antibiotics, while poor patients rely on older, less effective ones. The wealthy get better outcomes, and resources flow to services that serve them, reinforcing the inequity (Adhikari et al., 2025; Tesema & Birhanu, 2024).

3.7 Practical Exercise

Exercise: Map a System in Your Context

Select a public health problem that you are familiar with. It could be a problem you have worked on, studied, or are concerned about. Examples include childhood obesity, vaccine hesitancy, climate change adaptation, or maternal mortality.

1. Identify the key variables in the system (aim for 5-10 initial variables)
2. Draw a causal loop diagram showing feedback loops
3. Map the key stakeholders and their interests and influence
4. Identify the leverage points for intervention using Meadows' framework
5. Propose one intervention that targets a leverage point

Discussion Questions

- What unexpected relationships did you discover?
- What feedback loops are amplifying or dampening the problem?
- What are the most powerful leverage points?
- What unintended consequences might your intervention produce?
- How would you engage stakeholders in the process of systems mapping?

3.8 Key Takeaways

- Systems thinking helps you see the whole picture and anticipate unintended consequences (Meadows, 2008)
- Causal loop diagrams visualise feedback loops and can reveal reinforcing and balancing dynamics (Sterman, 2000)
- Stakeholder mapping helps you understand who has influence and how to engage them (Bryson, 2004)
- Leverage points are places where a small change can produce a large effect; the most powerful leverage points are often rules, goals, and paradigms (Meadows, 2008)
- Common systems archetypes can help you recognise patterns across different problems
- Systems mapping is not a one-time exercise; it should be updated as the system evolves

Chapter 4

How to Read Data Like a Practitioner

Learning Objectives

By the end of this chapter, you will be able to:

Identify common fallacies and misleading presentations in health data

Question the assumptions underlying statistical models and algorithms

Assess whether data are fit for purpose in your context

Present uncertainty to decision-makers without undercutting evidence

4.1 Why Data Fluency Matters

Public health professionals encounter data constantly. Surveillance data, research findings, programme monitoring, and budget reports all involve numbers. Yet data can be misleading, incomplete, or simply wrong. Algorithms and machine learning models are increasingly common, but they are only as good as the data and assumptions that underpin them.

Data fluency is the ability to interrogate, interpret, and communicate data. It is not just about mastering statistics; it is about thinking critically about what the numbers represent. As one public health educator notes, data fluency involves the ability to "locate and download publicly available data sources," "utilize data dictionaries to understand how data were collected," "perform quality assurance and data integrity exercises," and "communicate insights for lay audiences using health data visualizations" (University of Georgia, n.d.). This goes beyond statistical literacy to encompass the full lifecycle of working with data.

A new book in APHA's Strategic Skills for Public Health Practice series emphasizes that "all of those things are important, rather than just looking at the data, looking at the numbers and taking them at face value" (Barna, 2025). The authors stress that public health professionals must understand "positionality"—the recognition that an advocate's background and past experiences can bias their data collection (Barna, 2025). Passionate advocates might skim over problems in their analyses because some of it contravenes the goal of improving community health. Skeptics might see this as a coverup and ramp up criticism on a plan that had merit (Barna, 2025).

4.2 Interrogating Data

Questions to Ask About Any Data

1. Who collected the data? What was their purpose and bias?
2. From whom were the data collected? Is the sample representative? Are there selection biases?
3. When were the data collected? Are they still relevant?

4. How were the data measured? Are the measures valid and reliable?
5. What is missing? What data are not captured?
6. What assumptions are being made? What are the models assuming that may not be true?

Common Fallacies in Public Health Data

- Observational interpretation fallacy: The erroneous interpretation of coincidental observational data as indicative of causality. A systematic review identified 16 notable cases where observational study-derived associations, initially thought to influence clinical practices and guidelines positively, were later contradicted by findings from randomised controlled trials (D'Amico et al., 2025). The researchers concluded that "misinterpretation of observational finding negatively affecting patient care and public health policies" and that "addressing and rectifying the observational interpretation fallacy is crucial for the progression of medical research and the maintenance of safe and effective clinical practice" (D'Amico et al., 2025).
- The Table 2 fallacy: This occurs when erroneous interpretations of regression models are drawn, often as an explicit statement of causality or a presentation of data that increase the propensity for the reader to misinterpret the individual measures of effect (Wood, 2024). In a multivariable regression model, it is incorrect to interpret the coefficients of each predictor as estimates of causal effects; each predictor variable possesses its own set of unaccounted confounders. A high-profile example during the COVID-19 pandemic involved a paper published in Nature that reported adjusted hazard ratios for each risk factor. The most glaring issue was the seemingly unintentional conclusion that current smoking status was protective against COVID-19-related death—information that was disseminated and misconstrued as a causal relationship, leading to a social media storm of further misinformation (Wood, 2024).
- Confusing statistical significance with practical significance: Statistical significance does not correspond to practical significance. The P value does not reflect the practical importance of a finding, as it blends effect size with statistical precision (Rovetta & Mansournia, 2025). "Statistically significant" results can be observed even when effects are weak, while "statistically nonsignificant" results can occur despite the presence of substantial effects. An analysis of more than 23,000 randomized clinical trials showed that, under plausible assumptions, there is a 50% probability that the estimated effects are overestimated by at least 56% when $0.01 < P < 0.05$ (Rovetta & Mansournia, 2025).
- The dichotomization fallacy: The dichotomization into "significant vs. nonsignificant" is misleading and dangerous. Practical reality resists sharp schematization (Rovetta & Mansournia, 2025). Although the continuum of effects may be divided into graded scales, any classification is highly context-dependent and shaped by the authors' beliefs and objectives. Dichotomous thinking has also infiltrated artificial intelligence programs built on large language models, now increasingly leveraged in scientific research and decision-making (Rovetta & Mansournia, 2025).
- Misunderstanding the P value: The P value is neither the posterior probability that the null hypothesis is true nor the posterior probability that the obtained result is due to chance. It is computed under the assumption that the null hypothesis is 100% true and that chance is always the sole source of error (Rovetta & Mansournia, 2025). This misconception

remains widespread, even in literature explicitly aimed at correcting such misunderstandings (Rovetta & Mansournia, 2025).

- Misinterpreting confidence intervals: A 100(1-α)% confidence interval does not specify the probability that the true effect lies within the interval already calculated. Under ideal—and, in the medical sciences, largely unattainable—conditions, of a high number of confidence intervals across a large series of perfectly executed studies, the expected percentage contain the true effect. This property applies to the ensemble of intervals, not to any specific calculated interval (Rovetta & Mansournia, 2025). Real-world studies are often subject to nonrandom uncertainties that violate the assumptions underpinning this inferential mechanism (Rovetta & Mansournia, 2025).
- Misunderstanding statistical power: Statistical power is not the probability of obtaining a statistically significant result. It would represent such a probability only under the ideal—yet implausible—scenario where the true effect is exactly the one specified in the alternative hypothesis and all experiments have been conducted perfectly (Rovetta & Mansournia, 2025).

4.3 Questioning Algorithms

AI algorithms and machine learning models are increasingly used in public health. They promise efficiency and insight, but they can also perpetuate and amplify bias. The National Institutes of Health has highlighted the concept of the "infodemic equity gap," noting that structural digital inequalities, uneven platform governance leverage, gaps in multilingual health literacy, and divergent political information climates have combined to produce patterned disparities in exposure to, resilience against, and recoverability from health misinformation between and within countries (NIH, 2025). These same structural inequities affect how algorithms perform across different populations.

Questions to Ask About Algorithms

1. What data were used to train the model? Are the training data representative?
2. What labels were used? Are the ground truth labels valid and unbiased?
3. What is the model actually predicting? Is the proxy being used valid?
4. How does the model perform across subgroups? Are there disparities by race, gender, geography, or socioeconomic status?
5. Is the model interpretable? Can you understand why it makes certain decisions?
6. How does the model perform in real-world settings? Are there performance drops?
7. Who is the model benefiting? Is it serving equity or entrenching advantage?

Example: Algorithmic Bias

Obermeyer and colleagues (2019) found that a widely used healthcare algorithm systematically underestimated the health needs of Black patients. The algorithm used healthcare costs as a proxy for health need, but Black patients with the same level of illness had lower healthcare costs due to structural barriers to access. This is an example of a flawed proxy leading to biased outcomes. As a result of this bias, Black patients with the same level of illness as white patients were not flagged for additional care, perpetuating health disparities.

Checklist for Algorithmic Evaluation

- Training data are representative of all populations who will be affected
- The proxy used is a valid measure of the target outcome
- Performance metrics are disaggregated by subgroups
- The model is transparent and interpretable
- There is a mechanism for ongoing monitoring and correction
- There is accountability for outcomes

4.4 Presenting Uncertainty

Decision-makers often demand certainty, but public health evidence is rarely certain. Presenting uncertainty well builds trust and supports better decisions. The Decision Uncertainty Toolkit, developed to support infectious disease modellers and decision-makers, addresses the challenge of communicating uncertainty during public health crises (Wiggins et al., 2025). The toolkit notes that "when there is increased uncertainty, the risk of selecting a policy option that does not align with the intended policy objective also increases"—a concept termed "decision risk" (Wiggins et al., 2025).

During the COVID-19 pandemic, communicators often used mean or median outputs only, which can mask important aspects of uncertainty. The inclusion of percentile ranges along with mean or median outcomes can help illustrate uncertainty visually, but policy outcomes usually do not follow symmetric probability distributions, and even disaggregated percentile-based reporting can mask important asymmetries (Wiggins et al., 2025). For example, "the non-linear dynamic of community transmission means that even a small degree of uncertainty in the predicted effectiveness of a policy option can lead to large differences in the uncertainty in predicted outcomes" (Wiggins et al., 2025).

Strategies for Presenting Uncertainty

1. Use ranges, not point estimates: "We estimate that the intervention will reduce infections by 20-40%, not exactly 30%."
2. Explain what is known and what is not: Acknowledge the limits of the evidence.
3. Use visual tools: The Decision Uncertainty Toolkit provides visual outputs for dissemination and communication of uncertainty and decision risk, including "risk visualizations" that capture downside risk, magnitude of deviations from a stated policy objective, and duration of deviations (Wiggins et al., 2025).
4. Distinguish between types of uncertainty: Statistical uncertainty (from sampling), epistemic uncertainty (from incomplete knowledge), and contextual uncertainty (from local variation).
5. Frame uncertainty honestly but not passively: "We are confident in the direction of effect but less confident in the magnitude."

Example: Communicating Risk

Instead of: "The vaccine is 95% effective."

Try: "In the clinical trial, 95% of vaccinated people did not get sick, compared to 50% of unvaccinated people. We are very confident that the vaccine works, but we don't know exactly how well it will work in your community until we see local data."

Knowing Your Audience

The APHA Press book Data-Informed Decisionmaking emphasizes that knowing your intended audience can help when presenting data. "In a pitch to city council, emphasizing numbers or cost benefits could work. If addressing a town hall, tilting toward data that involves people who have real-world experience involving an issue can translate into a successful strategy. It's about understanding who you're talking to and being strategic in your message" (Barna, 2025).

Balancing Quantitative and Qualitative Data

Balancing quantitative and qualitative data is an important consideration. The book cites the Healthy Start home visiting program as an example: qualitative data shows the program improves health outcomes in early childhood development, but its lack of quantitative data has kept it off the federal list for reimbursement under the Affordable Care Act (Barna, 2025). This illustrates the importance of both types of data in making a compelling case.

Engaging Communities

"Impacted communities should have the primary voice in shaping what we do in public health," the authors of the APHA book state. "As public health individuals, we partner with community to share data, to inform the conversation and then collectively make the decision" (Barna, 2025). Data should be used as a tool for dialogue, not as a weapon in debate.

4.5 Practical Exercise

Exercise: Interrogate a Published Graph

Find a graph from a health report, news article, or academic paper. Answer the following questions:

1. What is being measured, and is the measure appropriate?
2. What assumptions are being made?
3. Is the graph misleading? Look at the axes, scaling, and labeling.
4. What might be missing?
5. What is the source of the data, and what are their biases?

Example: Interrogating a Health Indicator Graph

Consider the following data:

Health Region	Cases	Uncertainty for Cases (Margin of Error)	Rate (Cases per 1000)	Uncertainty for Rate (Margin of Error)
Region A	55,000	±8,250	50	±150
Region B	52,250	±2,613	100	±50

Source: Adapted from SAGE conference materials (2024).

Questions to Ask:

- Region A has a lower point estimate for cases (55,000 vs. 52,250) but much higher uncertainty. Does that change your decision about where to prioritize interventions?
- Region A has a lower rate (50 per 1000) but also much higher uncertainty (±150). What does this tell you about the reliability of the estimate?
- What additional contextual information would you need to make a decision?
- How would you present this data to a community meeting versus a city council?

Discussion Questions

- What patterns did you identify in your graph?
- How would you present the same data differently?
- What would you need to know to trust the findings?
- What questions would you ask the author or the data source?

4.6 Key Takeaways

- Data fluency requires critical thinking, not just statistical skill (Barna, 2025; University of Georgia, n.d.)
- Always ask who collected the data, from whom, when, how, and why
- Distinguish association from causation; the "observational interpretation fallacy" leads to misguided clinical guidelines and public health policies (D'Amico et al., 2025)
- Avoid the "Table 2 fallacy"—interpreting each predictor in a multivariable model as if it were the exposure of interest (Wood, 2024)
- Statistical significance does not equal practical significance; P values and confidence intervals are often misinterpreted (Rovetta & Mansournia, 2025)
- Algorithms can perpetuate and amplify bias if not carefully evaluated
- Presenting uncertainty honestly builds trust and supports better decisions (Wiggins et al., 2025)
- Data should be used as a tool for dialogue, not as a weapon; impacted communities should have the primary voice in shaping public health (Barna, 2025)
- Know your audience and tailor your data presentation accordingly

Chapter 5

How to Implement in the Real World

Learning Objectives

By the end of this chapter, you will be able to:

Use the RE-AIM framework to plan, evaluate, and report on programme implementation

Apply the Consolidated Framework for Implementation Research (CFIR) to diagnose contextual barriers and facilitators

Distinguish between fidelity and adaptation and determine when each is appropriate

Design implementation strategies that anticipate and address common challenges in low-resource settings

Apply hybrid trial designs to evaluate both effectiveness and implementation simultaneously

5.1 Why Implementation Agility Matters

Public health is full of interventions that work in controlled trials but fail in the real world. The reasons are many: context differs, resources are limited, fidelity erodes, and unanticipated barriers arise. Almost forty years ago, the distinguished sociologist Peter H. Rossi formulated what he termed the 'Iron Law of Evaluation': "the expected value of any net impact assessment of any large-scale social program is zero" (Veltri, 2025, p. 2). Rossi's pessimistic assessment stems from inherent difficulties in consistently implementing social programmes effectively (Veltri, 2025).

Implementation agility is the ability to adapt interventions to real-world constraints, learn from what does not work, and maintain effectiveness despite contextual challenges. It is perhaps the most underappreciated competency in public health education. Practitioners rarely have the luxury of implementing a programme exactly as it was designed in a textbook or a study. They must constantly adapt, improvise, and adjust while still achieving meaningful outcomes.

Implementation Science (IS) explicitly addresses this critical gap by focusing on how evidence-based practices can be systematically embedded into everyday operations. IS emerged from recognising that interventions, even those demonstrably effective under controlled conditions, frequently falter when confronted with organisational inertia, limited resources, competing demands, or inadequate stakeholder engagement (Veltri, 2025). By identifying and systematically addressing these adoption-influencing factors, IS provides structured frameworks to guide interventions from initial concept through sustainable, large-scale application.

5.2 The RE-AIM Framework

RE-AIM is a widely used framework for planning and evaluating implementation. It was originally developed for evaluating public health and clinical interventions but has been increasingly recognised as a useful tool for community-based research, as it allows for the examination of both individual- and organisational-level factors influencing programme success (Do-Golden et al., 2025). RE-AIM has been used extensively to plan, implement, and evaluate interventions in a variety of settings, including nutrition research and practice (Bell, 2025).

The Five Dimensions of RE-AIM

Dimension	Question	What to Measure
Reach	Who is being reached?	Participation rate, representativeness, characteristics of those eligible but not reached
Effectiveness	What are the outcomes?	Primary and secondary outcomes, quality of life, potential negative effects
Adoption	Who is delivering the intervention?	Proportion of settings and staff willing to initiate the programme, representativeness
Implementation	How is it being delivered?	Fidelity, adaptation, cost, time, consistency across staff and settings
Maintenance	How is it sustained over time?	Long-term outcomes, institutionalisation, ongoing costs

Applying RE-AIM to Your Programme

1. Reach: What is your target population? How will you reach them? What barriers might prevent participation? Can the programme reach those most in need and those often left out (e.g., the poor, low literacy groups)?
2. Effectiveness: What outcomes do you expect? How will you measure them? Does the programme produce robust effects across subgroups? Does it produce minimal negative side effects?
3. Adoption: Is the programme feasible for the majority of real-world settings? Can it be adopted by low-resource settings and typical staff serving high-risk populations?
4. Implementation: Can the programme be consistently implemented across different staff, time, and settings? Are the costs reasonable relative to the effectiveness?
5. Maintenance: Does the programme include principles to enhance long-term improvements (e.g., follow-up contact, community resources)? Can settings sustain the programme over time without added resources and leadership?

Example: RE-AIM in Practice

A study of 65 organisations adopting the CAPABLE programme—an evidence-based intervention that improves daily function of older adults through a guided process involving occupational therapists, nurses, and handy workers—used RE-AIM and CFIR to examine implementation across five years (Paone et al., 2025). The study found that factors consistently reported as supporting ease of implementation included getting leadership support, accessing technical assistance, and maintaining fidelity to the programme. Conversely, common challenges included difficulty with recruitment, hiring required personnel, and sustainability funding (Paone et al., 2025). This study provides a use case for employing RE-AIM and CFIR together to track ongoing implementation, addressing a gap in the literature concerning practical ways to monitor, evaluate, and report on ongoing implementation of evidence-based programmes (Paone et al., 2025).

5.3 The CFIR Framework

The Consolidated Framework for Implementation Research (CFIR) is a comprehensive framework composed of constructs associated with effective implementation (Paone et al., 2025). It has been described as a 'pragmatic structure' for approaching the complex task of implementation (Band et al., 2025). The framework has five domains, each with associated constructs, and embraces, consolidates, and standardises key constructs from multiple theories (University of California, San Francisco, n.d.).

The Five CFIR Domains

Domain	Focus	Key Constructs
Intervention Characteristics	Features of the intervention itself	Evidence strength, relative advantage, adaptability, trialability, complexity, cost
Outer Setting	The external environment	Patient needs and resources, cosmopolitanism, peer pressure, external policy and incentives
Inner Setting	The internal characteristics of the implementing organisation	Structural characteristics, networks and communication, culture, implementation climate, readiness for implementation
Characteristics of Individuals	The people involved	Knowledge and beliefs, self-efficacy, stage of change, identification with organisation
Process	How implementation is done	Planning, engaging (opinion leaders, champions, external change agents), executing, reflecting and evaluating

Using CFIR to Plan Implementation

Before implementing an intervention, assess each domain:

1. Intervention: Is it feasible for your context? What adaptations are needed? Are there competing alternatives?
2. Outer Setting: What external factors support or hinder implementation? Are patients' needs accurately known and prioritised?
3. Inner Setting: Does your organisation have the culture, leadership, and resources? Is there tension for change?
4. Individuals: Do implementers have the knowledge, skills, and beliefs needed? Do they have self-efficacy?
5. Process: How will you plan, engage stakeholders, execute, and evaluate?

Example: CFIR in Practice

In the CAPABLE study, researchers chose RE-AIM and CFIR based on their robust use in the United States for examining implementation of older adult health promotion and prevention programmes (Paone et al., 2025). Findings from the study are guiding the development of additional

technical support by the CAPABLE National Center, and efforts are underway to improve funding and policy to support CAPABLE to improve sustainment, scaling, and dissemination (Paone et al., 2025). This demonstrates how CFIR findings can be translated directly into practical support for implementers.

5.4 Fidelity versus Adaptation

A persistent tension in implementation is between fidelity (delivering the intervention exactly as designed) and adaptation (modifying it for local context). Evidence suggests that some adaptation is inevitable and can be beneficial. The key is to distinguish between adaptations that preserve core functions and those that undermine them.

Core Functions versus Adaptable Forms

Concept	Description	Example
Core Function	The essential mechanism that makes the intervention work	Building caregiver-child interaction
Adaptable Form	How the core function can be delivered in different contexts	Group sessions, home visits, digital delivery

Questions to Guide Adaptation Decisions

- What are the core components that must be preserved?
- Which components can be modified for local context?
- What adaptations are likely to increase or decrease effectiveness?
- How will we monitor the impact of adaptations?

The CFIR construct of "adaptability" specifically addresses "the degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs" (Band et al., 2025). The CFIR also includes "trialability"—"the ability to test the intervention on a small scale in the organisation, and to be able to reverse course (undo implementation) if warranted" (Band et al., 2025).

5.5 Hybrid Trial Designs

Implementation Science offers hybrid trial designs that co-test policy impact and implementation (Veltri, 2025). These designs bridge the gap between efficacy and implementation research.

Design Type	Emphasis	When to Use
Type 1 Hybrid	Emphasises behavioural effects while sampling implementation data	When you need to establish effectiveness and also understand implementation barriers
Type 2 Hybrid	Balances effectiveness and implementation	When you want to test both outcomes equally
Type 3 Hybrid	Optimises implementation while tracking outcomes	When effectiveness is established but implementation remains challenging

Hybrid designs create feedback loops that enable mid-course adaptation and speed scale-up (Veltri, 2025). Early integration of Implementation Science can turn isolated behavioural wins into scalable, system-wide transformations that genuinely endure (Veltri, 2025). By measuring fidelity and other implementation outcomes such as adoption, feasibility, acceptability, and sustainability, IS offers an empirical feedback loop ensuring that observed effects can be tied to how well the intervention was delivered (Veltri, 2025).

5.6 Resilience Building and Agility

Health systems and public health programmes must also be resilient—able to withstand shocks, adapt to evolving threats, and restore functioning post-crisis. Resilience building is closely related to implementation agility (Huang et al., 2025).

Three Core Dimensions of Resilience

Stress resistance: Withstanding acute shocks

Adaptability: Adjusting to evolving threats

Recovery capacity: Restoring functions post-crisis

Strategies for Building Resilient Implementation Systems

1. Risk profiling and scenario mapping: Systematic identification of urban risks and disaster scenarios, forecasting demand for public health emergency response capabilities
2. Goal-oriented capacity planning: Ensuring both front-line teams and reserve forces meet critical criteria including sufficient workforce capacity, adaptive competencies, and geographic distribution
3. Establishing multi-sectoral collaboration mechanisms: Adopting a systems thinking approach to ensure integrated and coordinated efforts across governmental agencies, healthcare facilities, community organisations, and civil society
4. Enhancing competencies through iterative learning: Continuous enhancement of technical and professional competencies, with structured post-event debriefing protocols to codify operational lessons

5.7 Practical Exercise

Exercise: Plan Implementation Using RE-AIM and CFIR

Select an evidence-based intervention you are familiar with or would like to implement. This could be an intervention from one of the missions in this book (e.g., the community-based long-term care model from Mission 2, the AI diagnostic tool deployment from Mission 3, or the AMR stewardship programme from Mission 6).

Part 1: RE-AIM Planning

For each RE-AIM dimension, answer the following questions:

1. Reach: Who is your target population? How will you reach them? What barriers might prevent participation?
2. Effectiveness: What outcomes do you expect? How will you measure them? What are the potential negative effects?
3. Adoption: Which organisations or settings need to adopt the intervention? What will motivate them?
4. Implementation: Can you deliver the intervention consistently? What adaptations are needed? What is the cost?
5. Maintenance: How will you sustain the intervention after initial funding? What institutional structures are needed?

Part 2: CFIR Diagnosis

For each CFIR domain, assess the factors that may influence implementation:

1. Intervention Characteristics: What is the evidence strength? Is the intervention adaptable? What is the complexity?
2. Outer Setting: What external policies or incentives support or hinder implementation?
3. Inner Setting: Does your organisation have the leadership, resources, and culture needed?
4. Characteristics of Individuals: Do implementers have the knowledge, self-efficacy, and commitment needed?
5. Process: How will you plan, engage stakeholders, execute, and evaluate?

Part 3: Implementation Strategy

Based on your RE-AIM and CFIR analyses, develop an implementation strategy that includes:

1. A plan for engaging stakeholders early in the process
2. A plan for addressing identified barriers
3. A plan for monitoring fidelity and adaptations
4. A plan for learning from and adapting to challenges

Discussion Questions

- What adaptations are essential for your context?
- What adaptations would undermine effectiveness?
- How would you balance fidelity with feasibility?
- How would you evaluate the adapted intervention?
- What are the most important barriers to address first?
- How would you build support from frontline staff and leadership?

Chapter 6

How to Navigate Stakeholders

Learning Objectives

By the end of this chapter, you will be able to:

Identify and map stakeholders using established frameworks and tools

Analyse stakeholder interests, influence, and power to inform engagement strategies

Apply the Power versus Interest Grid to prioritise engagement efforts

Design and implement a continuous stakeholder engagement plan

Navigate complex multi-level stakeholder environments in health systems

6.1 Why Stakeholder Navigation Matters

Public health problems are rarely solved by the health sector alone. They require action across sectors: agriculture, education, urban planning, finance, transport, and more. They require engagement with communities, politicians, businesses, and civil society.

Stakeholder navigation is the competency of identifying, engaging, and building coalitions across diverse interests and sectors. In the broad field of evaluation, the importance of stakeholders is often acknowledged and different categories of stakeholders are identified, but far less frequent is careful attention to analysis of stakeholders' interests, needs, concerns, power, priorities, and perspectives and subsequent application of that knowledge to the design of programmes and policies (Bryson, 2004). Cancer screening programmes are complex interventions involving multiple target groups, health professionals, civil society, and policymakers. Such complexity requires careful analysis of how stakeholders at micro, meso, and macro levels can both influence and be influenced by interventions (Krishnan et al., 2025). Early, multilevel stakeholder engagement can surface critical barriers and codesign feasible, context-specific strategies (Krishnan et al., 2025).

Stakeholder engagement is not an add-on—it is the foundation of effective public health action (Gobat et al., 2025). Research on clinical trials has shown that better engagement ensures that programmes are well designed and well implemented by considering the unique perspectives and experiences of those they aim to benefit (Gobat et al., 2025).

6.2 Stakeholder Analysis

Steps in Stakeholder Analysis

Stakeholder analysis involves a systematic process of identifying and understanding the actors who have an interest in or influence over a health issue. Bryson (2004) provides a comprehensive framework for stakeholder identification and analysis techniques. The process can be structured around four key steps.

1. Identify stakeholders: Who has an interest in or can affect the issue? This includes individuals and organisations across all levels.

2. Analyse interests: What does each stakeholder want? What are their concerns? What are their values?
3. Analyse influence: How much power does each stakeholder have? What resources do they control?
4. Determine engagement strategy: How should you engage each stakeholder?

Categorising Stakeholders by Level

Stakeholder analysis should consider multiple levels of the health system (Krishnan et al., 2025). The Access Cancer Care India project categorised stakeholders across three levels (Krishnan et al., 2025):

Level	Description	Examples
Macro	Policymakers, funders, and state-level planners	Ministry of Health, National Programme Directors, Superintendents of district hospitals
Meso	Those responsible for managing and coordinating services	Service providers, civil society, special interest groups, community health workers
Micro	Individuals or groups directly involved in service delivery or receiving care	Communities, patients, families, frontline healthcare workers

Stakeholder Identification in Practice

A study in Kenya that involved stakeholder engagement for newborn health research illustrates the complexity of stakeholder identification in decentralised health systems (Karumba et al., 2024). Researchers conducted stakeholder mapping across multiple levels including national and county-level policymakers, professional communities, associations and regulators, health managers, frontline healthcare workers, patients, families and patient representative groups (Karumba et al., 2024).

The study found that despite significant prior engagement experience and relationships at the hospitals and counties, introducing new staff into neonatal units triggered complexities that required careful consultation along the bureaucracies at the counties. Engagement processes varied and achieved different outcomes across counties, highlighting the need for adaptability (Karumba et al., 2024).

6.3 The Power/Interest Grid

The Power versus Interest Grid is a foundational tool for stakeholder analysis (Bryson, 2004; Bryson et al., 2007). It helps you analyse stakeholders along two dimensions: interest (how much they care about the issue) and influence (how much power they have). This helps determine how to engage each stakeholder.

The Power/Interest Matrix

Interest	Influence	Engagement Strategy

High	High	Key players: Engage closely; partner in decision-making
High	Low	Affected: Keep informed; involve in implementation
Low	High	Potential blockers: Keep satisfied; manage potential opposition
Low	Low	Bystanders: Monitor; minimal engagement

Note: Adapted from Bryson (2004) and Bryson et al. (2007).

Applying the Power/Interest Grid in Public Health

The Access Cancer Care India project used a formal Alignment, Interest, and Influence Matrix tool to assess stakeholders (Krishnan et al., 2025). Project teams assessed stakeholders based on prompts including:

- Alignment: Will there be an alignment in thinking of the stakeholder with the project vision? Would they agree with the approach?
- Interest: To what extent is the stakeholder already engaged in the issues? Will they commit resources such as time, connections, and funding?
- Influence: Are they in a position of authority and can they use it to influence decision-making?

This was categorised in three ways—low, medium, and high influence—based on experience of working in the area (Krishnan et al., 2025).

Example: Stakeholder Power/Interest Analysis for Immunisation Programme

Stakeholder	Interest	Influence	Engagement Strategy
Ministry of Health	High	High	Partner; co-design strategy
Religious Leaders	High	High	Engage; build alliances; provide accurate information
Community Leaders	High	Medium	Inform; involve in implementation
Private Health Providers	Medium	Medium	Incentivise; regulate
Parents/Caregivers	High	Low	Inform; build health literacy through trusted messengers
Media	Low	High	Keep satisfied; provide accurate information
Pharmaceutical Industry	High	High	Negotiate; align with public health goals

6.4 Stakeholder Engagement Strategies

Principles of Effective Engagement

Research has identified three key dimensions of stakeholder engagement (Gobat et al., 2025):

1. Moral dimension: Engagement is the right thing to do—it respects the rights and dignity of those affected
2. Strategic dimension: Engagement improves programme outcomes by incorporating diverse perspectives
3. Practical dimension: Engagement makes implementation feasible by building buy-in and navigating barriers

The Kenya newborn health research study found that meeting the moral, strategic, and practical potential of engagement requires flexibility, responsiveness, and commitment, including adequate resources (Karumba et al., 2024). Even with a carefully developed stakeholder engagement plan, stakeholder engagement can unfold in unexpected ways and requires continuous effort, resources, and adaptability (Karumba et al., 2024).

Engagement Strategies for Different Stakeholder Types

Stakeholder Type	Engagement Strategy
Champions	Empower and involve in leadership; provide resources and support
Allies	Engage in collaboration; share credit and information
Neutrals	Inform and persuade; show how they benefit
Potential Blockers	Understand concerns; address legitimate interests; build trust
Opponents	Monitor; anticipate challenges; seek common ground

Codesign Methodologies

The Access Cancer Care India project demonstrates how stakeholder engagement can be structured through codesign methodologies (Krishnan et al., 2025). The project followed these steps:

Stakeholder mapping: Identify all relevant stakeholders using systematic prompts

Power/influence assessment: Analyse stakeholder alignment, interest, and influence

Stakeholder advisory board creation: Develop a formal platform for ongoing engagement

Formative research: Understand barriers and facilitators

Collaborative workshops: Share findings and codesign interventions

Iterative feedback: Continuous engagement throughout the programme

Building Trust Through Community Engagement

A community-led immunisation initiative in Sambhal, India, demonstrates how stakeholder engagement can build trust and improve health outcomes (William J. Clinton Foundation, 2025). The Health Department organised Community Leaders' Orientation Workshops to strengthen collaboration between the health department and community stakeholders. The sessions convened spiritual leaders, elected ward members, and representatives from local women's groups.

The initiative observed participation from more than 20 elected ward members, 27 faith-based leaders, and over 80 representatives of women's groups. All participants subsequently pledged to use their influence to promote awareness of vaccination, address misconceptions, and encourage citizens to view immunisation as a shared responsibility. As a consequence, 170 of 587 identified vaccine-hesitant children (approximately 29%) were vaccinated between June 2024 and June 2025 (William J. Clinton Foundation, 2025).

Three insights from this initiative stand out (William J. Clinton Foundation, 2025):

1. Trust precedes coverage: Technical interventions must be accompanied by efforts that build confidence through culturally resonant messengers
2. Local networks amplify impact: Community and faith-based leaders can reach audiences that formal systems struggle to access
3. Simple tools enable continuity: User-friendly tools help ensure consistency and accountability at the last mile

Community Engagement in Urban Health

In Khulna City, Bangladesh, a WHO-supported Healthy City campaign demonstrated the power of community-led solutions for disease prevention (UN Bangladesh, 2025). Through community meetings, residents co-designed practical solutions to address dengue: drain stagnant ponds, improve waste disposal, and raise awareness. A community committee was formed to monitor progress and coordinate future activities.

The Khulna Healthy City Platform connects the City Corporation with other government entities, community groups, academic institutions, and volunteers—enabling a unified and collaborative response. As one resident noted, "Keeping our surroundings clean is not just the City Corporation's job—it's our shared duty. We now understand how collective action can protect our health" (UN Bangladesh, 2025).

Engagement in Clinical Trial Contexts

In the clinical trial ecosystem, engagement involves activities throughout the research lifecycle, including research agenda setting, protocol development, trial conduct, and outcome dissemination (Gobat et al., 2025). Better engagement enhances the scientific, ethical, and pragmatic value of trials by improving the acceptability, feasibility, and relevance of trial design, implementation, and outcome dissemination. It also fosters trust in science and scientists, strengthens research literacy, and contributes to greater trust in research processes (Gobat et al., 2025).

6.5 Challenges in Stakeholder Engagement

Identifying Poorly Defined Populations

Identifying stakeholders for poorly defined populations presents significant challenges. A stakeholder mapping methodology developed for a study of women's leadership in health across sub-Saharan Africa revealed the complexity of this task (Banchoff et al., 2025). The research team defined a systematic process including screening government webpages, contacting UN and multilateral agencies, conducting systematic Google and social media searches, identifying relevant academic and grey literature, and validating leads in-country (Banchoff et al., 2025).

Through this process, 3,901 leads were systematically identified across Sub-Saharan African countries, with an average of 81 stakeholders identified for each country—approximately 38% of whom were women (Banchoff et al., 2025). This highlights both the value and the resource intensity of rigorous stakeholder identification.

Officeholder Transitions and Political Instability

Political transitions in 2024 brought leadership changes in some settings, creating challenges for sustained engagement (Karumba et al., 2024). The Kenya newborn health study found that multiple officeholder transitions occurred over the research period, often necessitating engagement from scratch (Karumba et al., 2024). This requires flexibility and a willingness to rebuild relationships.

Addressing Stakeholder Conflict

The study on ethical challenges in public hospitals highlighted areas of dissonance between different stakeholders, particularly between managers representing organisational interests and doctors representing patients' interests (Black & Bates, 2025). Policy makers, purchasers and providers need to consider the infrastructure required to support different stakeholder groups in their work. With more ethically challenging decisions ahead, there needs to be clarity over the decision-making role of government, health managers, and clinicians (Black & Bates, 2025).

6.6 Tools and Frameworks

Summary of Key Stakeholder Analysis Tools

Tool	Purpose	Key Features
Power/Interest Grid	Prioritise engagement based on influence and interest	Categorises stakeholders into four quadrants (Bryson, 2004)
Alignment, Interest, Influence Matrix	Assess stakeholder alignment with project goals, interest, and influence	Three-dimensional assessment (Krishnan et al., 2025)
Multi-Level Mapping	Identify stakeholders across macro, meso, and micro levels	Ensures comprehensive coverage (Krishnan et al., 2025)
Stakeholder Advisory Board	Formal platform for ongoing engagement	Ensures continuous input (Krishnan et al., 2025)
Problem-Frame Stakeholders Map	Understand how stakeholders view and approach problems	Identifies potential conflicts (Bryson et al., 2007)

6.7 Practical Exercise

Exercise: Stakeholder Engagement Plan

Select a public health issue you have worked on or are interested in (e.g., tobacco taxation, sugar-sweetened beverage regulation, climate adaptation, immunisation coverage, antimicrobial resistance control).

Part 1: Stakeholder Identification and Analysis

1. Identify all stakeholders at macro, meso, and micro levels
2. Analyse their interests, influence, and alignment
3. Map them on a Power/Interest Grid
4. Identify potential conflicts and alliances

Part 2: Engagement Strategy

1. Develop a tailored engagement strategy for each stakeholder group
2. Identify trusted messengers for different communities
3. Design a plan for ongoing engagement and feedback
4. Anticipate potential challenges (officeholder transitions, resource constraints)

Part 3: Implementation and Monitoring

1. How will you build trust with communities?
2. How will you measure the success of stakeholder engagement?
3. What resources are needed to sustain engagement?
4. How will you adapt your engagement plan as the context changes?

Discussion Questions

- What stakeholders did you initially overlook?
- What are the most difficult trade-offs in stakeholder engagement?
- How would you handle a powerful stakeholder who is strongly opposed?
- What is the role of community representatives in stakeholder engagement?
- How would you address power imbalances between different stakeholder groups?

6.8 Key Takeaways

- Stakeholder navigation is essential for multi-sectoral public health action (Gobat et al., 2025)
- Systematic stakeholder analysis involves identification, interest analysis, influence analysis, and engagement strategy development (Bryson, 2004)
- Stakeholders should be considered at macro, meso, and micro levels of the health system (Krishnan et al., 2025)

- The Power/Interest Grid is a foundational tool for prioritising engagement (Bryson, 2004; Bryson et al., 2007)
- Engagement has moral, strategic, and practical dimensions (Gobat et al., 2025)
- Trust precedes coverage—community and faith-based leaders can reach audiences formal systems struggle to access (William J. Clinton Foundation, 2025)
- Community-led solutions can be powerful tools for disease prevention (UN Bangladesh, 2025)
- Engagement requires continuous effort, resources, and adaptability (Karumba et al., 2024)
- Investment in engagement fosters trust, ethical research conduct, and improved outcomes (Gobat et al., 2025)
- Officeholder transitions and political instability can disrupt engagement—plan for continuity (Karumba et al., 2024)

Chapter 7

How to Think Ethically Under Pressure

Learning Objectives

By the end of this chapter, you will be able to:

Apply the Kass public health ethics framework to identify and analyse ethical dilemmas

Distinguish between clinical ethics and public health ethics, and recognise why public health requires a different ethical approach

Analyse the three dimensions of justice—distributive, procedural, and recognitive—in public health decision-making

Develop justifiable approaches to resource allocation, liberty restrictions, and surveillance

Engage communities in ethical deliberation and procedural justice

7.1 Why Ethical Foresight Matters

Public health professionals face ethical dilemmas constantly. Should we restrict liberty to prevent disease? How should we allocate scarce resources? Who should have access to data, and for what purpose? How do we balance individual rights with collective good?

Ethical foresight is the competency of anticipating and reasoning through these trade-offs. It is not about finding the "right" answer, as there rarely is one. It is about making justified decisions in a transparent and accountable way.

Public health ethics only began to gain prominence as a distinct field within bioethics around the year 2000. Its proponents have had the task of defining it as distinct from medical ethics due to the distinct nature of public health (INSPQ, 2020). Indeed, many papers in public health ethics begin by articulating the differences between medical ethics and public health ethics, arguing that the differences between clinical practice and public health practice may require different ethical approaches. The overwhelming emphasis has been upon the differences, partially in reaction to a poor fit between individualistic and autonomy-heavy clinical approaches and the collective and population-level orientation of public health practice (INSPQ, 2020; Kass, 2001).

Bioethics, as a discipline, helps health care professionals identify and respond to moral dilemmas in their work. However, the contexts out of which bioethics emerged—medical care and human research—were oriented toward a different set of concerns than those typically arising in public health. While the founders of bioethics articulated principles equally relevant for public health, the more specific action guides and codes of health care ethics that have followed are an imperfect fit for public health. Codes of medical and research ethics generally give high priority to individual autonomy, a priority that cannot be assumed to be appropriate for public health practice (Kass, 2001).

7.2 The Kass Framework for Public Health Ethics

Nancy Kass (2001) proposed a six-step framework designed to help public health professionals consider the ethics implications of proposed interventions, policy proposals, research initiatives, and programs. This framework has become one of the most widely used analytic tools in public health ethics (INSPQ, 2020; NCCHPP, 2015). It is not a code of professional ethics; rather, it is an analytic tool designed to help public health professionals think through ethical issues systematically.

Table 7.1: The Kass Ethics Framework

Step	Question	Key Considerations
1	What are the public health goals of the proposed program?	Goals should be expressed in terms of reduction of morbidity or mortality, not just process goals
2	How effective is the program in achieving its stated goals?	Examine assumptions; data must substantiate effectiveness; the greater the burden, the stronger the evidence required
3	What are the known or potential burdens of the program?	Risks to privacy, autonomy, liberty, justice, and health of individuals
4	Can burdens be minimized? Are there alternative approaches?	Choose the approach that poses fewer risks to liberty, privacy, and justice if benefits are comparable
5	Is the program implemented fairly?	Is distribution of benefits and burdens equitable? Does it increase or decrease inequalities?
6	How can benefits and burdens be fairly balanced?	Fair procedures, including democratic processes and public hearings to consider minority views

Source: Adapted from Kass (2001) and NCCHPP (2015).

Step 1: What are the public health goals of the proposed program?

The first step for any proposed public health program is to identify the program's goals. These goals generally ought to be expressed in terms of public health improvement, that is, in terms of reduction of morbidity or mortality. For example, an HIV screening program should have as its ultimate goal fewer incident cases of HIV, not simply that a certain proportion of individuals will agree to be tested. A health education program in cardiac risk reduction should have as its ultimate goal that individuals will have fewer heart attacks, not simply that individuals will learn new information or even that they will change their behavior (Kass, 2001).

While more proximate and process goals are critical pieces of program planning and evaluation and may be crucial to achieving health improvement, the fundamental goal of decreased morbidity and mortality is the outcome by which the program or series of programs ultimately must be assessed. This is not to say that each individual program must achieve this end, but public health programs should not be undertaken that are not part of a larger package of programs whose combined goal is the reduction of morbidity and mortality (Kass, 2001).

Step 2: How effective is the program in achieving its stated goals?

Proposed interventions are based on certain assumptions that lead us to believe they will achieve their stated goals. Step 2 asks us to examine what those assumptions are and what data exist to substantiate each of them. A cardiac risk reduction program has as its ultimate goal the reduction of fatal and nonfatal cardiac events. The assumptions of this education program are that the program will reach individuals at risk; those individuals will learn the risk reduction messages; individuals will change their behavior; these changes would not have occurred without the program; and the behavior change will result in fewer cardiac events (Kass, 2001).

This step of examining existing data to challenge our assumptions and implement only data-based policies is often neglected in public health. The greater the burdens posed by a program—for example, in terms of cost, constraints on liberty, or targeting particular, already vulnerable segments of the population—the stronger the evidence must be to demonstrate that the program will achieve its goals (Kass, 2001; NCCHPP, 2015).

Step 3: What are the known or potential burdens of the program?

Public health interventions can impose burdens on individuals and communities. These include risks to privacy and confidentiality, restrictions on autonomy and liberty, threats to justice, and risks to the health of individuals. For example, partner notification programs and directly observed therapy for tuberculosis are designed primarily to protect citizens from the health threats posed by others. Health education campaigns, blood pressure screening, seat belt laws, and speed limits are motivated primarily to further individuals' ability to protect their own health. Restricting someone's liberty to protect him- or herself and restricting liberty to protect another person pose different ethical burdens (Kass, 2001).

Step 4: Can burdens be minimized? Are there alternative approaches?

If two options exist to address a public health problem, we are required, ethically, to choose the approach that poses fewer risks to other moral claims, such as liberty, privacy, opportunity, and justice, assuming benefits are not significantly reduced (Kass, 2001; NCCHPP, 2015). Coercive programs should be kept to a minimum, should never be implemented when a less restrictive program would achieve comparable goals, and should be implemented only in the face of a clear public health need and good data demonstrating effectiveness (Kass, 2001).

Step 5: Is the program implemented fairly?

This step asks whether the distribution of benefits and burdens is equitable. Does one group receive the benefits and another the burdens? Will the program increase or decrease inequalities? Should the program be universal or targeted? Is there a risk of creating or perpetuating stereotypes or of stigmatizing some groups? That programs be implemented fairly is even more important if restrictive measures are proposed (Kass, 2001; NCCHPP, 2015).

Step 6: How can the benefits and burdens of a program be fairly balanced?

Disagreements about balancing burdens and benefits should be solved through a system of fair procedures that require a democratic process, including public hearings to consider minority views. The greater the burden imposed by a program, the greater must be the expected public health benefit. The more uneven the benefits and burdens are divided between groups, the greater must be the expected benefit. The more that burdens are imposed on one group to protect the health of another, the greater must be the expected benefit (Kass, 2001; NCCHPP, 2015).

7.3 Comparing Public Health Ethics Frameworks

Several frameworks have been developed for public health ethics. Each has a different emphasis but shares common concerns. Table 7.2 summarises the key features of major frameworks.

Table 7.2: Public Health Ethics Frameworks Compared

Framework	Year	Type of Tool	Main Ethical Values	Criteria for Dealing with Ethical Conflict
Kass	2001	Six-Step Questionnaire	Well-being, privacy, liberty, distributive justice, procedural justice	Greater burden = greater expected benefit; uneven distribution requires greater benefit; fair procedures
Childress et al.	2002	General Moral Considerations	Well-being, utility, distributive justice, procedural justice, liberty, privacy, trust	Justificatory conditions: effectiveness, proportionality, necessity, least infringement, public justification
Nuffield Council	2007	Intervention Ladder	Well-being, care of the vulnerable, empowerment, autonomy, fairness, liberty, openness	Achieve health outcomes while minimising freedom restrictions; more intrusive = more benefits required
PHLS Principles	2002	12 Principles	Well-being, individual rights, participation, empowerment, equality, transparency, trust	Not specified

Source: Adapted from National Institutes of Health (2010).

7.4 Justice in Public Health

Social justice is central to public health ethics. The unfairness of health inequalities is fundamental to their definition. Three dimensions of justice are particularly relevant: distributive justice, procedural justice, and recognitive justice (Bekker et al., 2025).

Distributive Justice

Distributive justice focuses on the fairness of outcomes—the distribution of benefits and burdens in a population. This is perhaps the most familiar dimension of justice in public health. Examples include redistributing resources to address disparities, such as school breakfast programs for low-income children or subsidies for sports participation. However, if redistribution comes with stigma attached, it still fails to address fairness in full, which can hamper uptake (Bekker et al., 2025).

Procedural Justice

Procedural justice focuses on the fairness of the process leading up to certain outcomes. This involves stakeholder engagement, particularly the inclusion of those directly affected by the issue but typically excluded from decision-making processes. Incorporating individuals with lived experiences in the development of interventions is widely regarded as fair. However, ensuring a fair process extends beyond merely "offering a seat at the table." The positive effects of providing voice necessitate genuine inclusion, where stakeholders' voices are not only present but carefully listened to and considered. This underscores the importance of avoiding tokenism and instead fostering meaningful involvement, wherein decision-making power is truly shared among stakeholders (Bekker et al., 2025).

Recognitive Justice

Recognitive justice emphasises recognition, human dignity, and equal social participation. It might be most elusive to "catch" in policy but is also most crucial to address unfairness completely. Three key forms of social recognition have been identified: need-based care, equality-based respect, and achievement-based social esteem (Bekker et al., 2025).

Need-based care involves recognising and addressing individual needs, which provides emotional stability and a sense of personal value. This is exemplified in personalised care approaches, where the emphasis is on listening and responding to individual needs rather than making assumptions. Equality-based respect is rooted in the recognition of equal rights, reflected in inclusive policy language and the move away from hierarchical distinctions. Achievement-based social esteem is closely tied to individual accomplishments but can marginalise those without employment, leading to a lack of recognition and potential social and psychological repercussions (Bekker et al., 2025).

Bekker et al. (2025) argue that integrating social justice theory into public health strategies promotes fairness and contributes to the reduction of health inequalities. For interventions to be genuinely fair and effective, they must integrate all three dimensions of justice.

7.5 Ethical Challenges in Public Health

Liberty Restrictions

Public health has a long history of restricting liberty to prevent disease: quarantine, isolation, mandatory vaccination, and closure of businesses and schools. The ethical tension is between individual autonomy and collective protection.

Liberty-restricting measures have been implemented for centuries to limit the spread of infectious diseases. But whose liberty should be restricted? One standard response in public health ethics is to appeal to the "least restrictive alternative" necessary to achieve a public health goal. However, in practice, greater restriction of liberty can lead to greater control of the pandemic and save more lives, though with increasing burdens to others (Savulescu, 2023; Cameron et al., 2021).

Cameron et al. (2021) argue that the commonly accepted explanation—that liberty restrictions may be justified to prevent harm to others when this is the least restrictive option—fails to adequately accommodate the complexity of the issue or the difficult choices that must be made. They introduce a dualist consequentialist approach, weighing utility at both a population and individual level, which may provide a better framework for considering the justification for liberty restrictions. However, they note that the consequentialist approach does not adequately account for the value of equality,

and this value may be protected through the application of an additional proportionality test (Cameron et al., 2021).

Savulescu (2023) argues that in some pandemics, such as COVID-19, it may be a more proportionate restriction of liberty to restrict the liberty of certain groups rather than the population as a whole. He argues that where risk groups are more likely to utilise limited health resources, they pose an indirect threat to others during the pandemic that warrants coercion. He proposes an algorithm for making decisions about selective restriction of liberty (Savulescu, 2023).

Justifications for liberty restrictions should consider:

1. Effectiveness: Is the restriction likely to achieve its public health goal?
2. Proportionality: Is the restriction proportionate to the threat?
3. Necessity: Is there a less restrictive alternative that would achieve comparable results?
4. Least infringement: Is this the least restrictive option available?
5. Public justification: Has the decision been publicly justified and transparent?
6. Fair procedures: Have affected communities been consulted?

Resource Allocation and Triage

When resources are scarce—ventilators, vaccines, ICU beds—who should receive them? Against the background of the COVID-19 pandemic that has shaken societies around the world, the debate about fairness of medical allocation decisions is gaining momentum (Keßler & Krumpal, 2025).

Public health crises demand heightened attention to fairness. It is important on two levels: first, the process by which decisions are made must be fair (procedural justice); second, the distribution of scarce human and material resources must be fair (distributive justice) (McLean, 2007).

Triage criteria to consider include:

- Clinical urgency: Who is at immediate risk of death without treatment?
- Likelihood of benefit: Who is most likely to survive with treatment?
- Duration of benefit: Who will benefit for the longest period?
- Equity: Are there disparities in who has access?

Controversial criteria include:

- Age: Should older patients receive lower priority?
- Disability: Should people with disabilities receive lower priority?
- Social worth: Should essential workers receive priority?

McLean (2007) notes that deciding who can best preserve society means making "social worth" distinctions, which, because they run counter to the instinct for fairness, would ordinarily be considered inappropriate criteria. In the emergency situation of a pandemic, however, making distinctions on the basis of social worth may be necessary. Failure to make these sorts of distinctions could translate into a high level of injustice accompanied by social chaos. Hence, prioritising certain essential personnel, while unfair during non-pandemic conditions, may be the best way to minimise further social breakdown during a pandemic (McLean, 2007).

Surveillance and Privacy

Public health surveillance relies on collecting personal data: health status, contacts, location. The ethical tension is between privacy and collective protection.

Kass's (2001) framework identifies risks to privacy and confidentiality as key burdens that must be considered. Questions to ask include:

1. What data are being collected and for what purpose?
2. Who has access to the data?
3. How will privacy and confidentiality be protected?
4. Will data be shared with other agencies? For what purposes?
5. What are the consequences for individuals whose data are collected?
6. Is there a mechanism for oversight and accountability?

7.6 Procedural Justice and Community Engagement

Procedural justice is essential for ethical public health decision-making. Stakeholder engagement is a key mechanism for achieving procedural justice. However, meaningful engagement requires more than tokenism. Individuals with lived experiences must have decision-making power genuinely shared among stakeholders (Bekker et al., 2025).

Research on digital primary care services in the UK has revealed serious shortcomings in procedural justice for racially minoritised people. Voice, trust, and impartiality—widely used criteria for evaluating procedural justice—were all found to be lacking. The study found high levels of digital poverty, variations in digital literacy and proficiency in English, and the need for more attention to the design of digital services and workforce training (Netto et al., 2025).

Key principles for procedural justice in public health:

Transparency: Decisions are open to scrutiny and explanation

Inclusion: Affected parties have a voice in decision-making

Accountability: Decision-makers are responsible for their choices

Reversibility: Decisions can be reviewed and revised

Genuine participation: Stakeholder engagement is meaningful, not tokenistic

7.7 Practical Exercise

Exercise: Ethical Analysis of a Public Health Issue

Select a public health issue with an ethical dimension. Examples include:

- Mandatory vaccination for healthcare workers
- Contact tracing and digital surveillance
- Triage during a pandemic
- Lockdowns and quarantine

- Data sharing with international partners
- Climate adaptation and relocation

Using the Kass (2001) framework, analyse the ethical dimensions of the issue:

Step 1: What are the public health goals of the proposed intervention?

Step 2: How effective is the intervention in achieving its stated goals? What evidence supports this?

Step 3: What are the known or potential burdens? Consider privacy, autonomy, liberty, justice, and health.

Step 4: Can burdens be minimised? Are there alternative approaches?

Step 5: Is the program implemented fairly? Are benefits and burdens equitably distributed?

Step 6: How can benefits and burdens be fairly balanced? What procedural mechanisms are needed?

Discussion Questions

- What was the most difficult ethical trade-off in your analysis?
- Which of the three dimensions of justice (distributive, procedural, recognitive) is most relevant to your case?
- How would you engage affected communities in ethical deliberation?
- What safeguards would you need to protect vulnerable groups?
- How would you communicate an ethically difficult decision to the public?
- What role should procedural justice play in ethical decision-making?

7.8 Key Takeaways

- Public health ethics requires a different approach from clinical ethics because public health focuses on populations rather than individuals (Kass, 2001; INSPQ, 2020)
- The Kass (2001) framework provides a six-step analytic tool: identify goals, assess effectiveness, identify burdens, consider alternatives, assess fairness, and balance benefits and burdens
- Three dimensions of justice are relevant: distributive (fair outcomes), procedural (fair processes), and recognitive (recognition and dignity) (Bekker et al., 2025)
- Liberty restrictions must be assessed against criteria including effectiveness, proportionality, necessity, least infringement, and public justification (Cameron et al., 2021; Savulescu, 2023)
- Resource allocation and triage require transparent, accountable, and fair processes (McLean, 2007; Keßler & Krumpal, 2025)
- Procedural justice requires genuine stakeholder engagement, not tokenism (Bekker et al., 2025; Netto et al., 2025)

- The greater the burden imposed, the stronger the evidence must be for effectiveness (Kass, 2001

Chapter 8

How to Tell a Health Story

Learning Objectives

By the end of this chapter, you will be able to:

Distinguish between information transmission and narrative engagement in health communication

Apply principles of narrative persuasion, including transportation and identification, to craft compelling health messages

Design risk communication that balances transparency, uncertainty, and trust

Counter misinformation through proactive "prebunking" and trusted community messengers

Translate complex health data into accessible, culturally resonant stories

8.1 Why Narrative Competence Matters

Public health is contested. Evidence is challenged. Trust is low. Messages are amplified or distorted by media and social media. Public health professionals must communicate not just facts but narratives that resonate with audiences, build trust, and motivate action.

Narrative competence is the ability to frame health issues persuasively for different audiences, translate technical concepts into accessible language, and counter misinformation effectively. This competency extends beyond traditional public health communication to encompass the collaborative construction and compelling performance of stories (Nash et al., 2023). It involves skills that go beyond close reading to include creative writing, reflective practice, collegial feedback, and performance (Nash et al., 2023).

Narrative competence has been defined as the ability "to recognize, absorb, interpret, and be moved by the stories of illness" (Charon, 2006, as cited in University of Kansas, n.d.). In public health, this means being able to use stories not only to understand health experiences but to communicate them in ways that inform and inspire action.

The WHO has recognised storytelling as a core part of its Communication for Health (C4H) approach, drawing upon insights from social, behavioural and communications sciences to achieve public health outcomes (World Health Organization, 2024). As one WHO feature story explains, "Facts alone may not be enough to engage and convince people. That is where the power of storytelling comes in" (World Health Organization, 2024).

8.2 The Neuroscience of Narrative

The brain is not an information processor in the abstract. It is a pattern-recognition organ tuned to narrative (Cureus, 2025). Humans evolved to understand the world through stories, not statistics. In every culture, from oral traditions to digital feeds, storytelling has served as a vehicle for transmitting values, norms, warnings, and behaviours.

Narrative Transportation

Narrative transportation is the psychological state of being immersed in a story (Cureus, 2025). When individuals are "transported" into a story, they exhibit reduced counterarguing, enhanced memory retention, and increased openness to persuasion. Functional MRI studies show that emotional storytelling engages the amygdala, hippocampus, prefrontal cortex, and even motor planning areas, as if the brain is rehearsing the actions portrayed (Cureus, 2025). These networks coordinate emotional salience, memory consolidation, executive decision-making, and physiological preparation to act. A well-told story is not just heard; it is felt and simulated (Cureus, 2025).

Identification and Engagement

Narratives typically describe a series of events, including characters, a temporal flow, and causality (RAND Corporation, 2025). When audiences identify with characters and become engaged in their journeys, they are more likely to be persuaded. Research on narrative health persuasion draws on meta-analyses comparing narratives across media and comparing narrative with non-narrative communication (RAND Corporation, 2025).

Stories vs. Statistics

People respond more emotionally to individual stories than to abstract statistics (Ministry of Health Indonesia, 2025). A story about a 45-year-old father paralysed after a stroke resonates more than abstract data about stroke incidence. This narrative creates a connection between the audience and the message, making the information more memorable and impactful (Ministry of Health Indonesia, 2025).

8.3 The WHO Risk Communication and Community Engagement Framework

Risk communication is now recognised as an essential pillar of emergency preparedness and response, placed beside epidemiological and medical interventions (Diers-Lawson, 2025). The WHO has institutionalised the RCCE-IM framework (Risk Communication, Community Engagement, and Infodemic Management) as a core public health capacity (Diers-Lawson, 2025).

Key Elements of Effective Risk Communication

A content analysis of official public health communications during the COVID-19 pandemic identified five key elements of effective risk communication (Fields & Spence, 2024):

Element	Description
Situational transparency	Openness about what is known and what is not known
Stakeholder-centred content	Messages tailored to the needs of different audiences
Evidence-based rationales	Clear explanations of why decisions were made
Continuous improvement	Updating information as evidence evolves
Descriptions of risk management	Explaining how risks are being addressed

The study found that risk management, transparency, and stakeholder-centred content were the most frequently identified elements in government communications (Fields & Spence, 2024). However, over time there was an increase in vague language and a decrease in evidence-based rationales. The authors recommend increasing transparency regarding evidence-based decisions, as well as changes in decisions, to improve risk communication and increase compliance with public health measures (Fields & Spence, 2024).

The PHERCC Framework

The Public Health Emergency Risk and Crisis Communication framework (PHERCC) provides a structured approach to crafting, delivering, and refining public health messages to build trust, promote compliance, and enhance societal resilience (Leslie et al., 2025). The framework includes six domains:

Evidence: Using the best available science and data

Initiator: Identifying who should deliver the message

Channel: Choosing the right communication channels for each audience

Publics: Understanding and segmenting different audiences

Message: Crafting clear, accurate, and actionable content

Feedback: Monitoring and responding to public concerns

Research applying the PHERCC framework in rural Northern New England found that stakeholders emphasised transparency in public health messaging, adapting to evolving evidence while maintaining consistency (Leslie et al., 2025). Trusted local sources and traditional media were essential for reaching vulnerable populations, particularly older adults in rural areas (Leslie et al., 2025).

The EPIC Approach

Diers-Lawson (2025) has argued for an "EPIC" approach to risk communication that is:

Engaged: Actively involving communities in communication

Positive: Emphasising benefits and solutions rather than fear

Informative: Providing clear, evidence-based information

Community-centred: Placing communities at the heart of communication

This approach bridges the gap between scholarly theory and applied public health practice, recognising that traditional risk communication assumptions may not fit the operational realities of public health emergencies (Diers-Lawson, 2025).

8.4 The Crisis and Emergency Risk Communication (CERC) Framework

The CERC framework, developed by the US Centers for Disease Control and Prevention, provides a structured approach to risk communication during emergencies (Melville, 2025). It recognises that risk communication during a crisis is fundamentally different from day-to-day public health communication.

Phase-Based Messaging

CERC identifies six phases of a crisis, each requiring different communication strategies (Melville, 2025):

Phase	Communication Focus
Pre-crisis	Preparedness, education, building trust
Initial	Acknowledge the event, establish credibility, provide basic information
Maintenance	Provide ongoing updates, address rumours, support affected populations
Resolution	Explain what happened, what is being done, lessons learned
Evaluation	Assess the response, communicate improvements
Recovery	Restore trust, address long-term health impacts

Risk Perception

How people perceive risk affects how they process health information (Melville, 2025). Risk perception is influenced by factors including:

Dread: The degree to which a risk evokes fear

Familiarity: How familiar people are with the risk

Control: Whether people feel they can control the risk

Trust: Whether people trust the sources of information

Fairness: Whether the distribution of risk is perceived as fair

Understanding these factors helps public health professionals craft messages that address the concerns audiences are actually having, not just the concerns they "should" have.

8.5 Crafting Health Stories: Principles and Practice

Principles of Good Health Storytelling

StoryCenter, an organisation that helps real people share their personal stories to build a healthy world, offers several principles for effective health storytelling (Hill, 2024):

1. Don't try to make a point, or give advice, or talk about "other people." Share in your own voice, from your heart. Good stories are simultaneously emotionally compelling, rich with detail and nuance, and concise (Hill, 2024).
2. Be vulnerable. Storytellers must resist the impulse to give a chronological, blow-by-blow account and instead focus on a particular scene that captures a moment of change or realisation (Hill, 2024).
3. Zoom in, don't generalise. Audiences don't want broad-brush sketches; they want a specific account of a particular time, place, and situation (Hill, 2024).
4. Avoid giving too much context at the outset. This spoils the sense of mystery. Bring audiences right into a significant moment (Hill, 2024).
5. Avoid "the tyranny of the happy ending." If a storyteller has no happy ending, an attempt to manufacture one will undermine the entire story. Allow audience members to come to their own conclusions (Hill, 2024).
6. Dig deep for sensory details. What did it look like, sound like, feel like? Who was there? What did they say? (Hill, 2024).

Levels of Narrative Integration

A strategic framework for embedding health messages in media identifies multiple levels of narrative integration (Cureus, 2025):

Integration Level	Definition	Example
Symbolic embedding	Subtle visual or thematic cues signalling a health norm	A character wears a breast cancer ribbon or has a glucose monitor visible
Behavioural modelling	Characters visibly engaging in health behaviours	A protagonist attends therapy, takes medication, or gets screened
Conversational integration	Health topics discussed in natural dialogue	Two friends talk about getting a colonoscopy or managing panic attacks
Plotline centrality	A health issue drives the main story arc	A character's cancer diagnosis shapes the season's narrative

This framework recognises that public health messages can be embedded in media at different levels of depth. The goal is not didacticism—audiences do not want to be lectured—but to reflect real experiences that audiences can recognise and learn from (Cureus, 2025).

8.6 Translating Data into Stories

Data alone is not enough. It must be translated into a narrative that feels close to everyday life (Ministry of Health Indonesia, 2025; WHO PMNCH, 2026). A WHO masterclass on health

storytelling identified three key principles for translating data into compelling stories (WHO PMNCH, 2026):

1. Humanise complexity: Extract a single, relatable human thread from massive health datasets
2. Practice ethical storytelling: Communicate sensitive health issues without compromising dignity or safety
3. Clarify the ask: Use data to support a persuasive argument rather than letting the numbers bury the message

Data-to-Story Translation

Data	Story Translation
"Stroke is the leading cause of disability in Indonesia"	"One in four deaths from stroke occurs in individuals under the age of 60"
"Cervical cancer is a significant burden"	"Every two hours, a woman in Indonesia dies from cervical cancer"
"Diabetes is increasing among young people"	"A 28-year-old father of two lost his eyesight to preventable diabetes"

These translations humanise the data and make health burdens feel urgent and understandable (Ministry of Health Indonesia, 2025).

Modular Storytelling

A new approach to communicating burden of disease data involves modular reporting that combines interactive visualisations with customisable narrative elements (European Journal of Public Health, 2025). This approach bridges the gap between scientific data and decision-making by enabling stakeholders to generate their own tailored narratives from shared data sources (European Journal of Public Health, 2025). Users can explore existing visualisations, download graphics, add annotations, and generate reports adapted to their context (European Journal of Public Health, 2025).

8.7 Countering Misinformation

Misinformation and disinformation are among the greatest challenges to effective health communication (EUPHA, 2025). The digital era has transformed public health communication into a high-stakes balancing act. Health authorities face unprecedented challenges in maintaining public trust while adapting to the dynamic nature of scientific evidence (EUPHA, 2025).

The Dual Crisis

Public health institutions are navigating a landscape where facts increasingly compete with ideology. The COVID-19 pandemic exposed the fragility of health communication systems: rapidly evolving guidelines, shifting recommendations, conflicting expert opinions, and politicised debates eroded public confidence (EUPHA, 2025). Vulnerable populations—those with limited health literacy or pre-existing distrust in institutions—are disproportionately affected, exacerbating disparities (EUPHA, 2025).

Strategies for Countering Misinformation

1. Normalise uncertainty: Frame uncertainty as inherent to scientific progress. Instead of dismissing past guidelines, clarify how new data refined recommendations (EUPHA, 2025).
2. Anticipate, address, and prebunk misinformation: Proactively address common myths by equipping audiences with critical thinking tools. Preemptive messaging reduces susceptibility to false claims (EUPHA, 2025).
3. Leverage trusted messengers: Collaborate with community leaders, healthcare providers, and influencers who resonate with specific demographics. Trust is built through cultural relevance and consistency (EUPHA, 2025).
4. Prioritise clarity, accessibility, and nuance: Use plain language and clear explanations. Avoid absolutist language that may later require retraction (EUPHA, 2025).
5. Openly discuss scientific processes: Explaining how evidence is generated, evaluated, and sometimes revised can help demystify science and reduce perceptions of arbitrariness (EUPHA, 2025).

The Role of Storytelling in Fighting Misinformation

Stories can also be used to counter misinformation. Authentic, emotionally compelling first-person narratives can provide alternative perspectives that challenge false claims (Hill, 2024). Stories that reflect the lived experiences of people who have been affected by health issues can build empathy and understanding in ways that factual corrections alone cannot achieve (World Health Organization, 2024).

However, storytellers must be honest and trustworthy. The proliferation of disinformation about health issues is exacerbating challenges in responding to disease. Trustworthy storytelling is essential (Hill, 2024).

8.8 Adapting Messages for Different Audiences

Audience Analysis

Understanding your audience is essential for effective health communication (PHERCC Framework; Leslie et al., 2025). Key questions to ask:

Who is your audience? Demographics, values, concerns, literacy

What do they already believe? Knowledge, attitudes, trust

1. What is their preferred communication channel? Social media, radio, community meetings

Who do they trust? Community leaders, religious figures, healthcare providers

Tailoring Messages by Audience

Audience	Approach	Channel

Young people	Connect through social media; use relatable characters	TikTok, Instagram, YouTube
Productive workers	Emphasise costs and lost income	Workplace communications, WhatsApp
Community leaders	Frame narratives with moral and social values	Community meetings, faith-based settings
Healthcare workers	Provide clear, evidence-based guidance	Professional training, newsletters

Note: Based on Ministry of Health Indonesia, 2025; Leslie et al., 2025.

Rural and Low-Resource Settings

Research on risk communication in rural settings found that trusted local sources and traditional media (radio, print) were essential for reaching vulnerable populations (Leslie et al., 2025). Barriers included misinformation, translation challenges, and limited internet access. Simplified, accessible core messages and consistent updates enhanced public engagement (Leslie et al., 2025). Investing in inclusive communication systems and leveraging community partnerships are important for effective responses to future health crises (Leslie et al., 2025).

8.9 Practical Exercise

Exercise: Develop a Health Story

Select a public health issue you care about (e.g., vaccination, mental health, climate adaptation, cancer screening). Develop a story that communicates this issue to a specific audience.

Part 1: Audience Analysis

1. Who is your target audience?
2. What do they already believe about the issue?
3. What are their concerns and values?
4. Who do they trust?

Part 2: Story Development

Using the principles from StoryCenter and the narrative integration framework, develop a story that includes:

1. A specific moment of change or realisation
2. Sensory details (what did it look like, sound like, feel like?)
3. A first-person voice (if using a personal story)
4. A clear but subtle message (avoid didacticism)
5. An authentic emotional arc (avoid "the tyranny of the happy ending")

Part 3: Adaptation

1. How would you adapt this story for different formats (social media, radio, print, community meeting)?

2. How would you adapt it for a different audience (e.g., youth vs. older adults)?

Part 4: Countering Misinformation

1. What misinformation exists about your issue?
2. How could you use storytelling to counter it?
3. Who would be a trusted messenger for your audience?

Discussion Questions

- What is the difference between telling a story and delivering information?
- How do you balance emotional engagement with factual accuracy?
- What are the ethical considerations in using personal stories for health advocacy?
- How do you adapt a story for different cultural contexts?
- What is the role of data in storytelling?

8.10 Key Takeaways

- Narrative competence extends beyond information transmission to include the collaborative construction and compelling performance of stories (Nash et al., 2023)
- The brain is tuned to narrative—story activates regions far beyond those engaged by raw data (Cureus, 2025)
- Narrative transportation (immersion in a story) increases persuasion by reducing counterarguing and enhancing memory (Cureus, 2025)
- Risk communication has become an essential pillar of public health, placed beside epidemiological and medical interventions (Diers-Lawson, 2025)
- Effective risk communication requires transparency, stakeholder-centred content, evidence-based rationales, and continuous updating (Fields & Spence, 2024)
- Good health stories are emotionally compelling, rich with detail and nuance, and concise (Hill, 2024)
- Data must be translated into narratives that feel close to everyday life (Ministry of Health Indonesia, 2025; WHO PMNCH, 2026)
- Countering misinformation requires normalising uncertainty, prebunking, trusted messengers, and accessible language (EUPHA, 2025)
- Different audiences require different channels, messengers, and narrative approaches (Leslie et al., 2025)
- Trust is built through cultural relevance, consistency, and community partnership (PHERCC Framework; Leslie et al., 2025)

Part III

The Core Missions: Putting Competencies to Work

Introduction to Part III

Part I made the case for change. We examined why the traditional discipline-based model of public health is no longer enough for the complex and interconnected challenges of the twenty-first century. We also introduced the six competencies that provide the foundation for the approach taken in this book.

Part II then moved from ideas to practice. You worked through the six competencies, learning how to map systems, interpret data, design implementation strategies, navigate stakeholders, reason through ethical uncertainty, and communicate health issues in ways that people can understand and act on.

Part III is where you put those competencies to work.

This part is organised around six missions. Each mission places you in a difficult public health situation where there is no simple answer and no single discipline that can solve the problem. You will have to work with incomplete information, limited resources, competing interests, uncertainty, and consequences that may extend far beyond the immediate decision.

These are not case studies to read passively.

They are situations to work through.

You will be asked to examine evidence, interpret data, map systems, identify competing interests, consider ethical consequences, develop practical responses, make decisions, and explain why you made them. At several points, you will have to choose a course of action without having all the information you would ideally want.

That is deliberate.

Real public health practice rarely provides a clean problem with a single correct answer. Professionals often have to act while evidence is emerging, resources are limited, political pressures are present, institutions disagree, and communities may understand the problem differently from those responsible for responding to it.

The missions are designed to recreate that reality.

The Outbreak in the Megacity asks you to make decisions during an emerging infectious disease crisis. You will need to connect surveillance, contact tracing, resource allocation, communication, ethics, and implementation.

The Empty Nests mission asks how a health and social care system should respond before population ageing overwhelms existing arrangements. Here, the challenge is not simply to understand ageing, but to redesign systems, develop a workforce, allocate limited resources, work with communities, and navigate competing government priorities.

The Digital Diagnosis mission places you inside a difficult decision about artificial intelligence in clinical care. The question is not simply whether the technology works. You must examine whose data shaped it, who benefits, who may be placed at risk, what happens when performance varies between populations, and who remains responsible when an algorithm makes a poor decision.

The Climate Displacement Crisis asks what happens when people lose homes, livelihoods, health services, and social support at the same time. You will have to make decisions about emergency response, resource allocation, coordination, mental health, displacement, and long-term adaptation.

The Infodemic places you in an environment where information, trust, politics, culture, and behaviour collide. You will have to decide how to respond to misinformation without treating every concern as misinformation, how to engage communities and platforms, and how to communicate uncertainty without losing public trust.

The Silent Pandemic takes you into the challenge of antimicrobial resistance. Here the problem crosses human health, animal health, agriculture, pharmaceutical markets, environmental systems, regulation, and everyday behaviour. You will have to balance the need to protect antibiotics with the equally important need to ensure that people can still obtain appropriate treatment.

The problems are different, but the underlying challenge is the same.

How do you make good public health decisions when the problem is bigger than your discipline, the evidence is incomplete, and the decision cannot wait?

This is where the six competencies become useful.

You will return to Systems Mapping to understand relationships and unintended consequences. You will use Data Fluency to distinguish useful evidence from numbers that can be misleading. You will draw on Implementation Agility to move from an attractive plan to something that could actually work. You will use Stakeholder Navigation to understand interests, power, resistance, and opportunities for collaboration. You will apply Ethical Foresight when decisions involve competing values, unequal risks, or scarce resources. And you will use Narrative Competence when evidence alone is not enough to move people toward action.

No mission can be solved by using only one of these competencies.

That is intentional.

Public health problems do not arrive organised according to university departments. A climate emergency may become a mental health problem, a nutrition problem, a housing problem, a displacement problem, and a health systems problem at the same time. An AI deployment decision may become an equity issue, a regulatory issue, a clinical safety issue, a data governance issue, and a question of public trust.

The boundaries between disciplines disappear quickly when you are responsible for the decision.

For that reason, the missions should not be approached as exercises in finding the answer the author has in mind. They are exercises in professional judgement.

Ask yourself:

What evidence am I using?

What assumptions am I making?

Whose interests are represented?

Who may be affected but has no voice in the decision?

What risks am I accepting?

What alternatives am I rejecting, and why?

What could go wrong if my decision succeeds?

What could go wrong if it fails?

These questions matter because professional judgement is not simply the ability to know more. It is the ability to use what you know when the situation is uncertain and the decision still has to be made.

Each mission therefore includes moments of uncertainty, competing priorities, limited resources, and difficult choices. You may disagree with the options provided. You may believe that an important option is missing. That is acceptable.

In fact, it is useful.

If you can identify a better option, explain why it is better, identify what evidence would support it, anticipate its risks, and show how you would implement it, you are doing exactly the kind of thinking this book is designed to develop.

At the end of each mission, you will find a reflection section and a competency debrief. These are not simply tests of whether you found the "correct" solution. They are opportunities to examine your reasoning and understand how you approached the problem.

Ask yourself what you would do differently.

Consider which assumptions influenced your decisions.

Think about whose perspective was missing.

Identify what information you wished you had.

Consider which competency you relied on most and which one you neglected.

Then ask a more difficult question:

What does this decision reveal about the kind of public health professional you are becoming?

Reflection is not an exercise added after the real work.

It is part of the work.

The six missions are the practical centre of this book. They are where the competencies move beyond concepts and become professional judgement. They are where knowledge meets uncertainty, where competing priorities have to be weighed, and where you begin to see what it means to work across disciplinary boundaries.

So approach these missions differently from the way you might approach a conventional textbook chapter.

Do not read only to find the answer.

Make the decision.

Defend it.

Question it.

Then ask what you have learned from making it.

You are not simply completing assignments. You are practising the work of public health.

The stakes are high. The information is imperfect. The resources are limited. The interests are competing. The decisions are difficult.

That is precisely why the learning matters.

Mission 1

The Outbreak in the Megacity

Learning Objectives

By the end of this mission, you will be able to:

1. Map transmission pathways and identify leverage points within a complex urban outbreak.
2. Interpret preliminary epidemiological data while recognising uncertainty and limitations.
3. Design a contact tracing strategy that is effective, feasible, ethical, and appropriate to the local context.
4. Evaluate quarantine and movement restrictions by considering epidemiological, social, economic, legal, and ethical consequences.
5. Apply ethical reasoning to the allocation of scarce intensive care resources.
6. Communicate health risks clearly to different audiences while maintaining transparency and trust.
7. Integrate multiple public health competencies into a coherent emergency response.

The Scenario

You are the newly appointed Chief Public Health Officer of a rapidly urbanising middle-income country.

The capital city, Metroville, is home to 12 million people. Approximately 30 percent of the population lives in densely populated informal settlements where access to clean water, sanitation, healthcare, and secure housing is limited. The city is also a major regional transport hub, with an international airport, a busy seaport, several large markets, and extensive daily movement between the capital and surrounding districts.

You have been in office for only three weeks.

On a Tuesday morning in early autumn, you receive an urgent call from the Director of the National Infectious Disease Institute.

A 45-year-old man who works in a wet market in the eastern district has been admitted to Metroville General Hospital with severe acute respiratory illness. Initial laboratory tests are inconclusive, but the clinical presentation is unusual enough to concern the attending physicians.

Within 48 hours, five additional cases are identified among his family members, neighbours, and two healthcare workers who treated him.

By the end of the week, the number of confirmed cases has risen to 47.

The pathogen has been identified as a fictional novel respiratory virus provisionally designated HxN8. Preliminary investigation suggests a possible animal-to-human transmission event associated with the wet market, but the source has not yet been confirmed.

Early epidemiological estimates suggest a reproductive number of approximately 2.5. Four deaths have occurred among the 47 confirmed cases. Children under five and adults over 65 appear to be experiencing more severe disease.

The evidence is still incomplete.

You do not yet know whether transmission is occurring mainly in households, healthcare facilities, markets, workplaces, public transport, or some combination of these settings. The apparent concentration of cases in the eastern district may represent a true geographic cluster, but it may also reflect differences in testing and case detection.

The hospital system is already under pressure from routine healthcare demands. Intensive care capacity is limited. The public is becoming increasingly anxious, and rumours are spreading rapidly through social media and messaging platforms.

International media have begun reporting the outbreak.

The Minister of Health has called an emergency meeting for tomorrow morning.

She has asked you for a response plan.

You have less than 24 hours to prepare.

A Note About the Scenario

Metroville, HxN8, and the epidemiological data presented in this mission are fictional and have been created for educational purposes.

The public health principles, ethical considerations, and professional approaches used in the mission are informed by published guidance and literature. The exercise is therefore not asking you to reproduce a predetermined response. It is asking you to make defensible decisions using incomplete information.

That distinction matters.

In a real outbreak, you rarely receive a complete dataset before you have to act.

The First Decision

Before beginning the tasks, stop and consider the situation you have inherited.

You do not have enough information.

You do not have enough staff.

You do not have enough intensive care capacity.

You do not have complete public trust.

And you do not have the luxury of waiting until everything is known.

Your first responsibility is therefore not to find the perfect response. It is to determine what must be understood, what must be decided, and what must happen immediately.

Public health emergency management requires coordination across surveillance, laboratory systems, clinical care, public health and social measures, risk communication, community engagement, and governance. These functions need to work together rather than operate as separate activities (World Health Organization [WHO], 2026).

You are now responsible for bringing them together.

Task 1: Map the Outbreak System

The Situation

You have 48 hours to develop an initial understanding of how the outbreak is spreading.

Your epidemiology team has compiled preliminary information on the first 47 confirmed cases.

Table 1.1

Preliminary Case Data for the First 47 Confirmed Cases

Case characteristic	Number
Total confirmed cases	47
Direct wet market exposure	31 (66%)
Household contacts of confirmed cases	12 (26%)
Healthcare workers	4 (8%)
Cases in eastern district	38 (81%)
Cases in other districts	9 (19%)
Cases under 5 years	14 (30%)
Cases aged 5 to 65 years	22 (47%)
Cases over 65 years	11 (23%)
Hospitalised	47 (100%)
Requiring intensive care	9 (19%)
Deaths to date	4 (8.5%)

Note: The percentages are descriptive summaries of the fictional case series. They should not be interpreted as estimates of population risk.

Your Task

Construct a systems map of the outbreak using the information in Table 1.1.

Your map should identify:

1. The major actors involved in the outbreak.
2. The settings in which transmission may be occurring.
3. The possible pathways through which infection is spreading.
4. Factors that could accelerate transmission.
5. Factors that could slow transmission.
6. Feedback loops within the outbreak system.
7. Vulnerable populations.
8. Health system pressures that could worsen the situation.
9. Social and economic consequences that could influence behaviour.
10. Potential leverage points for intervention.

Do not simply draw a transmission chain.

Think about the wider system.

For example, a fear-driven reduction in attendance at health facilities could delay diagnosis. Delayed diagnosis could increase transmission. At the same time, fear could reduce market attendance and therefore decrease some forms of exposure.

A movement restriction could reduce transmission but also prevent informal workers from earning income. Loss of income could reduce people's ability to isolate safely, potentially undermining the intervention itself.

Your map should make these relationships visible.

Decision Challenge

Identify three leverage points where a relatively small intervention could produce a substantial effect on the outbreak.

For each leverage point, explain:

- What you would change.
- Why you believe it matters.
- Which actors would need to act.
- What unintended consequence might occur.
- What information you would need to monitor whether it is working.

Professional Output

Prepare a one-page outbreak systems map and a 300-word executive interpretation for the Minister of Health.

Your interpretation should answer one question:

Where should the government intervene first, and why?

Toolkit Reference

Use Chapter 3: How to Map a System for systems mapping, causal relationships, feedback loops, stakeholder mapping, and identification of leverage points.

Task 2: Design a Contact Tracing Strategy

The outbreak is expanding.

Your surveillance team has identified 35 new notifications requiring investigation in the next 24 hours.

Your current public health workforce can complete approximately 20 investigations per day using existing staff.

The eastern district presents additional challenges. Many informal settlements have no formal street addresses. Residents frequently move between neighbourhoods for work. Some people are reluctant to provide information to government officials because of previous experiences with authorities.

There are also concerns about the collection and use of personal health information.

You have been asked to establish a contact tracing strategy immediately.

Contact tracing is not simply a technical exercise. Its effectiveness depends on timely identification, appropriate follow-up, community engagement, cultural acceptability, privacy and data protection, ethical practice, and the resources available to implement it (WHO, 2025).

Your Task

Design a 72-hour contact tracing protocol for Metroville.

Your strategy must explain:

1. How you will define a contact.
2. Which cases will receive priority investigation.
3. How contacts will be identified.
4. How you will manage people without formal addresses.
5. What role community health workers will play.
6. What role community and religious leaders might play.
7. Whether digital tools should be used and, if so, for what purposes.
8. What personal information must be collected.
9. How personal information will be protected.

10. How you will respond when people refuse to cooperate.
11. How you will allocate the limited workforce.
12. How you will monitor whether the strategy is working.

The Capacity Problem

You have 35 notifications but capacity for only 20 investigations today.

You therefore have to prioritise.

Develop a prioritisation rule that explains which 20 investigations should happen first.

Possible factors include:

- severity of illness
- high-risk exposure
- healthcare exposure
- exposure in crowded settings
- links to vulnerable populations
- evidence of onward transmission
- geographic clustering
- ability to identify additional contacts
- time since exposure
- likelihood of rapid deterioration

You must justify your choices.

There is no automatic correct answer.

The Privacy Question

A technology company has offered the Ministry a free digital contact tracing platform.

The company wants access to anonymised epidemiological data to improve its system.

The Minister is interested because the platform could increase efficiency.

The country's legal team is concerned that the data-sharing arrangement has not been adequately reviewed.

Would you accept the offer?

If yes, under what conditions?

If no, what alternative would you propose?

Professional Output

Prepare a 72-hour Contact Tracing Protocol containing:

- operational workflow

- prioritisation criteria
- staffing plan
- community engagement approach
- privacy safeguards
- escalation procedure
- monitoring indicators

Your protocol should fit on approximately two pages.

Toolkit Reference

Use Chapter 6: How to Navigate Stakeholders and Chapter 7: How to Think Ethically Under Pressure.

Task 3: Decide on Quarantine and Movement Restrictions

The Minister is considering imposing a lockdown on the eastern district.

The district has approximately two million residents.

Preliminary modelling suggests that movement restrictions could substantially reduce transmission if implemented early and effectively. However, many residents depend on informal employment. They have limited savings and little ability to work from home.

Local leaders warn that a poorly designed lockdown could produce serious economic hardship.

There is another concern.

If residents believe that a lockdown is imminent, some may leave the district before restrictions begin. Movement out of the district could spread the outbreak to other parts of Metroville and neighbouring regions.

The Minister wants your recommendation by 6:00 p.m.

Your Decision

You must choose one of four broad approaches:

Option A: Full District Lockdown

Restrict movement into and out of the eastern district.

Option B: Targeted Restrictions

Restrict specific high-risk settings, gatherings, workplaces, and transmission routes while allowing most movement to continue.

Option C: Combined Targeted Measures

Introduce targeted restrictions together with intensive testing, contact tracing, isolation support, community measures, and temporary controls on particularly high-risk movement.

Option D: Delay Restrictions

Continue surveillance and voluntary measures while collecting more evidence before introducing compulsory restrictions.

You may propose a modified version of any option, but you must clearly state what you would do.

Your Task

Prepare a Ministerial Decision Brief of approximately 500 words.

Your recommendation must address:

1. The epidemiological rationale.
2. The expected benefits.
3. The likely social and economic consequences.
4. The potential impact on vulnerable groups.
5. The likelihood of compliance.
6. The risk of people leaving the district.
7. The support that would be required.
8. The legal and ethical justification.
9. The indicators that would determine whether restrictions should be strengthened, maintained, or relaxed.

Public health and social measures should be considered alongside epidemiological trends, public perceptions, health system pressures, social consequences, economic effects, implementation capacity, and equity. Monitoring should continue after measures are introduced so that policies can be adjusted as circumstances change (WHO, 2025).

The Community Meeting

Before your recommendation goes to the Minister, you must meet with representatives from the eastern district.

The meeting includes:

- market traders
- transport workers
- religious leaders
- community health workers
- youth representatives
- women's organisations
- local government officials
- healthcare workers
- representatives of people living in informal settlements

One representative asks:

"You are asking us to sacrifice our livelihoods for a disease that you cannot even explain properly. Why should we trust you?"

You have two minutes to respond.

Do not give a technical lecture.

Explain your decision as you would to the community.

Professional Output

Submit:

1. A 500-word Ministerial Decision Brief.
2. A two-minute verbal response to the community.
3. Five indicators you would monitor during the first seven days of implementation.

Toolkit Reference

Use Chapter 6: How to Navigate Stakeholders and Chapter 7: How to Think Ethically Under Pressure.

Task 4: Triage Limited Intensive Care Resources

The outbreak has now placed severe pressure on Metroville General Hospital.

The hospital has 25 ventilators.

Eighteen are currently being used by patients with other critical illnesses.

Only seven ventilators are immediately available.

Nine patients with HxN8 now require intensive care.

The clinical team expects the number of critically ill patients to increase over the next two weeks.

There is no immediate prospect of obtaining additional ventilators or ICU beds.

The hospital director asks you a difficult question:

"Who should receive the ventilators?"

You cannot avoid the question.

Your Task

Develop an ethical framework for allocating scarce intensive care resources.

Your framework must address:

1. Clinical severity.
2. Likelihood of benefit.
3. Equality and fairness.
4. Vulnerability.

5. Whether age should influence decisions.
6. Whether healthcare workers should receive priority.
7. Disability and chronic illness.
8. Whether previous healthcare access should matter.
9. How decisions should be reviewed.
10. Who should make individual triage decisions.
11. How conflicts of interest will be managed.
12. How decisions will be communicated to patients and families.
13. What care will be provided to patients who do not receive intensive care.
14. How the wellbeing of clinicians making these decisions will be protected.

Scarcity does not remove ethical responsibility. It makes ethical reasoning more important. WHO guidance on resource allocation emphasises equality, maximising benefit, attention to those at greatest risk, transparent processes, inclusiveness, consistency, and accountability. It also cautions against using irrelevant characteristics such as race, ethnicity, creed, or disability as arbitrary grounds for denying scarce resources (WHO, 2020).

The Difficult Question

A 38-year-old healthcare worker and a 72-year-old retired teacher both require a ventilator.

Both have a reasonable but uncertain probability of survival.

The healthcare worker has been exposed to HxN8 while caring for patients and is responsible for a team of nurses.

The retired teacher lives alone and has no dependants.

You have only one ventilator.

Who receives it?

Do not simply state your choice.

Explain:

- Which ethical principle supports your decision.
- Which competing principle challenges it.
- What information could change your decision.
- Who should have authority to make the final decision.
- How you would defend the decision publicly.

Professional Output

Develop a one-page ICU Allocation Framework that could be used by the hospital during the outbreak.

Your framework must include:

- allocation principles

- decision criteria
- decision-making structure
- review process
- appeal or reassessment mechanism
- communication principles
- clinician support

Toolkit Reference

Use Chapter 7: How to Think Ethically Under Pressure.

Task 5: Communicate Risk in a Low-Trust Environment

The outbreak is now receiving national and international attention.

Social media platforms are filled with conflicting claims.

Among the messages circulating are claims that:

- HxN8 is a biological weapon.
- The government knew about the outbreak weeks ago.
- The government is hiding the real number of deaths.
- The virus was deliberately released.
- A vaccine is already available but is being withheld.
- The vaccine under development will cause infertility.

Some claims are completely false.

Others contain fragments of real information mixed with speculation.

Trust in government is particularly low in the eastern district.

At the same time, international journalists are demanding daily briefings.

The Minister wants you to prepare the communication strategy.

Your Task

Develop a seven-day outbreak risk communication strategy.

Your strategy must identify:

1. The most important information the public needs to know.
2. The audiences that require different messages.
3. The communication channels appropriate for each audience.
4. The role of radio, television, social media, community health workers, religious leaders, and local organisations.
5. How rumours will be monitored.

6. Which misinformation claims should be addressed immediately.
7. Which claims should be monitored rather than publicly amplified.
8. How uncertainty will be communicated.
9. How corrections will be issued when previous information changes.
10. How the government will demonstrate transparency.
11. How community feedback will influence the response.

Risk communication is not simply the delivery of instructions. It involves an exchange of information, advice, and concerns between authorities and people facing a threat. Community engagement similarly requires affected communities to participate in shaping responses that affect them (WHO, 2024a, 2024b).

The Communication Test

You have three minutes to brief the Minister.

She says:

"I don't want to tell people that we are uncertain. They will panic."

You disagree.

Explain why communicating uncertainty can sometimes strengthen rather than weaken public trust.

Then prepare the following:

Deliverable 1: Ministerial Briefing

A three-minute verbal briefing for the Minister.

Deliverable 2: Public Statement

A 250-word statement for the general public.

Deliverable 3: Community Message

A short message for residents of the eastern district.

The message should be suitable for delivery through local radio or community health workers.

Deliverable 4: Media Questions

Prepare responses to five difficult questions from journalists.

At least two questions should involve information that remains uncertain.

Deliverable 5: Misinformation Decision Table

Create a table with three columns:

Claim	Response	Reason
Claim 1	Respond immediately / monitor / do not amplify	Why?

Claim 2	Respond immediately / monitor / do not amplify	Why?
Claim 3	Respond immediately / monitor / do not amplify	Why?
Claim 4	Respond immediately / monitor / do not amplify	Why?
Claim 5	Respond immediately / monitor / do not amplify	Why?

Your objective is not to respond to every false statement.

Your objective is to create an information environment in which people can make reasonable decisions despite uncertainty.

Toolkit Reference

Use Chapter 8: How to Tell a Health Story.

The 72-Hour Decision Challenge

You have now completed the five tasks.

The Minister calls you back into her office.

The situation has deteriorated.

You have only 72 hours to implement the first phase of the response.

Your team has identified ten possible interventions:

1. Expand laboratory testing.
2. Intensify contact tracing.
3. Establish community isolation facilities.
4. Restrict large public gatherings.
5. Introduce targeted movement restrictions.
6. Provide food and income support to affected households.
7. Expand ICU capacity.
8. Deploy community health workers.
9. Launch a national risk communication campaign.
10. Establish a community advisory group.

You do not have enough resources to implement all ten effectively.

Your Task

Choose only three interventions for immediate intensive implementation.

For each choice, explain:

- Why it comes first.
- What problem it addresses.

- What evidence supports the decision.
- What resources it requires.
- What could go wrong.
- Which intervention you are deliberately postponing and why.

Then identify three indicators that would cause you to change your priorities during the following 72 hours.

This is the central test of the mission.

Public health leadership is not simply knowing which interventions are useful.

It is knowing what to do first when you cannot do everything.

Professional Response Brief

You are now required to bring the entire mission together.

Prepare a 48-hour Emergency Response Brief for the Minister of Health.

The brief should contain:

1. Situation Assessment

What do you know?

What do you not know?

What are the most important uncertainties?

2. Immediate Priorities

What must happen within the next 24 hours?

3. Outbreak Control

What measures will you introduce to reduce transmission?

4. Health System Protection

How will you protect hospitals, healthcare workers, and essential services?

5. Equity

Which populations are most likely to experience disproportionate harm?

How will your response address their needs?

6. Ethics

Which decisions involve significant ethical trade-offs?

How will those decisions be governed?

7. Community Engagement

How will communities participate in the response?

8. Communication

What will the government say, to whom, through which channels, and how often?

9. Monitoring

Which indicators will you monitor during the first week?

10. Decision Triggers

What findings would cause you to strengthen, change, or relax your response?

Mission Reflection

Do not rush through this section.

The purpose of the reflection is not to determine whether you found the "correct" answer. It is to examine how you made decisions when evidence was incomplete and competing values were involved.

Consider the following questions:

1. What was the most difficult decision you made in this mission?
2. What information did you wish you had before making that decision?
3. Which decision did you make with the greatest uncertainty?
4. Which of your decisions could produce unintended harm?
5. What assumptions did you make about the population of Metroville?
6. Did you assume that people would comply with government instructions? Why?
7. How did the socioeconomic conditions of the eastern district affect your decisions?
8. Did your response prioritise speed or equity? Could you have achieved both?
9. How did you balance individual liberty against collective protection?
10. How did you approach the allocation of scarce ICU resources?
11. Should healthcare workers ever receive priority during a public health emergency? Under what circumstances?
12. How did you distinguish evidence from assumption?
13. Which data would you want to collect next?
14. Did your communication strategy treat communities as recipients of information or as partners in the response?
15. How did you deal with misinformation without giving it unnecessary attention?
16. Which of the six competencies did you use most heavily?
17. Which competency was weakest in your response?
18. If you were given another 72 hours, what would you change?

Competency Debrief

This mission was deliberately designed so that no single public health discipline could solve the problem on its own.

Systems Mapping

You had to understand the outbreak as a system rather than as a collection of individual cases.

Data Fluency

You had to interpret incomplete data, recognise uncertainty, prioritise information, and avoid treating preliminary estimates as established facts.

Implementation Agility

You had to decide what could realistically be implemented with limited staff, infrastructure, and time.

Stakeholder Navigation

You had to work with ministers, healthcare workers, community leaders, journalists, market workers, and residents whose interests were not always aligned.

Ethical Foresight

You had to anticipate the consequences of restrictions, surveillance, resource allocation, and emergency decision-making.

Narrative Competence

You had to communicate evidence and uncertainty to audiences with different levels of knowledge, different concerns, and different levels of trust.

The six competencies overlap throughout the mission. A technically sound intervention can fail if communities do not trust it. A fair policy can fail if it cannot be implemented. Good epidemiological evidence can have little effect if decision-makers cannot translate it into action.

That is the point of the exercise.

Mission Summary

The Outbreak in the Megacity places you inside a rapidly evolving public health emergency where the available evidence is incomplete, resources are limited, and every decision has consequences beyond the immediate health threat.

You were asked to:

- map an outbreak as a complex system;
- interpret preliminary epidemiological information;
- identify leverage points for intervention;
- design a feasible contact tracing strategy;
- protect privacy while pursuing public health objectives;

- make difficult decisions about quarantine and movement restrictions;
- consider the economic and social consequences of emergency measures;
- develop an ethical approach to scarce ICU resources;
- communicate risk in a low-trust environment;
- distinguish between information that requires an immediate response and information that may be better monitored;
- and prioritise three interventions when you could not implement everything at once.

The mission illustrates a central reality of public health practice.

The hardest decisions are rarely about whether something is medically possible. They are about what should be done, when it should be done, who should be involved, who may bear the cost, and how the consequences will be managed.

That requires more than disciplinary knowledge.

It requires judgment.

Sources informing this mission

The mission's evidence-based components are grounded particularly in WHO guidance on contact tracing, public health and social measures, emergency risk communication and community engagement, and ethical resource allocation. WHO's current emergency preparedness framework also emphasises the integration of surveillance, evidence use, coordination, clinical care, public health measures, risk communication, workforce capacity, and governance during emergencies.

For the book itself, I would not put this "Sources informing this mission" section here. The manuscript should use the APA in-text citations already embedded above, with the full bibliographic records consolidated in the book's final References section.

One further editorial decision I strongly recommend: keep "HxN8" rather than H10N8. The original manuscript used H10N8, but H10N8 is an actual influenza A subtype, so using it for a fictional pathogen creates an unnecessary factual problem. The fictional designation makes the simulation cleaner and more defensible.

This version is now at the level I would use as the master Mission 1 before we move to Mission 2.

Mission 2

The Empty Nests

Learning Objectives

By the end of this mission, you will be able to:

1. Assess the implications of population ageing for health, social care, families, communities, and public finances.
2. Design a community-based, person-centred long-term care model that responds to local needs and available resources.

3. Apply behavioural and cultural insights to improve uptake of preventive and supportive services among older adults.
4. Develop a workforce strategy that addresses both formal care workers and unpaid family caregivers.
5. Compare long-term care financing options and make a defensible recommendation under a fixed budget.
6. Navigate competing interests among health, social welfare, finance, local government, communities, families, and older people themselves.
7. Integrate systems mapping, implementation agility, stakeholder navigation, and narrative competence into a practical policy proposal.

The Scenario

You are the Director of Ageing and Health Policy in a middle-income country in Southeast Asia.

For this mission, we will call the country Negara.

Negara is ageing rapidly.

At present, approximately 11 percent of the population is aged 60 years or older. By 2050, that proportion is expected to reach approximately 25 percent.

These figures are part of the fictional scenario. They reflect the broader demographic transition occurring across Asia and the Pacific, where the population aged 60 years and above is projected to increase substantially over the coming decades (Asian Development Bank [ADB], 2025).

The demographic change is being driven by declining fertility and longer life expectancy.

For decades, Negara relied heavily on families to care for older relatives.

That arrangement is beginning to change.

Younger adults are moving to cities in search of employment. Some migrate internationally. Families are becoming smaller. Women, who have traditionally carried much of the unpaid caregiving burden, are increasingly participating in paid employment.

Residential care exists, but it is limited, expensive, and culturally unpopular.

For many families, placing an older parent in residential care is still seen as abandonment rather than as a legitimate form of support.

At the same time, the health system remains heavily oriented towards hospitals and acute treatment.

Primary care is uneven.

Community health workers are present in most districts, but few have formal training in ageing, functional assessment, dementia, rehabilitation, or long-term care.

Social protection programmes exist, but they are fragmented and difficult to navigate.

There is no national long-term care system.

The result is an uncomfortable contradiction.

People are living longer, but the system has not yet decided who will care for them, where that care will be provided, or how it will be financed.

WHO's approach to healthy ageing emphasises maintaining functional ability and providing person-centred, coordinated care across health and social care settings. It also recognises that long-term care must extend beyond clinical treatment to include assistance, social support, and care that enables people to live with dignity. (WHO, 2021, 2026).

The Minister of Health believes Negara should adopt an ageing in place strategy.

The Minister of Social Welfare agrees, but wants the programme to reach poor and socially isolated older adults.

The Minister of Finance is less enthusiastic.

Her position is straightforward:

"I support helping older people. I do not support creating another expensive government programme that we cannot afford ten years from now."

The Minister of Labour is concerned about the workforce.

The Minister of Local Government wants districts to have more control over implementation.

Community organisations want older people to have a stronger voice.

Families want help, but many do not want government officials telling them how to care for their parents.

You have been given six months to develop a five-year national pilot.

The pilot will operate in three districts.

The government has established a maximum budget of NCU 50 million over five years.

You cannot exceed it.

Your job is not to design everything that older people might need.

Your job is to decide what Negara should build first, for whom, where, and why.

The Central Question

Before you begin, consider the question at the heart of this mission:

How do you redesign a care system before demographic change overwhelms it?

There is another question underneath it:

What happens when a government wants to do the right thing but cannot afford to do everything at once?

That is your problem.

Task 1: Design the Three-District Care Pilot

The Minister initially tells you:

"I want an ageing-in-place system."

You ask her what she means.

She replies:

"Older people should be able to remain at home and in their communities for as long as possible."

That sounds reasonable.

But it is not yet a system.

WHO's Integrated Care for Older People approach emphasises person-centred, coordinated care that addresses functional ability rather than treating older people only according to individual diseases. It is designed to connect health and social care across homes, primary care, hospitals and community settings (WHO, 2021, 2026).

The challenge is to translate that principle into something Negara can actually operate.

What You Know

The government has selected three pilot districts:

District	Population	Older adults	Main characteristics
District A	1.2 million	12%	Urban, high hospital use, good digital connectivity
District B	850,000	15%	Rural, dispersed communities, limited transport
District C	1.0 million	10%	Peri-urban, high migration, many older adults living alone

These figures are fictional and are provided solely for the simulation.

Across the three districts:

- community health workers are already operating;
- primary care clinics exist but vary in quality;
- social welfare offices operate separately from health services;
- local governments have limited budgets;
- community and faith-based organisations already provide informal support;
- there is no shared long-term care assessment system.

ADB's recent work in Indonesia, Mongolia, and Viet Nam demonstrates that community-based long-term care can build on existing community structures rather than creating an entirely separate system. Its regional pilot work highlights case management, community care hubs, local coordination, workforce development, technology, and health-social care integration as important components. (ADB, 2025).

Your Task

Design a five-year community-based long-term care pilot for the three districts.

Your proposal must answer:

1. Who should receive services?

Will the pilot serve:

- everyone aged 60 and above?
- everyone aged 65 and above?
- people with functional limitations?
- people living alone?
- people with multiple chronic conditions?
- people identified as socially or economically vulnerable?

Develop an eligibility and prioritisation system.

2. What services should be included?

You may consider:

- health assessment
- chronic disease management
- medication support
- rehabilitation
- falls prevention
- nutrition support
- mental health and social connection
- dementia support
- home-based care
- respite care
- caregiver education
- social protection referrals
- transport assistance
- assistive devices
- palliative care
- health promotion
- community activities

You do not have to include all of them.

Choose what the pilot can realistically deliver.

3. Who coordinates care?

Decide whether coordination should occur through:

- primary care clinics
- community care hubs

- local government
- dedicated case managers
- community health workers
- social welfare offices
- a new independent agency

Explain your choice.

4. What role should older people play?

Do not design the system entirely around what professionals think older people need.

Decide how older adults will participate in:

- needs assessment
- service design
- local governance
- monitoring
- evaluation

5. What happens when ageing in place is not appropriate?

This is an important question.

Ageing in place should not become a slogan.

Some people will require intensive nursing care, rehabilitation, dementia care, palliative care, or residential support.

Your model must explain when home and community care is appropriate and when another form of care should be offered.

Evidence to Consider

Indonesia: Community Care Hubs

ADB's work in Indonesia describes community care hubs that connect older people and caregivers with local services through case management and community-based support. The model builds on existing local structures rather than replacing them. (ADB, 2025, 2026).

Viet Nam: Community-Based Care

ADB's Viet Nam pilot examined how community organisations and local systems could be linked with health and social services to provide more integrated support for older adults. The pilot emphasised multidisciplinary coordination, training, financing, and local implementation. (ADB, 2025).

India: Community-Based Support

The original mission also draws attention to the emerging use of community-based workers and local youth in supporting older adults through home-based services. If you use the Vriddha Mitra

example in your final book, we should retain the Patil et al. (2026) citation already present in the manuscript, but verify the bibliographic record again during the final reference audit.

Design Principle

The aim is not to copy another country's model.

It is to ask:

What can Negara learn from other countries without pretending that their systems can simply be transplanted?

Professional Output

Prepare a Five-Year Community Care Pilot Proposal of approximately 1,500 words.

Include:

1. target population
2. service package
3. care pathway
4. governance structure
5. workforce model
6. role of older people
7. technology strategy
8. referral system
9. implementation phases
10. major risks and mitigation strategies
11. five indicators for monitoring success

Toolkit Reference

Use Chapter 3: How to Map a System and Chapter 5: How to Implement in the Real World.

Task 2: Change Behaviour Without Manipulating People

The Minister is worried about another problem.

Even where preventive and supportive services are available, older adults are not always using them.

A preliminary survey in the three pilot districts found:

Service or behaviour	Current uptake
Annual health assessment	38%
Recommended physical activity programme	24%

Medication review	42%
Social support programme	17%
Falls-risk assessment among high-risk adults	29%
Available social protection benefits successfully accessed	31%

These figures are fictional and are intended for the exercise.

Your team initially assumes that people simply lack information.

You are not convinced.

You conduct interviews.

You discover that some older adults:

- do not think preventive care is necessary when they feel well;
- associate government services with bureaucracy;
- fear being labelled as dependent;
- do not know which services they qualify for;
- find registration processes confusing;
- worry about losing independence;
- cannot easily travel to clinics;
- rely heavily on family members for decisions;
- trust local community figures more than government officials.

The problem may therefore be less about knowledge and more about how the system is designed.

WHO recognises behavioural and social sciences as important for understanding the cognitive, social, cultural, and environmental factors that shape health behaviour. It also recommends using behavioural evidence to design and evaluate policies and services rather than assuming that information alone will change behaviour (WHO, 2024a, 2024b).

Your Task

Choose two priority behaviours that the pilot should seek to change.

For each behaviour:

Step 1: Define the Behaviour

State exactly what you want people to do.

Avoid vague goals such as "improve healthy ageing."

For example:

Increase the proportion of high-risk older adults who complete an annual functional assessment.

Step 2: Identify the Barrier

What is preventing the behaviour?

Consider:

- capability
- opportunity
- motivation
- cost
- convenience
- social norms
- trust
- fear
- complexity
- transport
- family influence

Step 3: Design the Intervention

You may consider:

- reminders
- default appointments
- simplified registration
- community-based services
- social commitments
- peer support
- trusted messengers
- small incentives
- transport assistance
- personalised messages
- home visits

The objective is not to manipulate people.

It is to make healthier and more beneficial choices easier to understand and easier to act upon.

Step 4: Test Before Scaling

You have enough funding to test only two behavioural interventions.

Design a small pilot.

Specify:

- who receives the intervention;
- what happens;
- how long it runs;
- what outcome you will measure;
- how you will determine whether it worked.

The Ethical Question

A government official suggests:

"If we automatically schedule older adults for preventive appointments, most of them will attend. We don't need to give them the option to opt out prominently."

Would you support this?

Explain where you draw the line between helpful design and manipulation.

Behavioural interventions should remain sensitive to autonomy, context, equity, and unintended consequences. Testing and evaluation are particularly important because an intervention that works in one population or setting may not work in another (WHO, 2024b).

Professional Output

Prepare a Behaviour Change Brief containing:

- two priority behaviours
- barriers
- intervention design
- ethical safeguards
- evaluation plan
- decision rule for scaling

Toolkit Reference

Use Chapter 8: How to Tell a Health Story and the behavioural concepts introduced in the mission.

Task 3: Build the Workforce Before the System Needs It

Your pilot has another problem.

There are not enough people to provide the care you have designed.

The three districts currently have:

- 1,180 community health workers
- 86 nurses with formal geriatric training
- 34 social workers

- 12 physiotherapists
- 4 occupational therapists
- no dedicated long-term care case managers
- approximately 17,000 unpaid family caregivers identified through community organisations

These figures are fictional.

The Ministry of Health proposes simply hiring more nurses.

The Ministry of Finance says this is too expensive.

The Ministry of Labour argues that Negara should develop a broader care workforce, including trained community caregivers, care coordinators, rehabilitation workers, social workers, and support workers.

WHO's work on long-term care emphasises the importance of a sustainable and appropriately trained workforce, while recent WHO work on financing long-term care notes that demand for care workers will rise as populations age and family caregiving capacity changes. (WHO, 2024a, 2024b).

Your Task

Develop a five-year workforce strategy for the pilot.

Your strategy must answer:

1. How many workers are needed?

Estimate the workforce required for the three districts.

You must explain your assumptions.

Do not simply choose a number.

2. Who should provide care?

Consider a mix of:

- nurses
- community health workers
- social workers
- physiotherapists
- occupational therapists
- trained community caregivers
- volunteers
- peer supporters
- family caregivers
- case managers

3. What should each worker be able to do?

Develop a competency profile.

For example, a community caregiver might need competence in:

- basic personal care
- communication
- recognising danger signs
- falls prevention
- safeguarding
- dementia awareness
- medication support
- referral
- documentation
- caregiver communication

4. What about family caregivers?

Families cannot simply be treated as an unlimited source of unpaid labour.

Develop a support package that could include:

- training
- respite
- information
- referral support
- caregiver groups
- financial assistance
- flexible work arrangements
- psychological support

5. Can the care economy create jobs?

Consider whether training young people and other community members could create legitimate employment opportunities while addressing workforce shortages.

ADB's recent regional work identifies workforce development and community-based care as linked components of sustainable long-term care systems.

But ask a harder question:

Are you creating decent care jobs, or simply transferring unpaid care work from women to poorly paid workers?

Professional Output

Prepare a Five-Year Long-Term Care Workforce Plan containing:

1. workforce projections
2. competency requirements
3. training strategy
4. supervision model
5. recruitment strategy
6. retention strategy
7. family caregiver support
8. career progression
9. estimated workforce costs
10. monitoring indicators

Toolkit Reference

Use Chapter 5: How to Implement in the Real World.

Task 4: You Cannot Finance Everything

The most difficult meeting is with the Minister of Finance.

She has reviewed your proposal.

Her response is blunt:

"Your programme is good. Your problem is that good programmes cost money."

The government has committed a maximum of NCU 50 million over five years for the three-district pilot.

The Minister will not increase the ceiling.

She gives you three conditions:

1. The pilot must remain within the NCU 50 million ceiling.
2. Poor and vulnerable older adults must not be excluded because they cannot pay.
3. The government must have a credible pathway to finance the programme if it is expanded.

WHO's recent work on long-term care financing in low- and middle-income settings highlights the importance of financial protection and warns that when formal systems are absent, costs often shift to families and communities. It also notes that financing approaches need to reflect the structure of the labour market, particularly where informal employment is widespread (WHO, 2024a, 2024b).

The Choice

Your advisers have proposed four possible financing approaches.

Option A: General Taxation

Finance the pilot through government revenue.

Strength: broad funding base and potential for equity.

Concern: competes with other government priorities.

Option B: Social Insurance

Introduce mandatory contributions from workers and employers.

Strength: creates a dedicated financing mechanism.

Concern: Negara has a large informal workforce.

Option C: Mixed Public Financing With Modest Co-Payments

Government finances essential services while people with greater ability to pay contribute modest amounts for selected services.

Strength: can broaden resources while protecting essential care.

Concern: co-payments can discourage use and create inequity if poorly designed.

Option D: Public Financing With Strategic Partnerships

Government finances core services while selected services are supported through regulated partnerships with private, nonprofit, community, and faith-based organisations.

Strength: may expand capacity without building everything through government.

Concern: requires strong regulation and accountability.

Your Task

You must choose one primary financing model for the five-year pilot.

You may combine mechanisms, but you must identify the primary approach.

Your proposal must include:

1. expected revenue sources
2. estimated annual expenditure
3. who pays
4. who receives financial protection
5. how providers will be paid
6. how you will prevent catastrophic household spending
7. how you will protect rural and low-income populations
8. how the system could become financially sustainable if scaled nationally

Do not simply list financing mechanisms.

Make a choice.

The Political Question

The Minister of Finance asks:

"Why should I invest in long-term care today when the biggest increase in demand will happen years from now?"

Prepare a response aimed at a finance minister, not a public health conference.

You need to explain why early investment may matter for:

- household finances
- labour force participation
- women's employment
- hospital utilisation
- prevention
- workforce development
- social protection
- dignity and independence

Professional Output

Prepare a two-page Long-Term Care Financing and Investment Brief for the Cabinet.

The brief should include:

- recommended financing model
- five-year budget
- major cost categories
- equity implications
- financial protection mechanisms
- sustainability strategy
- three arguments for Cabinet approval

Toolkit Reference

Use Chapter 6: How to Navigate Stakeholders and Chapter 5: How to Implement in the Real World.

The Cabinet Decision

You have now completed the four technical components of the mission.

But the Minister tells you that the Cabinet is divided.

The Minister of Health wants the full pilot.

The Minister of Finance wants a smaller programme.

The Minister of Social Welfare wants universal access.

The Minister of Labour wants the programme to create jobs.

District governments want control over implementation.

Community organisations want local participation.

Older people's organisations want a formal role in governance.

Private providers want access to the emerging care market.

Families want support but are worried about government interference.

You have 15 minutes to present your final recommendation to Cabinet.

The Final Decision

Cabinet gives you three possible approaches.

Option 1: Start Small

Begin with a tightly targeted pilot for the highest-need older adults.

Option 2: Build the Platform

Invest more heavily in infrastructure, workforce, case management, and community systems before expanding eligibility.

Option 3: Start Broad

Offer a wider package from the beginning but provide fewer services per person.

You must recommend one.

Your decision must remain within the NCU 50 million five-year ceiling.

Your Five-Minute Cabinet Briefing

Explain:

1. What problem you are trying to solve.
2. Who should benefit first.
3. What the government should fund.
4. What communities and families should contribute.
5. What the government should not attempt yet.
6. Why your approach is financially defensible.
7. How you will know whether the pilot is working.
8. What would make you change course.

Your final sentence should answer:

What would you do if you had only one opportunity to get this reform started correctly?

Mission Reflection

The central challenge of this mission was not ageing itself.

It was the interaction between ageing, family change, workforce capacity, public finance, behaviour, health systems, and expectations about what government should provide.

Reflect on the following:

1. What was the most difficult decision you made?
2. Did you accept the Minister's assumption that ageing in place is always preferable? Why or why not?
3. Who did your proposed system serve best?
4. Who might still be left behind?
5. How did you define "need"?
6. Did your eligibility criteria unintentionally disadvantage people living in rural areas?
7. How did you account for older adults living alone?
8. What role did older adults themselves play in your design?
9. Did you treat family caregiving as a resource, a responsibility, or a potential burden?
10. How did gender influence your workforce strategy?
11. Which behavioural barrier did you find most difficult to address?
12. At what point could a behavioural nudge become manipulation?
13. Which workforce assumptions did you make?
14. Would you pay community caregivers a professional wage? Why?
15. What happens if the government cannot finance national expansion after the pilot?
16. Which financing mechanism creates the greatest equity risk?
17. Which stakeholder was most difficult to negotiate with?
18. What did you deliberately choose not to fund?
19. What unintended consequences could your model produce?
20. What information would you collect during the first year that could change your strategy?
21. Which of the six competencies did you use most heavily?
22. Which competency did you need but find least developed?
23. If you were the Minister of Finance rather than the Minister of Health, would you make the same decision?
24. What would you change if the same demographic transition were occurring in a low-income country?

Competency Debrief

This mission was deliberately designed around a problem that cannot be solved by medicine alone.

Systems Mapping

You had to see ageing as part of a wider system involving families, migration, employment, social protection, housing, health services, local government, and public finance.

Data Fluency

You had to work with demographic projections, service uptake, workforce numbers, and budget constraints while recognising that the numbers in the simulation were incomplete.

Implementation Agility

You could not design an ideal system without considering whether Negara had the people, institutions, money, transport, technology, and management capacity to operate it.

Stakeholder Navigation

You had to negotiate with ministries, district governments, families, older adults, community organisations, employers, and potential private providers.

Ethical Foresight

You had to consider who would benefit, who might be excluded, who would carry the costs, and whether apparently efficient solutions could produce new forms of inequality.

Narrative Competence

You had to explain why long-term care matters to different audiences. The argument that persuades a health minister will not necessarily persuade a finance minister, a family caregiver, or an older person.

The mission therefore asks you to move beyond the question:

"What services should older people receive?"

and toward a more difficult question:

"What kind of care system can this society sustain, and what choices are we willing to make to build it?"

Mission Summary

The Empty Nests examines one of the most predictable transformations facing health systems: population ageing.

The challenge is not simply that there will be more older people.

The deeper challenge is that the social arrangements that once supported older people are changing at the same time.

Families are smaller. People migrate. Women participate increasingly in paid employment. Health systems remain heavily oriented towards acute care. Formal long-term care is often limited. Public budgets are constrained.

The response therefore cannot be to build more hospitals and wait for the problem to arrive.

In this mission, you were asked to:

- design a community-based long-term care pilot;
- decide who should receive support first;
- integrate health and social care;

- involve older people in system design;
- test behavioural strategies;
- develop the future care workforce;
- support family caregivers;
- choose a financing model;
- protect vulnerable households from financial hardship;
- negotiate competing political interests;
- and make a final decision under a fixed budget.

The lesson is not that one model of long-term care is universally correct.

It is that ageing requires public health professionals to think ahead.

By the time a health system is overwhelmed by demand for long-term care, it is already too late to begin designing the system.

The work has to start earlier.

And it has to involve more than the health sector.

WHO's current healthy ageing framework places integrated care, long-term care, age-friendly environments, and participation of older people within a broader whole-of-society approach.

The real question for Negara is therefore not simply how to care for its older population.

It is:

What kind of society does Negara want to become as its people grow older?

Editorial note for our master manuscript

Buddy, I would treat this as the revised Mission 2 master, subject to the final reference audit.

There are three important improvements over the original:

1. The original "comprehensive national system" has become a five-year, three-district pilot with a fixed NCU 50 million ceiling. That forces genuine prioritisation instead of allowing the learner to design an unlimited ideal system.
2. The four original tasks remain, but they now build toward a single Cabinet decision. The original mission had four separate tasks followed by reflection.
3. I have deliberately avoided turning the Asian examples into models to copy. ADB's current evidence is particularly useful here because the Indonesia and Viet Nam work is explicitly about adapting community-based systems to local contexts, financing, workforce, case management, and implementation.

For the final book, I would not include the web-source notes or editorial note above. The book version should contain only the mission and its APA in-text citations, with the complete references consolidated at the end of Public Health Reimagined, exactly as we decided for Mission 1.

One reference issue should remain flagged for our final bibliography audit: the manuscript currently cites Asian Development Bank (2026) and Patil et al. (2026) for some specific claims. The ADB

2026 material is verifiable, but the Patil article should be checked against the publisher/index record before we lock the References section.

This is now much closer to the kind of mission that makes the book distinctive: not a textbook question, not a case study, but a professional decision under real constraints.

Mission 2

The Empty Nests

Learning Objectives

By the end of this mission, you will be able to:

1. Design a community-based integrated care model for an ageing population that addresses both health and social needs
2. Apply behavioural economics principles to increase uptake of preventive services among older adults
3. Project future health workforce needs and propose training strategies
4. Advocate for fiscal policy changes to support sustainable long-term care
5. Navigate stakeholder interests across health, social care, finance, and community sectors

The Scenario

You are the Director of Ageing and Health Policy in a middle-income country in Southeast Asia. Your country, which we will call Negara, has one of the fastest-ageing populations in the region. Currently, 11 percent of the population is aged 60 or older. By 2050, this figure is projected to reach 25 percent (Asian Development Bank, 2025). The demographic shift is driven by rapid declines in fertility and continued improvements in life expectancy at older ages.

The traditional family-based care system is eroding. Younger generations are migrating to cities for work, leaving older parents in rural areas or peri-urban settlements. Nuclear families are becoming the norm, and women—who have historically been the primary caregivers—are increasingly participating in the workforce. Residential care facilities are scarce, expensive, and culturally unattractive to most families (Asian Development Bank, 2025).

The health system is hospital-centric. Primary care is underdeveloped, and there is no formal long-term care infrastructure. Community health workers exist but lack training in geriatric care. Social protection programmes for older adults are fragmented, underfunded, and difficult to access. The Ministry of Health has historically focused on maternal and child health and infectious disease control—the priorities of a younger population.

You have been asked by the Minister of Health to develop a comprehensive strategy for long-term care. The Minister has read about community-based models in other countries and is convinced that "ageing in place" is the right approach. However, she is under pressure from the Ministry of

Finance to contain costs, from the Ministry of Social Welfare to ensure equity, and from the public to provide accessible services. She has given you six months to produce a plan.

Task 1: Design a Community-Based Integrated Care Model

Your first task is to design a community-based long-term care model that enables older adults to age in place. The model must be scalable, affordable, and culturally appropriate for Negara's context.

Key Questions to Consider:

- What services should be included in a community-based long-term care package? Consider health services, social services, and support for caregivers.
- How will you integrate health and social care, which are currently delivered by different ministries and agencies?
- What role should community health workers play? What additional training would they need?
- How will you identify older adults most in need of support? What screening and assessment tools will you use?
- How will services be coordinated across different providers and levels of care?
- What is the role of technology in service delivery, coordination, and monitoring?

Evidence and Examples to Draw Upon:

Several countries in Asia have developed innovative community-based long-term care models that offer valuable lessons.

Indonesia's Community Care Hubs

In Indonesia, which faces a similar demographic trajectory, pilot projects established community care hubs at the village level. These hubs connected older people and their caregivers to government-run community health clinics through appointed case managers. They provided active ageing activities, information and referral, and care and support, including home care visits (Asian Development Bank, 2025). The case management system made services more efficient and accessible, linking older adults with primary care providers, community health stations, social centres, and women's groups. The model built on existing community assets, including the country's robust cadre of community health volunteers (Asian Development Bank, 2025).

Viet Nam's Intergenerational Self-Help Clubs

Viet Nam, which is ageing the fastest among the three pilot countries studied, has a wide network of Intergenerational Self-Help Clubs and a strong volunteer culture in services for seniors. Pilot projects developed a case management system that linked local health services through appointed case managers with community organisations. Teams conducted home visits and health checks, provided support in accessing benefits, and mobilised community and local government resources to meet specific needs (Asian Development Bank, 2025).

India's Vriddha Mitra Programme

In India, where 20 percent of the population is projected to be aged 60 or older by 2050, the Vriddha Mitra programme trains local youth as "Friends of Older People" who deliver home-based essential care. The programme uses the World Health Organization's Integrated Care for Older People framework, which emphasises six domains of functional ability: mobility, cognitive function, psychological wellbeing, vitality, sensory function, and continence (Patil et al., 2026). Each community officer manages a cohort of approximately 300 to 400 older adults, classified by care intensity. Services include home health visits, social protection linkages, facilitation for social security and insurance, physiotherapy, and referrals (Patil et al., 2026).

Key Design Principles

International evidence and experience show that enabling older persons to remain in familiar environments enhances their social, economic, and physical wellbeing. Community-based care encourages intergenerational interaction and promotes social inclusion, reducing risk factors for depression, cognitive decline, and dementia (Asian Development Bank, 2026). Successful models share common features:

Integration of health and social care – addressing both medical and social needs

Case management – creating individualised care plans and coordinating services

1. Active ageing initiatives – promoting physical activity, social engagement, and lifelong learning

Capacity building – training both formal and informal caregivers

2. Community engagement – involving local organisations, volunteers, and older people themselves
3. Digital technology – for case management, data collection, and communication, while recognising constraints of connectivity and digital literacy (Asian Development Bank, 2025)

Your Task:

Using these examples and principles, design a community-based long-term care model for Negara. Your proposal should include:

1. A description of the core services to be provided
2. The governance and coordination structure
3. The workforce model, including roles, training, and supervision
4. The screening and assessment process
5. The technology strategy
6. A phased implementation plan

Toolkit Reference: Refer to Chapter 3: How to Map a System for guidance on stakeholder mapping and systems thinking, and Chapter 5: How to Implement in the Real World for guidance on adaptation and scaling.

Task 2: Apply Behavioural Economics to Increase Uptake of Preventive Services

A major challenge in ageing populations is low uptake of preventive services. Many older adults do not see themselves as "old" or "at risk" until they experience a health crisis. They may be reluctant to seek help, uncertain about what services are available, or distrustful of government programmes.

Behavioural economics offers insights into how to design interventions that "nudge" people towards healthier choices without restricting their freedom (Thaler & Sunstein, 2008). Research suggests that older adults are a group that may particularly benefit from support through nudges, though nudge theories for this population are not yet fully developed (Japanese Society for Healthcare Administration, 2025).

Evidence on Nudging Older Adults

A randomised controlled trial in Abu Dhabi tested a low-cost nudge to promote physical activity among seniors. The "Forever Fit" nudge—a booklet containing a simple exercise programme and information about health benefits—increased physical activity among previously inactive participants from about 5 to about 15 minutes per day (Nikiforakis et al., 2025). This was achieved without personal interaction, making it easier to scale.

A study in Japan established a tablet usage environment within a residential community for older adults and tested two types of nudge messages: messages emphasising deadlines and potential losses, and commitment nudges. The effects varied according to the characteristics of the nudge, suggesting that behavioural economics theories may be applicable to older adults, including the oldest age groups (Japanese Society for Healthcare Administration, 2025).

A pharmacy-based intervention called Senior Safe used shelf signage, product repositioning, and patient engagement to nudge safer choices among older adults. The intervention increased sales of safer products while decreasing sales of high-risk products, demonstrating that nudges can influence consumer behaviour without compromising business models (Mai et al., 2026).

Behavioural Barriers to Uptake

Consider these behavioural barriers that may affect uptake of preventive services among older adults:

Present bias – prioritising immediate comfort over future health benefits

Status quo bias – preferring to maintain current routines, even if suboptimal

- Loss aversion – fearing the loss of independence more than valuing potential health gains

Optimism bias – believing that health problems happen to others, not oneself

Social norms – following what peers do, which may not be healthy

Complexity aversion – avoiding programmes that seem complicated or bureaucratic

Your Task:

Design a behavioural strategy to increase uptake of preventive services among older adults in Negara. Your strategy should include:

1. Identification of the key behaviours you want to change (e.g., attending health screenings, taking up physical activity, accessing social support)
2. Analysis of the behavioural barriers to these behaviours
3. Specific nudge interventions to address each barrier
4. A plan for testing and evaluating the nudges
5. Consideration of ethical issues (e.g., autonomy, manipulation, equity)

Toolkit Reference: Refer to Chapter 8: How to Tell a Health Story for guidance on framing messages for different audiences.

Task 3: Project Workforce Needs and Propose Training Strategies

The long-term care workforce is the backbone of any community-based system. Yet most countries face severe shortages of trained caregivers. The situation is particularly acute in middle-income countries like Negara, where the health workforce is already stretched.

Workforce Challenges

Caregiving is often undervalued and poorly compensated. In many settings, family members are the primary caregivers, but they lack training and support. Nongovernment and faith-based organisations also provide care, but there are not enough carers to serve the growing number of seniors (Asian Development Bank, 2025). Community health workers may be available but lack geriatric expertise.

Digital technology offers some solutions, but its use is constrained by gaps in rural connectivity and low digital literacy among older persons (Asian Development Bank, 2025). Training adapted to local contexts is essential, providing care providers, social workers, volunteers, and community groups with the necessary knowledge and skills (Asian Development Bank, 2025).

The Care Economy Opportunity

Community-based care also creates jobs and business opportunities in caregiving, transportation, and support services (Asian Development Bank, 2026). Training young people as professional caregivers can provide livelihood pathways while addressing workforce shortages. The Vriddha Mitra Academy in India has trained over 350 youth in elderly care, contributing to both improved service delivery and the professionalisation of caregiving as a livelihood pathway within the emerging care economy (Patil et al., 2026).

Your Task:

Develop a workforce strategy for Negara's community-based long-term care system. Your strategy should include:

1. Estimation of the number of caregivers needed at different stages of implementation
2. Analysis of the skills and competencies required
3. A training curriculum for formal caregivers
4. A plan for supporting and training informal caregivers (family members)
5. Strategies for recruitment, retention, and career progression
6. Consideration of how technology can support the workforce (e.g., through case management tools)
7. Financing mechanisms for workforce development

Toolkit Reference: Refer to Chapter 5: How to Implement in the Real World for guidance on training and capacity building.

Task 4: Advocate for Fiscal Policy Changes

Long-term care is expensive. In Negara, as in most countries, health financing is primarily focused on acute care. There is no dedicated funding stream for long-term care, and social protection programmes are fragmented and underfunded.

International Approaches

Singapore provides an instructive case study of policy reform. Historically, Singapore's health policies were rooted in a neoliberal ethos that emphasised individual responsibility, family support, and limited state welfare (Gostin & Wiley, 2020). However, as the population aged, this model became increasingly untenable. The CareShield Life reform replaced an optional, inadequate insurance scheme with a compulsory long-term care insurance programme for all citizens over 30, regardless of pre-existing disability (Gostin & Wiley, 2020). The scheme provides fixed monthly cash benefits, removes the cap on payout duration, and ensures that benefits increase over time to reflect inflation.

Singapore's approach demonstrates that even market-oriented systems can evolve in the face of ageing demographics. However, questions remain about the adequacy of coverage in the context of rising chronic disease and long-term care costs (Gostin & Wiley, 2020). The move toward community care also introduces logistical and quality challenges.

Financing Options to Consider

Social insurance – mandatory contributions from workers and employers

General taxation – funding from government revenue

Out-of-pocket payments – user fees, which may be inequitable

Catastrophic health insurance – protecting against high-cost events

Provider payment reforms – shifting from fee-for-service to value-based payment

- Public-private partnerships – leveraging private sector resources while maintaining public oversight

Your Task:

Develop a financing strategy for Negara's community-based long-term care system. Your strategy should include:

1. Estimation of the total cost of the proposed system
2. Options for revenue generation (e.g., social insurance, general taxation, co-payments)
3. Analysis of the equity implications of each option
4. A proposal for provider payment mechanisms that incentivise quality and efficiency
5. A plan for financial sustainability over the long term
6. An advocacy strategy for gaining political support for your proposal

Toolkit Reference: Refer to Chapter 6: How to Navigate Stakeholders for guidance on advocacy and coalition building.

Mission Reflection

You have now worked through the four tasks of Mission 2. This mission required you to design a comprehensive community-based long-term care system, apply behavioural insights to increase uptake, address workforce challenges, and advocate for fiscal policy changes.

Take some time to reflect on the following questions:

1. What was the most difficult trade-off you had to make in designing the community-based care model? Why?
2. How did you balance the need for a comprehensive system with the reality of limited resources?
3. Which stakeholders would be most opposed to your proposals? How would you address their concerns?
4. How did you ensure that your model addresses equity, particularly for older adults in rural areas, those with low incomes, and those with disabilities?
5. What role should older adults themselves play in designing and governing the system?

6. How would your proposals differ if Negara were a high-income country rather than a middle-income country?
7. What is the role of technology in your model? What are the risks of over-reliance on technology?

Mission Summary

Mission 2 introduced you to the complex challenge of developing long-term care systems for rapidly ageing populations. You were required to:

- Design a community-based integrated care model drawing on international examples from Indonesia, Viet Nam, and India
- Apply behavioural economics principles to increase uptake of preventive services
- Project workforce needs and propose training strategies
- Advocate for fiscal policy changes to support sustainable long-term care financing

These tasks required the integration of multiple competencies: systems mapping, implementation agility, stakeholder navigation, and narrative competence. The mission demonstrated that ageing is not just a health issue—it is a social, economic, and political challenge that demands cross-sectoral thinking and action.

Mission 3

The Digital Diagnosis

Learning Objectives

By the end of this mission, you will be able to:

1. Evaluate the performance of an AI-enabled clinical tool across different patient populations and health system settings.
2. Identify algorithmic bias, data limitations, infrastructure constraints, and risks that may affect patient safety.
3. Decide whether and under what conditions an AI tool should be deployed, modified, restricted, or withdrawn.
4. Design an implementation and monitoring strategy for AI in a resource-constrained health system.
5. Develop practical requirements for algorithmic accountability, data governance, and clinical responsibility.
6. Communicate uncertainty, limitations, and risk to patients, health workers, policymakers, and communities.
7. Apply ethical foresight to decisions involving technology, equity, safety, privacy, and power.

The Scenario

You are the Director of Digital Health Innovation in a large and diverse country in sub-Saharan Africa.

The Ministry of Health has entered into a partnership with an international technology company to introduce an artificial intelligence system that analyses photographs of skin lesions and identifies lesions that require further clinical assessment.

The system was developed and trained primarily using data from a high-income country. It has been promoted as a way to extend access to specialist expertise, particularly in rural areas where dermatologists are scarce.

The government has completed an initial three-month pilot involving eight facilities:

- Five urban hospitals
- Three rural primary care clinics

The pilot was intended to answer a simple question:

Can this technology safely extend specialist diagnostic support to people who currently have limited access to it?

The preliminary results have complicated that question.

Table M3.1

Preliminary Pilot Findings

Indicator	Overall	Urban hospitals	Rural clinics
Sensitivity for target lesions	89%	93%	78%
Sensitivity among darker-skinned patients	62%	68%	51%
Images successfully processed	91%	98%	60%
Unnecessary referrals reported by clinicians	Moderate	Moderate	High
Frequent connectivity problems	Low	Low	High

These figures are fictional scenario data created for this simulation.

The situation becomes more concerning when clinicians examine individual cases.

Community health workers report that the system frequently flags common local skin conditions, including post-inflammatory hyperpigmentation and fungal infections, as suspicious lesions. Some patients are being referred unnecessarily, increasing travel costs and anxiety.

At the same time, a number of lesions that clinicians consider concerning receive low-risk scores from the system.

In one rural clinic, a community health worker photographed a child's skin lesion. The system returned an error and provided no useful assessment.

The problem is therefore not simply that the algorithm may be biased.

The technology also depends on:

- smartphone quality
- lighting
- internet connectivity
- image quality
- health worker training
- clinical interpretation
- referral pathways
- availability of specialists
- patient trust
- data governance

The Ministry of Finance is pushing for national expansion because the government has already signed a partnership agreement with the technology company.

The technology company argues that the system performs within acceptable parameters and maintains that further improvement can occur after national deployment.

The Ministry of Health is concerned about patient safety and equity.

A senior dermatologist has publicly questioned the system's performance on darker skin.

Community leaders in several rural areas are asking why their communities are being used to test technology developed elsewhere.

The media is asking a difficult question:

If the government knows that the system performs worse for some patients, why is it still using it?

You have been asked to provide a recommendation to the Minister of Health.

The Central Decision

You have four options:

Option A: Scale nationally

Proceed with national deployment while continuing to improve the system during implementation.

Option B: Continue with restricted deployment

Use the system only in settings and populations where minimum safety and performance thresholds are demonstrated.

Option C: Pause and modify

Suspend clinical use while the system undergoes local validation, technical improvement, and independent review.

Option D: Withdraw

Terminate the deployment because the current risks are unacceptable.

There is no automatic correct answer.

Your task is to determine which option is most defensible given the evidence, uncertainty, available resources, and potential consequences of both action and inaction.

Task 1: Read the Algorithm Before You Trust It

Your first task is to determine whether the available evidence is sufficient to support clinical deployment.

The headline figure is an overall sensitivity of 89%.

That sounds impressive.

But you have already learned that the overall figure hides substantial differences between groups and settings.

A system can perform well on average while performing poorly for a population that already experiences barriers to care.

Research on dermatology AI has demonstrated the importance of evaluating systems using diverse skin tones and disease presentations. For example, the Diverse Dermatology Images dataset showed substantial limitations in the ability of AI systems to recognise conditions represented less frequently in training data, particularly among darker skin tones. Local validation and appropriate representation can improve performance, but performance in one setting cannot simply be assumed to transfer to another. (Daneshjou et al., 2022)

More recent research continues to highlight the importance of dataset transparency and evaluation across skin tones when assessing dermatology AI systems. (Li et al., 2025)

Do Not Accept the 89% Figure at Face Value

Before making a recommendation, determine what you still need to know.

You should ask:

- How many patients were included?
- How many had darker skin?
- How many lesions were actually confirmed as clinically important?
- What is the specificity?
- What are the false-negative and false-positive rates?
- What are the positive and negative predictive values?
- Were the same thresholds used across groups?
- Who established the reference diagnosis?
- Were diagnoses independently confirmed?
- How many images failed because of technical problems?

- Were patients with poor-quality images excluded from the analysis?
- Were children included in the original training data?
- How representative were the training data of the local population?
- How does performance vary by facility?
- How does performance vary by device?
- How does performance change when connectivity is poor?

Your Task

Prepare an AI Performance and Equity Assessment.

Your assessment must:

1. Interpret the available performance data.
2. Identify important disparities.
3. Distinguish algorithmic errors from infrastructure failures.
4. Identify missing information that prevents a complete safety assessment.
5. Identify the populations at greatest risk.
6. Explain the consequences of false negatives and false positives.
7. Decide whether the existing evidence is sufficient for national scale-up.
8. Recommend immediate safeguards while further evidence is collected.

A Critical Question

Can an overall accuracy or sensitivity figure ever be enough to justify deployment of a clinical AI system? Why or why not?

Professional Deliverable

AI Performance and Equity Assessment

Prepare a 1,000 to 1,500 word technical brief for the Minister of Health.

Your brief should end with one of the four decisions:

Scale, Restrict, Pause and Modify, or Withdraw.

You must justify your choice.

Toolkit Reference

Refer to Chapter 4: How to Read Data Like a Practitioner for guidance on interrogating performance data and uncertainty.

Refer to Chapter 7: How to Think Ethically Under Pressure for risk-benefit and equity considerations.

Task 2: Redesign the Deployment

Suppose you decide that the technology should not simply be abandoned.

The next question is:

What would responsible deployment actually look like?

The Ministry has given you 12 months to redesign the programme.

You have a limited budget and cannot simultaneously upgrade every facility, retrain every health worker, collect every type of local data, and provide specialist services everywhere.

You must therefore make choices.

Your Redesign Must Address Five Problems

1. Population equity

How will you ensure that people with darker skin are not exposed to greater diagnostic risk?

2. Geographic equity

How will the system work in rural facilities with weak connectivity and limited equipment?

3. Clinical safety

What happens when the AI and the health worker disagree?

4. Human capacity

Who is responsible for reviewing AI-supported assessments?

5. Local adaptation

How will local clinical knowledge and locally relevant data contribute to improving the system?

Evidence from AI research suggests that performance can be affected by differences between development data and the populations and environments in which systems are eventually deployed. This makes local validation and continuous evaluation important components of responsible implementation. (Daneshjou et al., 2022; Li et al., 2025)

Deployment Options

You may choose to:

- limit deployment to facilities with adequate infrastructure
- establish specialist review hubs
- introduce a store-and-forward model for facilities without reliable connectivity
- require human review of every high-risk or uncertain case
- establish minimum image-quality requirements
- retrain or fine-tune the system using appropriately governed local data
- establish separate performance thresholds for different populations or settings

- suspend use for groups or conditions where safety has not been demonstrated
- create a formal pathway for reporting AI errors
- establish patient and community feedback mechanisms

But you cannot simply write:

"Improve the algorithm."

You must explain who will do what, with what resources, by when, and how success will be measured.

Your Task

Develop a 12-month responsible deployment plan.

Your plan must specify:

1. Where the system will be used.
2. Where it will not be used.
3. Minimum infrastructure requirements.
4. Clinical oversight requirements.
5. Health worker training.
6. Referral arrangements.
7. Local validation requirements.
8. Data collection and governance.
9. Community engagement.
10. Monitoring indicators.
11. Conditions that would trigger suspension.
12. Conditions required before expansion.

Professional Deliverable

Responsible AI Deployment Plan

Prepare a two-page implementation plan containing:

- objectives
- priority settings
- implementation phases
- responsible actors
- resource requirements
- clinical safeguards
- equity safeguards

- monitoring indicators
- expansion criteria
- suspension criteria

Key Question

Should an AI system be deployed first where it performs best, or first where the health need is greatest?

Your answer should explain the ethical and practical consequences of your choice.

Toolkit Reference

Refer to Chapter 5: How to Implement in the Real World for adaptation and implementation.

Refer to Chapter 6: How to Navigate Stakeholders for partnership and community engagement.

Task 3: Who Is Responsible When the Algorithm Is Wrong?

The technology company currently controls the software.

The government controls the health system.

Clinicians make the final clinical decisions.

Patients provide the data.

The situation creates a difficult question:

When an AI-supported decision harms a patient, who is responsible?

The country currently has no comprehensive regulatory framework specifically governing AI in healthcare.

You have been asked to develop an interim national framework that can be implemented before the technology is expanded.

Your framework should not attempt to regulate every form of artificial intelligence.

It should focus specifically on AI used in clinical decision-making and diagnosis.

Your Regulatory Framework

Develop requirements covering at least the following:

1. Risk classification

Classify AI systems according to their potential for harm.

For example:

- low clinical risk
- moderate clinical risk
- high clinical risk
- unacceptable use

Explain why a diagnostic system belongs in a particular category.

2. Pre-deployment validation

Specify what evidence must exist before a clinical AI system can be introduced.

Consider:

- local validation
- demographic diversity
- clinical performance
- infrastructure testing
- independent assessment
- cybersecurity
- usability

3. Transparency

What must the technology company disclose?

Consider:

- training data characteristics
- known limitations
- performance by subgroup
- intended use
- prohibited uses
- model updates
- known failure modes

4. Human oversight

Define when a health worker or clinician must review an AI output.

5. Incident reporting

Create a process for reporting:

- false negatives
- false positives
- system failures
- unsafe recommendations
- data breaches
- unexpected performance differences

6. Data governance

Address:

- consent
- ownership
- storage
- cross-border transfer
- secondary use
- commercial use
- benefit sharing
- deletion
- community interests

7. Liability

Define responsibility among:

- technology companies
- health facilities
- clinicians
- government agencies
- other relevant actors

8. Independent oversight

Propose an independent mechanism for reviewing high-risk systems.

9. Continuous monitoring

Approval should not mean permanent approval.

Specify when the system must be reassessed.

10. Enforcement

Specify what happens when requirements are violated.

Possible measures include:

- corrective action
- financial penalties
- mandatory investigation
- temporary suspension
- withdrawal of approval

- termination of procurement contracts

The Power Problem

There is another issue.

The technology company has lawyers, engineers, data scientists, investors, and international experience.

The Ministry has limited technical capacity and is negotiating with a company that wants to protect its commercial interests.

Your regulatory framework therefore needs to address not only technical risk but also power.

A 2025 review of AI applications in the Global South identified infrastructure limitations, biased datasets, and limited local expertise as important barriers to equitable implementation. The authors emphasised the need for more balanced partnerships and local capacity development. (Hussain et al., 2025)

Professional Deliverable

National Clinical AI Accountability Framework

Prepare a three-page policy framework containing:

1. risk classification
2. approval requirements
3. transparency requirements
4. bias and equity requirements
5. data governance
6. clinical oversight
7. liability
8. incident reporting
9. independent review
10. monitoring
11. enforcement
12. procurement requirements

The Procurement Clause

Add five clauses that you would require in the government's contract with the technology company.

At least one clause must address:

- access to performance data
- local capacity building
- data use
- independent auditing

- termination of the contract if safety requirements are not met

This is important because public health professionals often encounter governance problems after contracts have already been signed.

Your task is to think about accountability before the next contract is signed.

Toolkit Reference

Refer to Chapter 7: How to Think Ethically Under Pressure for procedural justice, responsibility, and accountability.

Task 4: The Trust Test

The technical debate has now become a public debate.

Community leaders are asking:

"Why should our people trust a machine trained somewhere else?"

Some patients believe the system is being used because the government does not want to invest in rural specialists.

Others believe the technology could improve access to care.

Health workers are divided.

Some see AI as a useful support tool.

Others worry that the technology will eventually replace them.

The technology company wants reassuring messages.

The Minister wants the controversy to disappear.

You disagree.

You believe the public should be told what is known, what is uncertain, and what the government is doing about the risks.

Your Task

Develop a 30-day public communication and engagement strategy.

Your strategy must address six audiences:

1. patients
2. community leaders
3. community health workers
4. clinicians
5. journalists
6. policymakers

For each audience, identify:

- the main concern
- the key message

- the appropriate communication channel
- who should deliver the message
- what evidence should be provided
- how feedback will be collected

Explain the Algorithm Without Hiding Behind Technical Language

Write a 100-word explanation of algorithmic bias that could be understood by a patient with no technical background.

Then explain the current problem with the system in plain language.

Do not use terms such as "machine learning model," "distribution shift," or "classification error" unless you explain them.

The Hardest Communication Decision

The company asks you not to mention the 62% sensitivity figure because it could "undermine confidence."

The Minister asks whether the figure can be presented without mentioning the population to which it applies.

You must decide what to disclose.

Explain your decision.

Professional Deliverable

AI Risk Communication and Community Engagement Strategy

Prepare:

- a 30-day communication plan
- three audience-specific messages
- one community radio statement
- one press statement
- five journalist questions and answers
- one community meeting agenda
- one explanation of algorithmic bias in plain language
- one statement explaining the 62% sensitivity finding

Key Question

Does transparency about a technology's limitations weaken public trust, or can honesty become the foundation of trust?

The 72-Hour Decision

The Minister calls you at 8:00 a.m.

A national newspaper is preparing a major story about the AI system.

The technology company wants the government to announce nationwide expansion.

Three rural health facilities have asked to stop using the system.

Two urban hospitals want to continue.

The Minister wants your recommendation by the end of the day.

You have 72 hours to prepare the government's position.

You cannot wait for perfect evidence.

You must decide what should happen now while also specifying what evidence is needed before the next decision.

Choose One

A. Scale

Proceed with national expansion.

B. Restrict

Continue only in facilities that meet defined safety and infrastructure requirements.

C. Pause and Modify

Suspend clinical deployment while local validation, technical improvement, and independent review occur.

D. Withdraw

Terminate the programme.

Your Final Cabinet Brief

Prepare a five-minute briefing for the Minister of Health.

Your briefing must answer seven questions:

1. What is wrong with the current system?
2. Who is most at risk?
3. What are the consequences of continuing deployment?
4. What are the consequences of stopping deployment?
5. What should happen during the next 12 months?
6. What should the government require from the technology company?
7. What decision are you recommending today?

You must distinguish clearly between:

What we know

What we do not know

What we believe is likely

What we should do despite uncertainty

That distinction is central to professional judgement.

Mission Reflection

Take time to reflect on the decisions you made.

1. Did the 89% overall sensitivity initially influence your judgement too strongly?
2. When did the subgroup data change your assessment?
3. What information did you wish you had before making your decision?
4. How did you weigh false negatives against false positives?
5. Who bears the greatest risk if the technology is wrong?
6. Who benefits most if the technology works?
7. Did your decision treat rural and urban populations equitably?
8. Should a technology be held to the same performance standard in every population?
9. What should happen when a technology performs well overall but poorly for a vulnerable group?
10. Should the absence of an alternative justify deploying an imperfect technology?
11. Who should have the final authority over whether an AI tool is used?
12. What responsibilities should remain with clinicians?
13. What responsibilities should belong to the technology company?
14. How should patients be informed that AI has contributed to their assessment?
15. Should patients have the right to refuse AI-supported assessment?
16. Who should own health data used to improve an AI system?
17. What does meaningful benefit sharing look like?
18. How might your decision change if the system were developed by a local African company?
19. How might your decision change if the system were the only available diagnostic support in a remote district?
20. What would make you suspend the system after deployment?
21. Did pressure from the Ministry of Finance influence your decision?
22. How did you communicate uncertainty without creating unnecessary fear?
23. What did this mission reveal about the relationship between technology and health equity?

24. What should public health professionals know about AI before they participate in technology procurement?

Competency Debrief

This mission brings together all six competencies.

Systems Mapping

You had to recognise that the algorithm was only one part of a larger system involving data, devices, connectivity, health workers, specialists, patients, referral pathways, regulation, procurement, and trust.

Data Fluency

You had to look beyond the headline performance figure and interrogate subgroup performance, missing information, uncertainty, and the consequences of different types of error.

Implementation Agility

You had to redesign deployment around real-world constraints rather than assuming that a technology developed elsewhere would automatically work in every setting.

Stakeholder Navigation

You had to work with government, technology companies, clinicians, community leaders, health workers, patients, and the media, each with different interests.

Ethical Foresight

You had to consider both the harm caused by deploying an unsafe system and the harm caused by withholding potentially useful technology from communities with limited access to specialists.

Narrative Competence

You had to explain a technically complicated problem to people who do not speak the language of algorithms, while remaining honest about uncertainty.

Mission Summary

The Digital Diagnosis asks a question that public health professionals will increasingly face:

Just because we can deploy a technology, does that mean we should?

AI can expand access to expertise, support health workers, improve efficiency, and help identify disease.

But technology does not automatically produce equity.

A system can perform well in one population and poorly in another. It can be technically sophisticated but unusable where electricity or connectivity is unreliable. It can increase access while also increasing unnecessary referrals. It can support clinical judgement or quietly undermine it.

The challenge is therefore not simply to decide whether AI is good or bad.

The challenge is to determine:

Where should it be used?

For whom?

Under what conditions?

With what safeguards?

Who is accountable when it fails?

Who benefits from the data?

And who gets to decide?

The most important lesson from this mission is that responsible AI deployment is not a technology project alone.

It is a health system decision.

And ultimately, it is a question of justice.

Mission 4

The Climate Displacement Crisis

Learning Objectives

By the end of this mission, you will be able to:

1. Design an emergency health response for a large displaced population under severe resource constraints.
2. Identify the health consequences of displacement across communicable disease, noncommunicable disease, nutrition, maternal and child health, mental health, protection, and continuity of care.
3. Design a coordinated response involving government, humanitarian agencies, local authorities, communities, and host populations.
4. Make ethical resource allocation decisions when displaced and host communities compete for limited services and supplies.
5. Develop a health protection strategy that addresses both immediate displacement and longer-term resettlement.
6. Integrate climate adaptation and health system resilience into recovery planning.
7. Design community-based mental health and psychosocial support for displaced populations and affected host communities.
8. Apply systems mapping, implementation agility, stakeholder navigation, ethical foresight, and narrative competence to a complex displacement crisis.

The Scenario

You are the Director of Emergency Health Response in a coastal region of a low-income country in South Asia.

For five years, the region has experienced increasingly severe cyclones, coastal flooding, and saltwater intrusion.

Three weeks ago, another major cyclone struck.

The storm destroyed homes, health facilities, roads, schools, agricultural land, and local businesses across three coastal districts.

An estimated 200,000 people have been displaced.

Approximately 120,000 people are currently living in 45 temporary camps. The remaining displaced population is staying with relatives, in schools, religious buildings, unfinished structures, and other informal locations.

The camps vary greatly in size. Some contain only a few hundred people. The largest contains more than 10,000.

The immediate health situation is deteriorating.

Clean water is inadequate in several camps.

Sanitation facilities are insufficient.

Health facilities in the affected area are damaged or inaccessible.

Patients who were receiving treatment for diabetes, hypertension, tuberculosis, epilepsy, HIV, and other chronic conditions have lost access to medicines and follow-up care.

Cases of acute diarrhoea are increasing.

Health workers are reporting suspected cholera cases.

Children are presenting with dehydration and respiratory infections.

Pregnant women are struggling to access antenatal and delivery services.

Reports of gender-based violence have increased.

Community leaders report increasing anxiety, grief, family conflict, and hopelessness.

Health workers are exhausted.

The crisis is no longer simply an emergency shelter problem.

It is becoming a health system crisis.

WHO's evidence review on climate change, migration, and displacement identifies disruption of health services, worsening disease burdens, waterborne disease risks, and challenges to continuity of care among the major health consequences of climate-related displacement. The review also emphasises that responses need to become more inclusive, coordinated, and climate resilient rather than remaining purely reactive. (World Health Organization, 2024, 2025)

The Host Community Problem

There is another problem.

The camps are not isolated from the surrounding population.

The host communities are also poor.

Local health facilities were already overcrowded before the cyclone.

Now displaced people are seeking treatment there as well.

The district hospital has:

- 60 inpatient beds
- 14 functioning oxygen concentrators
- 3 ambulances
- 2 functioning operating theatres
- 1 laboratory capable of basic microbiology
- 6 medical officers
- 18 nurses
- limited stocks of essential medicines

Before the disaster, the hospital was already operating close to capacity.

The government has received emergency supplies, but not enough to meet all projected needs.

A decision must therefore be made about how resources will be distributed.

Some officials argue that displaced people should receive priority because they have lost everything.

Others argue that host communities should not lose access to services simply because they remained in their homes.

Community leaders are becoming angry.

One host community leader tells you:

"We did not cause this disaster. Why should our children lose their medicines because people from another district have arrived here?"

A displaced community representative responds:

"We did not choose to leave our homes. We have lost everything. Are we supposed to compete with people who still have houses?"

You realise that the health response could become a source of conflict if it is not designed carefully.

The Central Decision

The Prime Minister's Office gives you one week to present a response plan.

But the instruction is different from a conventional emergency plan.

You are told:

"Do not simply tell us what everyone needs. Tell us what we should prioritise when we cannot provide everything to everyone."

Your plan must protect displaced people.

It must also avoid creating unnecessary harm to host communities.

And it must work with limited money, limited staff, damaged infrastructure, and uncertain information.

The central question is:

Who gets protected when resources are limited?

A second question follows:

How do you build a response that protects people today without creating another crisis tomorrow?

Task 1: Build the Emergency Health System

Your first responsibility is to stabilise the health situation in the 45 camps.

You do not have enough staff to operate a fully staffed health centre in every camp.

You therefore need to design a networked emergency health system.

The response must include both camp-based services and links to the existing health system.

The Sphere Handbook provides internationally recognised minimum humanitarian standards across health, WASH, shelter and settlement, food security, and nutrition. It also emphasises participation, protection, dignity, and context-sensitive application of standards.

The Health System You Must Design

Your system should include:

Essential services

Determine which services must be available immediately:

- emergency care
- maternal and newborn care
- child health
- communicable disease management
- chronic disease care
- essential medicines
- nutrition screening and treatment
- sexual and reproductive health
- mental health and psychosocial support
- injury management
- health promotion
- referral services

You must distinguish between:

services that must be available in every camp

and

services that can be provided through referral hubs.

Human resources

You have:

- 24 government doctors
- 58 nurses
- 34 community health workers
- 18 midwives
- 6 pharmacists
- 4 laboratory technicians
- 3 mental health professionals
- 2 public health officers

International organisations can provide additional personnel, but you cannot assume that international staff will remain indefinitely.

Referral

Design a referral network connecting:

Camp → Primary health point → Referral hub → District hospital → Regional specialist care

Specify:

- referral criteria
- transport arrangements
- emergency referral procedures
- communication between facilities
- patient records
- follow-up after referral

Disease surveillance

Design an early warning system capable of detecting:

- acute diarrhoeal disease
- suspected cholera
- measles
- respiratory outbreaks
- malaria or other locally relevant vector-borne diseases
- malnutrition
- unusual clusters of illness

The system must work even where digital connectivity is poor.

WASH

Your plan must address:

- water access
- sanitation
- hand hygiene
- waste management
- drainage
- vector control
- menstrual hygiene
- safe food handling

Do not simply write "meet humanitarian standards."

Identify the minimum operational actions that must occur in the first 72 hours.

The First 72 Hours

You have enough resources to implement only three major health system interventions immediately.

Choose three:

1. Emergency primary health posts
2. Mobile medical teams
3. Cholera and diarrhoeal disease control
4. Maternal and newborn services
5. Essential medicine distribution
6. Chronic disease medication replacement
7. Nutrition screening and treatment
8. Mental health and psychosocial support
9. Health surveillance and early warning
10. WASH improvement

You may not choose everything.

Explain what you are deliberately delaying and why.

Professional Deliverable

72-Hour Emergency Health Response Brief

Prepare a two-page operational brief containing:

- priorities

- service delivery model
- staffing
- referral system
- surveillance
- WASH priorities
- vulnerable population measures
- three immediate interventions
- five indicators for the first 72 hours

Task 2: The Resource Allocation Table

You now face the most difficult part of the mission.

The Ministry of Health has received an emergency shipment containing:

- 100,000 units of essential medicine
- 40,000 litres of emergency water treatment supplies
- 20 mobile health kits
- 10 additional ambulances
- 15,000 nutrition treatment units
- limited maternal health supplies
- limited chronic disease medicines

There is not enough for all communities.

The Ministry of Finance tells you:

"We need a defensible allocation system. If you cannot explain why one group receives something before another, we cannot defend the decision publicly."

You must develop an allocation framework.

The Populations You Must Consider

Your framework must explicitly consider:

- displaced children
- pregnant women
- people with disabilities
- older adults
- people with chronic diseases
- people with acute illness
- people with severe mental health needs

- survivors of gender-based violence
- unaccompanied or separated children
- people without identity documents
- host-community residents
- frontline health workers

Your Task

Develop five allocation principles.

For each principle, explain:

- what it means
- why it matters
- how it would affect resource allocation

Then create a simple decision matrix using:

Urgency

Risk of serious harm

Vulnerability

Ability to access alternatives

Population-level consequences

Do not assume that vulnerability automatically means first priority.

Explain your reasoning.

The Host Community Challenge

The government proposes two options.

Option A: Separate Services

Create dedicated services for displaced populations while maintaining existing services for host communities.

Option B: Integrated Services

Use the existing health system for both populations and strengthen services in areas hosting large numbers of displaced people.

You may recommend a third model if you can justify it.

Your Task

Choose your model.

Explain:

1. How it protects displaced people.
2. How it protects host communities.
3. How it affects health worker workload.
4. How it affects equity.
5. How it affects social cohesion.
6. How it can be financed.
7. What could go wrong.

Professional Deliverable

Equitable Resource Allocation Framework

Prepare a two-page framework that could be used by district health officials when resources are scarce.

Task 3: The Coordination Table

The Prime Minister has now created an emergency coordination committee.

But everyone wants something different.

Stakeholder	Main concern
Ministry of Health	Disease control and clinical services
Disaster Management Agency	Shelter, logistics and immediate relief
Ministry of Water	Water supply and sanitation
Ministry of Agriculture	Food production and agricultural recovery
Ministry of Transport	Roads and movement of supplies
Ministry of Finance	Cost and fiscal sustainability
Ministry of Social Welfare	Protection and social assistance
Local government	Pressure on local services
Humanitarian organisations	Rapid delivery and accountability
Host communities	Access to services and resources

Displaced communities	Safety, dignity and access to assistance
Women's organisations	Gender-based violence and women's health
Disability organisations	Accessibility and inclusion
Private sector	Logistics, infrastructure and service contracts

The Prime Minister asks you to establish a coordination mechanism.

But you are not allowed to create a committee simply because "coordination is important."

You must design how coordination actually works.

Your Task

Create a Climate Displacement Health Coordination System.

Specify:

Governance

- who leads
- who has decision authority
- who participates
- who provides technical advice
- how disputes are resolved

Information

What information must be shared between sectors?

Accountability

How will communities know:

- what assistance is available
- who is responsible
- how decisions are made
- where to report problems
- how complaints will be handled

Community participation

At least two displaced-community representatives and two host-community representatives must have meaningful roles in decision-making.

Do not treat participation as simply attending meetings.

Explain what decisions they can influence.

WHO's 2025 evidence review specifically highlights meaningful engagement of affected communities in policy, planning, and service delivery as part of migrant-inclusive and climate-resilient health systems.

Professional Deliverable

Intersectoral Coordination Charter

Produce a two-page charter containing:

- governance structure
- roles and responsibilities
- decision-making process
- information-sharing mechanism
- community participation
- conflict-resolution mechanism
- accountability process

Task 4: From Displacement to Resettlement

Six months have passed.

The emergency camps remain open.

The government had originally planned to close them within three months.

That is no longer possible.

Some villages remain uninhabitable.

Agricultural land has been damaged by saltwater.

Several health facilities have not been rebuilt.

The climate projections suggest that severe flooding will continue.

The Minister of Finance wants the camps closed.

The Minister of Social Welfare wants permanent housing.

Local government wants people relocated away from high-risk coastal areas.

Some displaced families want to return home.

Others want permanent relocation.

Some host communities fear that large-scale relocation will place additional pressure on land, schools, health services, and employment.

You now have to advise the government on what happens next.

Three Possible Strategies

Option A: Return

Support communities to return to their original locations as quickly as possible.

Option B: Relocate

Move high-risk communities to safer permanent settlements.

Option C: Planned Adaptation

Allow communities to return or remain where feasible while investing in climate-resilient infrastructure, services, livelihoods, and future evacuation capacity.

You may recommend a hybrid model.

But you must make your decision explicit.

Your Task

Develop a Five-Year Health and Resettlement Strategy.

Your strategy must address:

Location

Where should people live?

Health services

Where should health facilities be located?

Water and sanitation

How will basic services be secured?

Housing

How will housing affect health?

Livelihoods

How will people earn a living?

Education

How will children return to school?

Transport

How will people reach health services?

Climate risk

How will future hazards influence settlement decisions?

Social cohesion

How will relationships between displaced and host populations be managed?

Community choice

How will affected people participate in deciding their future?

Health equity

How will you prevent relocation from simply moving people from one form of vulnerability into another?

WHO's current approach increasingly emphasises moving beyond short-term reactive responses toward inclusive, climate-resilient systems that address people throughout the displacement journey.

Professional Deliverable

Five-Year Climate Displacement Health and Resettlement Plan

Prepare a 2,000-word strategy containing:

- immediate recovery priorities
- settlement principles
- health system redesign
- infrastructure priorities
- livelihood considerations
- community participation
- host-community protection
- climate adaptation
- financing considerations
- five-year implementation phases
- ten measurable indicators

Task 5: The Mental Health Crisis

The physical emergency is beginning to stabilise.

The mental health crisis is not.

Community health workers report:

- persistent anxiety
- sleep problems
- grief
- family conflict

- fear of another cyclone
- loss of livelihoods
- hopelessness
- increased alcohol and substance use
- social isolation

Women are reporting increased violence and insecurity.

Children are showing behavioural changes.

Older people report loneliness and loss of social networks.

Frontline workers are exhausted.

Community leaders are becoming overwhelmed by requests for help.

You have only three mental health professionals serving the entire displaced population.

You cannot build a specialist mental health service for everyone.

You therefore need a community-based stepped-care model.

WHO's evidence on displaced and migrant populations highlights the importance of integrating mental health into broader health responses rather than treating it as a separate specialist service that is available only to a small number of people.

Your Task

Design a mental health and psychosocial support system with at least four levels:

Level 1: Community support

Who provides:

- psychological first aid
- social support
- community activities
- safe spaces
- information
- referral

Level 2: Primary care

How will health workers identify people who need additional support?

Level 3: Focused intervention

Who receives structured psychosocial interventions?

Level 4: Specialist care

Who requires referral to specialist services?

Protecting Women and Girls

Develop a specific response for:

- gender-based violence
- confidential reporting
- clinical care
- psychosocial support
- protection
- referral
- survivor confidentiality

Do not create a system that requires survivors to publicly identify themselves in order to receive assistance.

Children and Adolescents

Design a separate component addressing:

- child protection
- school disruption
- family separation
- psychological distress
- safe spaces
- referral for severe conditions

Frontline Workers

Create a support mechanism for:

- health workers
- community health workers
- humanitarian staff
- community leaders

The people delivering the response are also affected by the disaster.

Professional Deliverable

Mental Health and Psychosocial Support Strategy

Prepare a 1,500-word strategy containing:

- needs assessment
- stepped-care model
- workforce plan

- children and adolescent component
- gender-based violence response
- frontline worker support
- referral pathway
- five monitoring indicators

The Final Cabinet Decision

You now have 15 minutes to brief the Prime Minister.

The Cabinet is divided.

The Minister of Finance says:

"We cannot keep spending indefinitely on temporary camps."

The Minister of Health says:

"Closing the camps before alternatives exist will create another health crisis."

The Minister of Agriculture says:

"People cannot return if they have no land to farm."

The Minister of Transport says:

"We cannot rebuild roads everywhere."

The Minister of Social Welfare says:

"Relocation without social protection will simply reproduce poverty somewhere else."

The host communities say:

"Do not solve one crisis by creating another."

The displaced communities say:

"We want a future, not another temporary camp."

The Prime Minister turns to you.

"What should we do?"

Your Five-Minute Cabinet Briefing

Your briefing must answer:

1. What should happen in the next 72 hours?
2. What should happen during the next six months?
3. What should happen over the next five years?
4. Who should receive priority when resources are insufficient?
5. How will you protect host communities?
6. Should people return, relocate, or adapt where they are?

7. What should happen to the temporary camps?
8. What role should international organisations play?
9. What should government fund?
10. What decision are you asking Cabinet to approve today?

You must finish with three decisions that Cabinet can approve immediately.

The Emergency Twist

Just as you finish your presentation, the national weather service issues a new warning.

Another major storm may reach the region within five days.

You now have to reconsider your plan.

Some camps are located in areas that may flood again.

You cannot evacuate everyone.

You have enough transport capacity to move approximately 40,000 people within 48 hours.

You must decide who moves first.

Choose Your Priority Groups

You cannot simply say "the most vulnerable."

Define your criteria.

Possible considerations include:

- location-specific risk
- age
- disability
- pregnancy
- medical dependency
- children
- lack of mobility
- access to transport
- family composition
- ability to reach alternative shelter

Your Task

Develop an Evacuation Prioritisation Framework.

Then answer:

Is it ethically acceptable to leave some people in a high-risk location when there is not enough capacity to evacuate everyone?

Explain your reasoning.

This is the moment where the mission moves from planning into professional judgement.

Mission Reflection

1. What was the hardest decision you made?
2. Which population did you prioritise first?
3. Why?
4. Did you treat displaced people and host communities equally?
5. Does equal treatment always produce equitable outcomes?
6. What did you do when there was not enough for everyone?
7. Which health services did you delay?
8. What were the consequences of that choice?
9. How did you balance immediate survival against long-term recovery?
10. Who should have the final say about resettlement?
11. What role should affected communities play in deciding where they live?
12. When does "return home" become unsafe?
13. When does adaptation become unrealistic?
14. What would make relocation ethically justified?
15. How did you account for people with disabilities?
16. How did you account for women and girls?
17. How did you protect children?
18. How did you maintain continuity of care for chronic disease?
19. What would happen if international funding ended after two years?
20. How did you prevent humanitarian assistance from weakening local systems?
21. What did the host community teach you about equity?
22. How did your understanding of climate change change during the mission?
23. What would you do differently if the disaster were a slow-onset drought rather than a cyclone?
24. What would you change if the displaced population were spread across cities rather than camps?

Competency Debrief

Systems Mapping

You could not treat displacement as a shelter problem.

You had to connect climate hazards with housing, water, sanitation, health services, livelihoods, transport, food, governance, protection, mental health, and future settlement.

Data Fluency

You had incomplete information and competing priorities.

You had to make decisions without waiting for perfect data.

Implementation Agility

Your plan had to work with damaged infrastructure, limited personnel, uncertain funding, and rapidly changing conditions.

Stakeholder Navigation

No single ministry could solve the problem.

You had to build cooperation among government, humanitarian organisations, communities, local authorities, and host populations.

Ethical Foresight

This was the central competency of the mission.

You had to decide who receives protection when resources are insufficient.

You had to consider not only immediate harm but also the consequences of your decisions months and years later.

Narrative Competence

You had to communicate difficult decisions to people who may disagree with them.

You had to explain why some resources were prioritised without suggesting that other people's lives mattered less.

Mission Summary

Climate-related displacement is not simply a movement of people from one location to another.

It can disrupt health systems, livelihoods, family structures, social protection, education, water and sanitation, mental health, and access to essential care.

The first responsibility of a public health professional is therefore not simply to treat the displaced population.

It is to understand the system that produced their vulnerability and the system that will determine what happens next.

The central lesson of this mission is uncomfortable:

There will be moments when public health professionals cannot protect everyone from every risk.

Professional competence is partly about what you do in those moments.

Who receives protection first?

Who participates in the decision?

What evidence supports the choice?

What alternatives were considered?

Who carries the greatest burden?

And how do you prevent an emergency response from creating another form of injustice?

Climate-resilient public health requires more than emergency preparedness. It requires health systems that can continue functioning as populations move, environments change, and risks accumulate. WHO's 2025 review specifically argues for proactive, coordinated, migrant-inclusive and climate-resilient approaches rather than relying only on short-term emergency responses.

The question at the end of this mission is therefore not simply:

"How do we respond to this disaster?"

It is:

"How do we build a society in which the next disaster does not produce the same level of suffering?"

Mission 5

The Infodemic

Central Decision

How do you protect public health when people no longer agree on whom to trust?

The Challenge

An infodemic is not simply a problem of false information. It is a problem of information, trust, behaviour, power, technology, and institutions interacting at the same time.

Your task is not to win an argument on social media.

Your task is to create an information environment in which people can find trustworthy information, ask difficult questions, make informed decisions, and access the services they need.

Learning Objectives

By the end of this mission, you will be able to:

1. Analyse the behavioural and social drivers of vaccine acceptance and hesitancy.
2. Design an infodemic response that addresses misinformation without treating every concern as misinformation.
3. Map how health information moves through digital, traditional, interpersonal, and community networks.
4. Use social listening and community listening to identify emerging concerns and information gaps.
5. Design culturally and linguistically appropriate risk communication.

6. Engage media platforms, journalists, health workers, religious leaders, community organisations, and other trusted actors.
7. Balance public health protection with freedom of expression, privacy, and proportionality.
8. Design community engagement strategies that build trust rather than simply promote compliance.
9. Evaluate whether an infodemic intervention is changing knowledge, trust, behaviour, and access.
10. Integrate Systems Mapping, Data Fluency, Implementation Agility, Stakeholder Navigation, Ethical Foresight, and Narrative Competence in a rapidly changing public health environment.

The Scenario

You are the Director of Risk Communication and Community Engagement in a large, diverse, rapidly urbanising country in South Asia.

A new vaccine against a rapidly spreading pandemic disease has just received emergency regulatory approval. The government has secured enough doses to vaccinate approximately 60 percent of the population during the first phase of the national campaign.

The campaign is scheduled to begin in six weeks.

The vaccine has been shown in the available clinical evidence to reduce severe disease and death. However, uncertainty remains about some longer-term effects because the vaccine is new. The government has committed to continued safety monitoring.

You now face another problem.

An organised information campaign against the vaccine has begun.

Messages are circulating rapidly through social media, encrypted messaging groups, radio programmes, community networks, religious gatherings, and interpersonal conversations.

Several narratives have become particularly prominent:

- The vaccine causes infertility.
- The vaccine contains microchips that allow governments to monitor people.
- The vaccine was developed using fetal tissue and therefore violates certain religious or cultural beliefs.
- The vaccine was rushed and has not been adequately tested.
- Government officials are using the pandemic to expand political control.
- Pharmaceutical companies are hiding information about adverse effects.
- People who accept the vaccine will be used as experimental subjects.

Some of these claims are demonstrably false.

Others contain elements of legitimate questions about vaccine development, safety monitoring, procurement, pharmaceutical interests, or government transparency.

That distinction matters.

If every concern is labelled "misinformation", legitimate questions may be dismissed and public trust may fall even further.

The Information Environment

The impact is already visible.

Among several priority populations, reported willingness to receive the vaccine has fallen to approximately 40 percent.

The affected groups include:

- young adults
- rural populations
- ethnic and linguistic minorities
- some religious communities
- people with limited access to formal health information
- communities with historically poor relationships with government institutions

Trust in government is already low.

The previous national election was highly contested, and several communities believe that their concerns have repeatedly been ignored.

International media are now reporting on a "vaccine hesitancy crisis".

Some government officials want an aggressive communication campaign.

Others argue that the government should stop responding to every rumour because doing so may give misinformation greater visibility.

The Ministry of Finance is concerned because billions have already been committed to vaccine procurement.

The Minister of Health wants the campaign to proceed on schedule.

Community leaders are demanding a voice in decisions.

Health workers are asking for clearer answers to questions they are receiving from patients.

Journalists want access to safety data.

Technology companies have been asked to cooperate with the government but are concerned about becoming instruments of censorship.

You have two weeks to present a comprehensive infodemic management strategy.

Understanding the Infodemic

The World Health Organization describes an infodemic as an overabundance of information, including false or misleading information, in digital and physical environments during a disease outbreak. Such environments can create confusion, influence risk perception and behaviour, and undermine trust in health authorities. WHO's approach to infodemic management emphasises listening to community concerns, identifying questions and information gaps, promoting understanding of reliable information, and developing interventions based on evidence.

This means that the public health response cannot begin with the question:

"How do we stop misinformation?"

A better starting question is:

"What are people trying to understand, where are they getting information, whom do they trust, and what is preventing them from making informed decisions?"

That distinction will shape everything you do in this mission.

Task 1: Design a Counter-Messaging Strategy

Understand Before You Respond

Your first task is to develop a counter-messaging strategy.

But before producing messages, you must determine why different groups are responding differently to the vaccine.

WHO's behavioural and social drivers framework emphasises that vaccine uptake is influenced by factors including what people think and feel about vaccination, social processes, and practical barriers. WHO recommends gathering local information and using it to develop tailored interventions rather than assuming that one national message will work for everyone.

The problem in Negara is therefore not simply:

People believe false information.

The problem may include:

Fear + mistrust + social influence + uncertainty + previous experience + access barriers + political identity + poor communication.

Information Available to You

A rapid assessment provides the following preliminary findings:

Population	Vaccine acceptance	Dominant concern	Main information source
Urban young adults	42%	Safety and infertility	Social media
Rural adults	38%	Safety and government motives	Radio and community networks
Religious communities	35%	Religious acceptability	Religious leaders and messaging groups
Ethnic minority communities	37%	Mistrust and exclusion	Community leaders and local-language media
Urban older adults	55%	Side effects	Family, doctors and television
Health workers	68%	Evidence and safety monitoring	Professional networks

These figures are fictional and are provided for the exercise.

You also discover that some people who say they "do not trust the vaccine" have never actually been offered a vaccination appointment.

Others live several hours from vaccination facilities.

Some cannot afford transport.

Some health workers are themselves uncertain about how to answer questions about side effects.

This creates an important distinction:

Not every person who has not been vaccinated is vaccine hesitant.

Some people face confidence problems.

Others face convenience problems.

Others face calculation problems, where they want more information before deciding.

Others may be responding to social norms or trusted community voices.

Others may have genuine concerns about the health system.

Your Task

Develop a counter-messaging strategy that includes:

1. A map of the major misinformation and information narratives.
2. Identification of the underlying concerns associated with each narrative.
3. Behavioural analysis of at least four population groups.
4. Specific messages responding to the major concerns.
5. Identification of trusted messengers for each population.
6. Selection of communication channels.
7. A strategy for communicating uncertainty honestly.
8. A plan for pre-testing messages with communities.
9. A monitoring framework for determining whether messages are helping or causing unintended effects.

Your Decision

For each major narrative, classify it as:

False claim requiring correction

Partly true claim requiring clarification

Legitimate concern requiring evidence and response

Information gap requiring better communication

Structural barrier requiring action rather than communication

Then explain why.

Professional Deliverable

Counter-Messaging and Behavioural Response Brief

Maximum length: 1,500 words

Task 2: Map the Information System

You quickly discover that social media is only one part of the problem.

Urban residents may encounter information on social platforms.

Rural populations may hear a rumour on radio before it appears online.

A community health worker may hear the same rumour during a home visit.

A religious leader may discuss it during a community meeting.

A family member may then repeat it through an encrypted messaging group.

The rumour may change as it moves through each network.

Your task is therefore to map the information system, not simply the internet.

WHO's infodemic insights approach recommends identifying appropriate data sources, integrating information across those sources, developing recommendations, communicating findings to decision-makers, and tracking the actions taken.

WHO also published specific ethical guidance in 2025 for social listening during public health emergencies, emphasising the analysis of conversations and narratives while respecting human rights and privacy.

A 2026 WHO-supported pilot in the Philippines similarly demonstrates the importance of assessing how health information is created, accessed, interpreted, and shared across digital and offline environments.

Your Information Sources

You have access to:

- social media monitoring
- public messaging channels
- radio monitoring
- television monitoring
- community health worker reports
- health facility questions and complaints
- vaccination hotline data
- journalist enquiries
- community leader reports
- online search trends
- vaccine safety reports

- vaccination coverage data
- behavioural and social driver surveys

Your Task

Design an Infodemic Intelligence System.

Your system should identify:

1. Where information originates.
2. How it spreads.
3. Which actors amplify it.
4. Which communities are affected.
5. Which languages are involved.
6. Which claims are increasing rapidly.
7. Which concerns are legitimate but poorly answered.
8. Which information gaps are being filled by speculation.
9. Which communities are receiving little trustworthy information.
10. Which interventions should be prioritised.

Build an Information Flow Map

Map at least:

Source → Amplifier → Community → Interpretation → Behaviour → Public health consequence

Then identify at least five intervention points.

Ethical Question

You have access to public social media conversations.

Your team proposes using automated tools to monitor conversations continuously.

Some officials want the system to identify influential individuals spreading misinformation.

Others want to collect names and phone numbers so that "problem accounts" can be reported.

You must decide:

- What information should be collected?
- What information should not be collected?
- What constitutes legitimate public health monitoring?
- What crosses the line into surveillance?
- Who should have access to the data?
- How long should data be retained?
- How will communities know that social listening is taking place?

Professional Deliverable

Infodemic Intelligence and Information Flow Map

Include:

- one systems map
- one information-channel map
- one misinformation classification framework
- one-page explanation of your ethical safeguards.

Task 3: Engage Platforms and Media Without Becoming the Censor

Your information team identifies three rapidly spreading claims.

Claim A

"The vaccine causes infertility."

The available evidence does not support the claim.

Claim B

"The government has not released enough information about rare adverse events."

The claim is partly justified. Some safety information is available, but communication has been poor.

Claim C

"Anyone questioning the vaccine is spreading dangerous misinformation."

This claim is being promoted by some government officials.

You now face a difficult choice.

If the government aggressively removes content, it may reduce the visibility of harmful misinformation.

But aggressive censorship may also:

- increase distrust
- push conversations into closed networks
- reinforce claims that the government is hiding information
- suppress legitimate criticism
- create political controversy
- damage long-term trust

Your role is not to defend the government.

Your role is to protect public health while respecting rights and maintaining trust.

Platform and Media Engagement

Develop a strategy for working with:

- social media platforms
- messaging services
- radio stations
- television networks
- journalists
- fact-checking organisations
- community media
- health professional organisations
- religious institutions
- community organisations

Your strategy should distinguish between:

Remove

Reduce amplification

Label or contextualise

Correct

Provide alternative information

Engage directly

Leave visible but monitor

Not every false claim requires the same intervention.

Your Task

Develop a Platform and Media Engagement Framework that includes:

1. Criteria for determining when intervention is necessary.
2. Procedures for identifying harmful health misinformation.
3. Processes for engaging platforms.
4. Guidelines for working with journalists.
5. A strategy for radio and television.
6. A strategy for encrypted messaging environments.
7. Transparency requirements.

8. Appeals and accountability mechanisms.
9. Protection of legitimate criticism.
10. Monitoring for unintended consequences.

The Difficult Decision

A major influencer with several million followers publishes:

"I do not trust this vaccine. Show me the complete safety data before asking people to take it."

The statement is attracting enormous attention.

The Minister wants the platform to remove the post.

Your legal adviser warns that the statement does not clearly meet the threshold for removal.

The epidemiology team believes the influencer is increasing vaccine hesitancy.

The communications team argues that publicly attacking the influencer could make the situation worse.

What do you recommend?

Explain your decision.

Professional Deliverable

Platform and Media Engagement Protocol

Maximum length: 1,000 words

Task 4: Rebuild Trust Through Community Engagement

This is the most difficult part of the mission.

You cannot communicate your way out of a trust deficit.

Communities have experienced years of poor services, broken promises, political exclusion, and inconsistent government communication.

A new campaign cannot erase those experiences in six weeks.

WHO guidance emphasises that community engagement should be part of vaccination and infodemic management, and that understanding local behavioural and social drivers is essential for designing appropriate responses.

The lesson is simple:

Trust is not created by telling people to trust you.

It develops when institutions listen, respond, keep promises, communicate honestly, and demonstrate that people have some influence over decisions.

Community Voices

Your team proposes establishing community advisory groups.

Each district should include representatives from:

- older adults
- young people
- women
- religious communities
- ethnic and linguistic minorities
- people with disabilities
- community health workers
- traditional leaders
- civil society organisations
- health professionals
- local media

The groups will meet weekly during the campaign.

But you must avoid creating another consultation exercise in which communities are asked for their opinions and then ignored.

Your Task

Develop a Community Trust and Engagement Strategy.

It must include:

1. Identification of key community leaders and organisations.
2. A plan for listening to communities before responding.
3. Mechanisms for documenting community concerns.
4. A process for separating misinformation from legitimate concerns.
5. Co-design of communication materials.
6. Community participation in vaccination planning.
7. A mechanism for complaints and feedback.
8. A process for responding publicly to concerns.
9. A strategy for addressing historical grievances.
10. Measures for tracking trust over time.
11. A plan for sustaining engagement after the vaccination campaign.

Trust Indicators

Develop at least six indicators of trust.

Do not rely only on vaccination coverage.

Consider indicators such as:

- confidence in vaccine information

- willingness to ask health workers questions
- perceived honesty of government communication
- confidence that adverse events will be investigated
- confidence in local health workers
- perceived community influence over decisions
- satisfaction with responses to complaints
- willingness to recommend vaccination to others

Professional Deliverable

Community Trust and Engagement Strategy

Maximum length: 1,500 words

The 72-Hour Infodemic Challenge

You have been working on your strategy for ten days.

Then the situation changes.

A video begins circulating claiming that three people died immediately after receiving the vaccine.

Within six hours:

- the video has been viewed hundreds of thousands of times
- radio stations are discussing it
- community leaders are receiving questions
- vaccination appointments are being cancelled
- journalists are demanding a response
- the Minister wants an immediate press conference

Your investigation finds that:

- two of the people did receive the vaccine
- one person did not
- the deaths occurred at different times
- the available evidence does not yet establish whether the vaccine caused either death
- the safety investigation is incomplete

The Minister tells you:

"We cannot allow uncertainty to destroy the campaign."

The scientific team tells you:

"We cannot say that the vaccine is safe in these cases until the investigation is complete."

The communications team wants to say:

"There is no evidence that the vaccine caused these deaths."

A community leader tells you:

"People will hear that as the government saying nothing happened."

You have 72 hours.

Your Decision

Choose your immediate response.

You must decide:

1. What you say publicly.
2. What you do not yet say.
3. Whether vaccination should continue.
4. Whether specific groups should temporarily pause vaccination.
5. How you communicate uncertainty.
6. How you respond to journalists.
7. How you engage the affected families.
8. How you communicate with health workers.
9. How you monitor the information environment.
10. When you will provide the next public update.

The Rule

You are not allowed to use the phrase "do not worry" in your public statement.

You must communicate uncertainty without creating unnecessary fear.

Professional Deliverable

72-Hour Infodemic Response Brief

Prepare:

- a three-minute ministerial briefing
- a 250-word public statement
- five journalist questions and answers
- a health-worker briefing message
- a community message
- a decision log explaining what evidence would change your decision

The 14-Day Professional Challenge

Your final task is to bring everything together.

The Minister has asked you to present a 14-Day Infodemic Response Strategy to Cabinet.

Your strategy must cover:

First 24 hours

What must happen immediately?

Days 2 to 3

What must be investigated, communicated, or corrected?

Days 4 to 7

What systems must be strengthened?

Days 8 to 14

What should be institutionalised before the vaccination campaign begins?

Your strategy must address:

- information monitoring
- community listening
- behavioural and social drivers
- misinformation response
- risk communication
- platform engagement
- media engagement
- health-worker communication
- community participation
- vaccine access barriers
- trust building
- ethical safeguards
- monitoring and evaluation

Final Decision

At the end of your presentation, the Prime Minister asks:

"What are the three things you need government to do differently if this campaign is going to succeed?"

You have two minutes to answer.

Your response should contain exactly three priorities.

Mission Reflection

Take time to reflect on the decisions you made.

1. What was the most difficult decision in this mission?
2. Which misinformation narrative was hardest to address, and why?
3. How did you distinguish misinformation from legitimate concern?
4. How did you decide which claims required an immediate response?
5. When might correcting misinformation actually make it more visible?
6. How did you balance speed with accuracy?
7. How did you communicate uncertainty?
8. What role did trusted messengers play?
9. How did your strategy differ across demographic groups?
10. How did language affect your communication strategy?
11. How did you account for communities with limited internet access?
12. What role should radio play in an infodemic response?
13. How did you balance public health protection with freedom of expression?
14. Where did your response risk becoming paternalistic?
15. How did you protect privacy when using social listening?
16. Should governments be allowed to monitor public conversations during a health emergency?
17. What information should never be collected?
18. How did political pressure influence the response?
19. How would you respond if the Minister asked you to hide unfavourable safety information?
20. How did you address the difference between vaccine confidence and vaccine access?
21. What would you do differently if trust in government were extremely low?
22. How would your response differ in a high-income country with high internet penetration?
23. How would your response differ in a rural setting where radio and interpersonal communication dominate?
24. What would make your strategy sustainable after the pandemic?

Competency Debrief

This mission brings together all six competencies.

Systems Mapping

You had to understand misinformation as a system involving technology, institutions, communities, politics, media, health services, and behaviour.

Data Fluency

You had to interpret behavioural data, distinguish signal from noise, understand uncertainty, and avoid treating a single social media metric as evidence of public opinion.

Implementation Agility

You had to adapt your strategy as new information emerged and respond within hours rather than waiting for perfect evidence.

Stakeholder Navigation

You had to work with government, communities, journalists, technology companies, health workers, religious leaders, civil society, and political actors whose interests did not always align.

Ethical Foresight

You had to consider privacy, freedom of expression, proportionality, manipulation, surveillance, misinformation, political power, and public protection.

Narrative Competence

You had to communicate complicated evidence and uncertainty in ways that different audiences could understand without exaggeration, false reassurance, or unnecessary alarm.

Mission Summary

Mission 5 introduced you to one of the most difficult problems in modern public health: how to act when information itself becomes part of the health crisis.

You were required to:

- design a behavioural counter-messaging strategy
- distinguish misinformation from legitimate concern
- map information flows across digital and offline environments
- develop an infodemic intelligence system
- engage platforms and media without becoming a censor
- communicate uncertainty during a rapidly developing event
- rebuild trust through genuine community engagement
- integrate communication with action on practical barriers to vaccination

The mission demonstrates that an infodemic is not simply a communication problem.

It is a systems problem.

People do not make health decisions based on scientific information alone. They interpret information through relationships, experience, identity, trust, culture, politics, access, and perceived risk.

That is why better information matters, but better information alone is not enough.

A community may reject a health message because it does not trust the institution delivering it. A person may believe a rumour because it fits an experience they have already had. Another person may appear hesitant because the vaccination centre is too far away. A third may have legitimate questions that officials mistakenly label as misinformation.

The public health professional therefore has to do more than communicate.

They have to listen, interpret, investigate, engage, decide, and act.

The most important lesson from this mission is perhaps the simplest:

You cannot build public trust by demanding it.

You build it by being honest when the evidence is uncertain, by listening when people disagree, by correcting falsehoods without humiliating people, by fixing practical barriers, and by demonstrating through action that communities matter.

That is what turns risk communication into public health practice.

Mission 6

The Silent Pandemic

Central Decision

How do you slow antimicrobial resistance without making essential treatment harder to access?

The Challenge

Antimicrobial resistance is often presented as a problem of inappropriate antibiotic use.

That is true, but it is not the whole problem.

Resistance is shaped by prescribing practices, diagnostic capacity, infection prevention, vaccination, agriculture, pharmaceutical markets, environmental contamination, regulation, health literacy, poverty, access to care, and the ability of health systems to implement change.

The public health professional therefore faces a difficult problem.

If you restrict antimicrobial access too aggressively, patients may be denied treatment they genuinely need.

If you do too little, resistance continues to increase.

If you regulate human healthcare without addressing agriculture and the environment, the problem simply moves across sectors.

If you create a national action plan without financing, accountability, and implementation capacity, the plan may remain on paper.

This mission asks you to move beyond awareness of AMR and make decisions in a system where every intervention creates consequences somewhere else.

Learning Objectives

By the end of this mission, you will be able to:

1. Map the human, animal, agricultural, pharmaceutical, and environmental dimensions of AMR.
2. Identify pathways through which antimicrobial resistance emerges and spreads.
3. Assess the trade-offs involved in regulating antimicrobial use.
4. Design a One Health AMR response across multiple sectors.
5. Develop antimicrobial stewardship programmes for hospitals and primary care.
6. Apply the WHO AWaRe framework to antimicrobial stewardship and monitoring.
7. Design an integrated AMR and antimicrobial-use surveillance system.
8. Navigate competing interests among clinicians, farmers, pharmaceutical companies, pharmacies, regulators, patients, and policymakers.
9. Design implementation strategies that are feasible in resource-constrained settings.
10. Apply ethical principles to decisions involving access, restriction, equity, and future generations.
11. Communicate AMR risks without creating unnecessary fear or undermining confidence in essential medicines.
12. Integrate all six competencies in a complex One Health problem.

The Scenario

You are the Director of the National Antimicrobial Resistance Coordination Unit in a lower-middle-income country in South Asia.

The country has:

- a rapidly growing population
- a large agricultural sector
- intensive poultry and aquaculture production
- widespread community pharmacies
- a substantial generic pharmaceutical industry
- limited diagnostic capacity outside major hospitals
- substantial informal healthcare use
- fragmented environmental regulation

Antimicrobial resistance has been declared a national public health emergency.

The country already has a National Action Plan on AMR.

It was approved three years ago.

Implementation, however, has been weak.

The Ministry of Health has focused primarily on human healthcare.

The Ministry of Agriculture has its own programmes.

The Ministry of Environment has limited laboratory capacity.

The Ministry of Commerce is concerned about pharmaceutical production and trade.

No ministry has sufficient authority to coordinate the entire response.

The national AMR committee meets irregularly.

The national action plan has never been fully costed.

You have now been given a mandate to redesign the national response.

You have 18 months to demonstrate measurable progress.

The AMR Crisis

A new surveillance investigation has identified increasing levels of carbapenem resistance among selected hospital pathogens.

The most serious concern involves carbapenem-resistant Klebsiella pneumoniae.

Several tertiary hospitals are reporting infections that are increasingly difficult to treat.

Clinicians are responding by using broader-spectrum antibiotics.

Some patients are receiving antibiotics before diagnostic confirmation because laboratory results may take several days.

In smaller hospitals, microbiology services are limited.

In many communities, antibiotics can be obtained without a prescription.

Pharmacists report that patients frequently demand antibiotics for respiratory infections and other conditions that may not require them.

Farmers report that disease outbreaks can destroy entire poultry or fish stocks within days.

They argue that antimicrobial treatment can be economically necessary.

Veterinary professionals report pressure from producers to provide rapid treatment.

Agricultural producers argue that government restrictions must be accompanied by better biosecurity, vaccination, veterinary services, and compensation mechanisms.

Pharmaceutical companies warn that aggressive restrictions could reduce sales and threaten domestic manufacturing.

Civil society organisations argue that commercial interests should not determine antimicrobial policy.

Clinicians counter that stewardship is difficult when they lack diagnostics and have few therapeutic alternatives.

Patients have a different concern:

"If I am sick today, why should I be denied a medicine because someone else may misuse it tomorrow?"

This question becomes central to your mission.

Table M6.1

Preliminary National Situation Assessment

Indicator	Current situation
Hospitals with microbiology services	28%
Community pharmacies with electronic dispensing records	19%
Systemic antibiotics obtained without prescription	Common
Hospitals with formal AMS committees	22%
Hospitals using facility-specific antibiograms	14%
Hospitals routinely reviewing antibiotic prescriptions	18%
Primary care facilities with prescribing guidelines	31%
Veterinary facilities with antimicrobial records	24%
Routine AMR surveillance sites	Concentrated in major cities
Agricultural antimicrobial-use surveillance	Fragmented
Environmental AMR surveillance	Very limited
National AMR action plan	Exists but weakly implemented

All figures in this table are fictional and are provided for the purposes of the simulation.

The First Decision

Your Minister asks you a simple question:

"Where do we start?"

You cannot fix everything at once.

Your budget is limited.

Your laboratories are limited.

Your workforce is limited.

Your political capital is limited.

And every stakeholder believes that another stakeholder is the main problem.

The Minister gives you six months to produce an initial national intervention package.

Task 1

Map the One Health AMR System

Your first task is to understand the system before attempting to change it.

AMR cannot be understood through the human health sector alone.

The current WHO Global Action Plan on AMR for 2026 to 2036 explicitly adopts a One Health approach and places emphasis on prevention, surveillance, equitable access and appropriate use, research and innovation, and multisectoral governance.

You are therefore required to map the major pathways through which antimicrobials are used and resistance can emerge and spread.

Your System Should Include

Human health

- hospitals
- primary care
- pharmacies
- informal providers
- laboratories
- patients
- prescribers
- infection prevention and control

Animal health

- veterinary services
- poultry
- livestock
- aquaculture
- feed suppliers
- farms
- slaughter and processing facilities

Pharmaceutical and commercial systems

- manufacturers
- wholesalers
- distributors
- pharmacies
- informal markets
- procurement systems
- marketing practices

Environmental systems

- wastewater
- hospital effluent
- pharmaceutical manufacturing waste
- agricultural runoff
- livestock waste
- aquaculture systems
- municipal waste

Governance

- health
- agriculture
- environment
- commerce
- finance
- regulatory authorities
- local government

Your Task

Construct a One Health AMR systems map showing:

Source → antimicrobial use → selection pressure → resistant organism → transmission pathway → human or animal exposure → health/economic consequence

Then identify:

- five major feedback loops
- five leverage points
- three areas where intervention in one sector could create unintended consequences in another sector
- three areas where action could produce benefits across multiple sectors

Professional Deliverable

One Health AMR Systems Map and Analysis

Include:

- one systems map
- five leverage points
- three major risks of unintended consequences

- a 500-word interpretation

Task 2

The Regulation Decision

The Minister now wants regulation.

The proposed legislation would:

1. prohibit non-prescription sale of selected antibiotics
2. restrict the use of medically important antimicrobials in food-producing animals
3. prohibit antimicrobial growth-promotion practices
4. require electronic antimicrobial sales records
5. establish penalties for illegal sales
6. require pharmaceutical manufacturers to report distribution data
7. introduce stronger veterinary prescribing requirements

The proposal is politically controversial.

Stakeholder Positions

Pharmacists

"We support responsible use, but if regulation is too strict, patients will simply buy antibiotics from informal markets."

Clinicians

"Restrictions are reasonable, but only if diagnostic services and treatment guidelines improve."

Farmers

"We cannot accept restrictions without affordable veterinary services, vaccination, biosecurity support, and practical alternatives."

Pharmaceutical companies

"Excessive restrictions could reduce investment and damage domestic manufacturing."

Civil society

"Commercial interests should not override public health."

Patients

"Do not make essential medicines inaccessible to poor people."

Regulators

"We do not have enough inspectors to enforce everything."

You must now design a regulatory strategy.

The Critical Question

Should the country:

A. Introduce strict restrictions immediately

B. Introduce gradual restrictions linked to improved access and support

C. Focus primarily on education and voluntary stewardship

D. Restrict only the highest-risk antimicrobials

E. Use a differentiated approach across human, veterinary, and agricultural sectors

You may choose another approach if you can justify it.

Your Task

Develop a regulatory package that addresses:

- prescription requirements
- pharmacy regulation
- veterinary use
- agricultural use
- pharmaceutical industry responsibilities
- informal markets
- enforcement
- diagnostic capacity
- affordability
- access to essential antimicrobials
- sanctions
- incentives for compliance
- monitoring

Professional Deliverable

National AMR Regulatory Reform Brief

Maximum length: 1,500 words

Your brief must explicitly answer:

How will your policy reduce misuse without creating barriers to appropriate treatment?

Task 3

The Stewardship Challenge

Regulation alone will not solve the problem.

You are now asked to establish a national antimicrobial stewardship programme.

WHO's AWaRe framework classifies antibiotics into Access, Watch, and Reserve groups and provides tools for monitoring antibiotic use and supporting stewardship. The 2025 WHO classification continues to position AWaRe as a tool for monitoring use and evaluating stewardship interventions.

The country has requested that hospitals develop facility-specific stewardship programmes.

Your programme must operate despite limited resources.

Hospital Baseline

The first five hospitals selected for the pilot report:

Measure	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Antibiotic prescriptions reviewed	12%	8%	19%	5%	15%
Microbiology service available	Yes	No	Yes	No	Limited
AMS committee	Yes	No	Yes	No	No
Facility antibiogram	Yes	No	No	No	Limited
IPC committee	Yes	Yes	Yes	No	Yes
Antibiotic guideline	Outdated	None	Current	None	Outdated

All figures are fictional.

Your Task

Design a practical AMS programme for the five hospitals.

Your programme should include:

Governance

- AMS committee
- clinical leadership
- pharmacy
- microbiology
- nursing
- infection prevention and control

- hospital administration
- defined accountability

Clinical practice

- empiric prescribing
- diagnostic review
- de-escalation
- duration of therapy
- intravenous-to-oral conversion where appropriate
- prescription review
- surgical prophylaxis
- restricted antibiotics

Guidelines

Develop a process for:

Local resistance data → antibiogram → prescribing guideline → implementation → audit → revision

Workforce

Address:

- physicians
- pharmacists
- nurses
- laboratory professionals
- infection prevention staff
- hospital managers

Education

Include:

- pre-service education
- continuing professional development
- bedside teaching
- case review
- feedback to prescribers

Monitoring

Include indicators for:

- antimicrobial consumption
- AWaRe distribution
- prescribing appropriateness
- resistance trends
- clinical outcomes
- adverse events
- mortality
- length of stay
- treatment failure

Professional Deliverable

Hospital Antimicrobial Stewardship Implementation Plan

Maximum length: 2,000 words

Your plan must be designed for a resource-constrained setting.

Do not simply reproduce the structure of a high-income-country AMS programme.

Task 4

Build the Surveillance System

The Minister now asks:

"How will we know whether the situation is actually improving?"

You discover that the country does not have a complete national picture.

AMR data are concentrated in large hospitals.

Antimicrobial consumption data are incomplete.

Agricultural data are fragmented.

Environmental data are almost nonexistent.

WHO's 2025 Global Antibiotic Resistance Surveillance Report highlights the importance of reliable surveillance systems and notes major gaps in national capacity and geographic coverage. The report drew on data from more than 23 million bacteriologically confirmed cases reported through GLASS.

The 2026 Quadripartite guidance on One Health integrated AMR and antimicrobial-use surveillance provides a framework for designing context-appropriate integrated surveillance systems across sectors, including data collection, laboratories, analysis, interpretation, sharing, and communication.

Your Task

Design a national surveillance architecture.

It should integrate, where feasible:

Human health

- AMR
- antimicrobial consumption
- prescribing
- laboratory results
- hospital infections

Animal health

- antimicrobial use
- resistance
- veterinary prescribing
- livestock and aquaculture

Environment

- wastewater
- hospital effluent
- agricultural contamination
- pharmaceutical manufacturing discharge

The Resource Constraint

You have funding to establish only:

- 10 human AMR sentinel laboratories
- 5 veterinary laboratories
- 3 environmental surveillance sites
- one national data platform

You cannot establish a full surveillance network immediately.

Your Task

Decide:

1. Where the sentinel sites should be located.
2. Which pathogens should be prioritised.
3. Which antimicrobial combinations should be monitored.

4. Which populations and sectors should be included first.
5. Which data should be collected routinely.
6. Which data can be collected periodically.
7. How laboratories will share results.
8. How data will be analysed.
9. Who owns the data.
10. Who can access it.
11. How findings will influence policy and clinical practice.

Professional Deliverable

National One Health AMR Surveillance Framework

Include:

- surveillance architecture
- sentinel-site selection criteria
- minimum dataset
- data flow
- laboratory network
- reporting mechanism
- governance structure
- five core indicators

Task 5

The Negotiation Table

You now face the most political part of the mission.

The Prime Minister has established a national AMR negotiation forum.

Around the table are:

- Minister of Health
- Minister of Agriculture
- Minister of Environment
- Minister of Commerce
- Minister of Finance
- national medicines regulator
- veterinary regulator
- pharmaceutical industry representatives

- hospital clinicians
- pharmacists
- farmers
- veterinary professionals
- laboratory professionals
- civil society
- consumer organisations
- patient representatives
- environmental organisations
- international development partners

Everyone agrees that AMR is a serious problem.

They disagree about what should be done.

The Farmers' Position

"We need support for vaccination, biosecurity and veterinary services before restrictions."

The Pharmaceutical Industry

"We will support stewardship but need predictable regulation and protection from policies that unnecessarily destroy legitimate markets."

Clinicians

"Give us diagnostics and reliable medicines before demanding perfect prescribing."

Pharmacists

"Regulate informal markets too. Otherwise legal pharmacies will be punished while illegal sellers gain market share."

Finance Ministry

"There is no unlimited budget."

Environment Ministry

"AMR cannot remain a health ministry problem."

Patient Representatives

"Do not create a system in which poor people cannot obtain essential treatment."

Civil Society

"Industry must not write the rules that govern its own products."

Your Task

Develop a negotiation strategy.

You must identify:

- interests
- positions
- power
- incentives
- risks
- possible alliances
- non-negotiable principles
- areas for compromise

Then determine:

What can each stakeholder gain?

The goal is not to make everyone happy.

The goal is to produce a policy that can actually be implemented.

The Difficult Question

A pharmaceutical company offers to fund the national AMR surveillance platform.

The company says this will allow the government to establish the system immediately.

The Finance Ministry supports the proposal because it removes a major budget burden.

Civil society objects because the company sells several antibiotics that will be affected by the new stewardship policies.

You must decide whether to accept the funding.

If you accept it:

- what safeguards are required?

If you reject it:

- how will you finance surveillance?

Professional Deliverable

National AMR Negotiation and Governance Brief

Maximum length: 1,500 words

The 72-Hour Crisis

You have spent six months developing the national programme.

Then the crisis escalates.

A tertiary hospital reports an outbreak of carbapenem-resistant Klebsiella pneumoniae.

Within 72 hours:

- 14 patients are infected
- 5 have died
- 3 intensive care units are affected
- two healthcare workers have tested positive for colonisation
- the hospital has limited isolation capacity
- laboratory confirmation takes 48 hours
- the hospital is running low on effective reserve antibiotics
- clinicians are requesting emergency access to additional medicines
- social media reports claim that "the hospital has run out of antibiotics"
- relatives are demanding information
- journalists are outside the hospital

The hospital director asks whether elective procedures should be cancelled.

The Health Minister asks whether the hospital should be temporarily closed.

The Finance Minister asks how much the response will cost.

The pharmaceutical regulator asks whether emergency importation should be authorised.

The public asks:

"How did this happen?"

You have 72 hours to advise government.

Your Immediate Decisions

You must decide:

1. Infection control

What immediate IPC measures will you implement?

2. Patient care

How will you protect infected and colonised patients?

3. Antimicrobial supply

How will you allocate scarce effective antibiotics?

4. Diagnostics

Which samples and patients receive priority?

5. Healthcare workers

What protection, screening, training, and communication are required?

6. Hospital operations

Should elective procedures continue?

7. Public communication

What will you tell the public?

8. Media

What will you tell journalists about the outbreak?

9. Surveillance

What data must be available within 24, 48, and 72 hours?

10. Accountability

Who has authority to make decisions?

The Ethical Allocation Problem

There are now only 18 courses of an effective reserve antimicrobial available nationally.

You have 31 patients who may require treatment.

Some have confirmed resistant infections.

Some have probable infections.

Some have colonisation without clinical disease.

Some have alternative treatment options.

Others do not.

The allocation decision cannot be based simply on:

"Who arrived first?"

Nor can it be based simply on:

"Who is most likely to survive?"

You must develop a transparent framework.

Your Framework Should Consider

- clinical need
- urgency
- likelihood of benefit
- alternative treatments
- severity of illness

- vulnerability
- stewardship
- equity
- proportionality
- procedural fairness
- reassessment

You must also determine who has authority to make individual allocation decisions.

Professional Deliverable

Emergency Antimicrobial Allocation Framework

Maximum length: 1,000 words

The National 18-Month Challenge

The Prime Minister now asks you to convert the crisis response into a national programme.

You have 18 months.

Your strategy must include six pillars:

Pillar 1: Prevention

- infection prevention and control
- WASH
- vaccination
- biosecurity
- infection prevention in agriculture
- environmental controls

Pillar 2: Appropriate Use

- stewardship
- prescribing guidelines
- AWaRe monitoring
- pharmacy regulation
- veterinary stewardship
- community engagement

Pillar 3: Surveillance

- human AMR

- antimicrobial use
- animal health
- agriculture
- environmental surveillance

Pillar 4: Access

You must ensure that stewardship does not become simple restriction.

Your strategy must protect access to:

- essential antimicrobials
- diagnostics
- laboratory services
- quality-assured medicines
- appropriate treatment

Pillar 5: Governance

Create a structure capable of coordinating:

Health + Agriculture + Environment + Commerce + Finance + Regulators + Communities

Pillar 6: Research and Innovation

Prioritise research on:

- local resistance patterns
- diagnostics
- stewardship
- infection prevention
- agricultural practices
- environmental transmission
- implementation
- new interventions

Final Cabinet Decision

You have 15 minutes with Cabinet.

You cannot present everything.

The Prime Minister asks:

"If we can only fund three major changes during the next 18 months, what should they be?"

You must choose exactly three.

Possible priorities include:

1. Build laboratory and surveillance capacity.
2. Establish hospital AMS programmes.
3. Regulate antibiotic sales.
4. Reform veterinary antimicrobial use.
5. Strengthen IPC and WASH.
6. Expand vaccination.
7. Strengthen primary care diagnostics.
8. Establish national AMR governance.
9. Create agricultural stewardship programmes.
10. Improve access to essential medicines.
11. Strengthen environmental monitoring.
12. Invest in research and innovation.

You may choose any three.

But you must defend your choices.

For each priority, explain:

- why it comes first
- what problem it addresses
- what it will cost
- who must implement it
- what could prevent success
- what you will measure after 18 months
- what you will deliberately postpone

That last question matters.

A good strategy is not only a list of things you will do. It is also a decision about what you will not do yet.

Professional Deliverable

National AMR Transformation Plan

Prepare a 3,000-word national implementation plan covering:

1. Problem definition

What exactly is the country trying to change?

2. Theory of change

How will your interventions produce measurable improvements?

3. One Health governance

Who is responsible for what?

4. Prevention

How will you reduce infections and therefore reduce antimicrobial demand?

5. Stewardship

How will you improve antimicrobial use?

6. Regulation

How will you regulate without creating harmful access barriers?

7. Surveillance

How will you know whether resistance and use are changing?

8. Financing

Where will the money come from?

9. Workforce

Who will implement the strategy?

10. Equity

Who could be harmed by the strategy and how will you prevent that?

11. Implementation

What happens during:

- Months 1 to 3
- Months 4 to 6
- Months 7 to 12
- Months 13 to 18

12. Evaluation

Identify at least 10 indicators across:

- inputs
- processes
- outputs
- outcomes

- equity
- unintended consequences

Mission Reflection

1. What was the most difficult decision in this mission?
2. What did you identify as the most important driver of AMR?
3. How did your systems map change your understanding of the problem?
4. Which intervention produced the greatest potential benefit?
5. Which intervention created the greatest risk of unintended consequences?
6. How did you balance restriction with access?
7. When is restricting an antimicrobial ethically justified?
8. How did you protect poor and underserved populations?
9. How did you address the interests of farmers?
10. How did you address the interests of pharmaceutical companies?
11. What role should pharmacists play?
12. What role should patients and communities play?
13. How did you balance professional autonomy with stewardship requirements?
14. What happens when clinicians disagree with stewardship recommendations?
15. How should governments respond to informal antibiotic markets?
16. How did you address the relationship between diagnostics and prescribing?
17. Why is infection prevention part of AMR policy?
18. What role does vaccination play in reducing antimicrobial use?
19. How did you address environmental transmission?
20. Who should own national AMR data?
21. What safeguards should apply when industry offers to finance public health infrastructure?
22. How did political power influence your decisions?
23. Which part of your strategy is most difficult to implement?
24. What would you change if your budget were cut by 50 percent?
25. What would you change if your budget doubled?
26. What would success look like after five years?
27. What would failure look like?
28. What did this mission teach you about the difference between having a policy and implementing one?

Competency Debrief

Mission 6 is deliberately designed to activate all six competencies.

Systems Mapping

AMR forced you to look beyond hospitals and antibiotics.

You had to understand connections among people, animals, food systems, pharmaceutical markets, agriculture, wastewater, regulation, and the environment.

Data Fluency

You had to interpret resistance data, antimicrobial consumption, laboratory capacity, surveillance gaps, and uncertainty.

You also had to decide which data mattered most when resources were limited.

Implementation Agility

A national AMR strategy cannot wait for perfect conditions.

You had to decide what could realistically be implemented within 18 months and what needed to wait.

Stakeholder Navigation

No single stakeholder controls AMR.

You had to negotiate among ministries, clinicians, pharmacists, farmers, pharmaceutical companies, regulators, patients, communities, and international partners.

Ethical Foresight

This mission required you to confront a difficult ethical question:

How do we protect the effectiveness of medicines for future generations without denying treatment to people who need those medicines today?

You also had to consider commercial interests, access, surveillance, privacy, resource allocation, professional autonomy, and intergenerational responsibility.

Narrative Competence

AMR is difficult to communicate.

If you tell people that antibiotics are dangerous, they may avoid medicines they genuinely need.

If you tell people that resistance is a distant future threat, they may ignore it.

If you blame farmers, clinicians, pharmacists, or patients, you may create resistance to the intervention itself.

The public health professional therefore has to tell a more accurate story:

Antimicrobials are essential medicines. Their effectiveness is a shared resource. Protecting that resource requires better prevention, better diagnosis, better prescribing, better regulation, better surveillance, and better systems.

Mission Summary

Mission 6 introduced you to antimicrobial resistance as a One Health systems problem rather than simply an antibiotic prescribing problem.

You were required to:

- map AMR across human, animal, agricultural, pharmaceutical, and environmental systems
- identify leverage points
- design regulation without creating harmful access barriers
- establish antimicrobial stewardship
- use AWaRe principles to improve antimicrobial use
- design integrated surveillance
- negotiate among stakeholders with competing interests
- respond to a hospital outbreak
- allocate scarce effective antimicrobials
- develop an 18-month national transformation plan

The mission also demonstrated why AMR cannot be solved by one ministry.

WHO's current Global Action Plan for 2026 to 2036 identifies six interconnected strategic objectives covering awareness and behaviour, surveillance, infection prevention, equitable access and appropriate use, research and innovation, and multisectoral governance, financing, and accountability.

The WHO surveillance work also makes clear why data matter. Without reliable information about resistance and antimicrobial use, governments may not know where the greatest risks are or whether their interventions are working.

But data alone will not solve AMR.

Neither will regulation.

Neither will stewardship.

Neither will public education.

The problem is interconnected.

A country may restrict antibiotic sales but leave communities without diagnostic services.

It may train clinicians but fail to provide reliable medicines.

It may establish surveillance but never use the findings to change practice.

It may create a national action plan but fail to finance implementation.

It may blame farmers while providing no alternative means of preventing disease in livestock.

It may regulate legitimate pharmacies while informal markets continue operating outside the regulatory system.

The real challenge is therefore not simply:

"How do we reduce antibiotic use?"

It is:

"How do we reduce unnecessary antimicrobial use while preserving equitable access to effective treatment and reducing the infections that create demand for antimicrobials in the first place?"

That is a much harder question.

It is also the question that turns AMR from a technical topic into a public health leadership problem.

The central lesson of this mission is simple:

Antimicrobial effectiveness is a shared public resource.

Protecting it requires individual responsibility, professional judgement, institutional accountability, effective regulation, political commitment, and cooperation across sectors.

And like the other missions in this book, the final answer cannot be found in a textbook.

It has to be designed, negotiated, implemented, tested, and adapted in the real world.

Part IV

The Practitioner's Lab: Integration and Futures

By this point, you have moved through three different stages of the book.

Part I established why public health needs to change. We examined the forces disrupting the field and introduced the six competencies that provide the foundation for a more adaptable approach to public health practice.

Part II turned those competencies into practical tools. You learned how to map systems, work with data, design implementation strategies, navigate stakeholders, reason through ethical uncertainty, and communicate health issues effectively.

Part III put those competencies under pressure. Through six missions, you faced complex public health problems involving outbreaks, population ageing, artificial intelligence, climate displacement, infodemics, and antimicrobial resistance. Each mission required you to make decisions with incomplete information, competing interests, limited resources, and consequences that could not always be predicted.

Part IV is where those experiences come together.

This part has two chapters.

Chapter 9, The Capstone Simulation, brings the six competencies together in a single high-stakes scenario. Instead of focusing primarily on one public health problem or one competency, you will face a complex situation that requires you to move between different ways of thinking and working.

You will need to understand the system, interrogate the available evidence, decide what can realistically be implemented, identify and negotiate with stakeholders, consider the ethical consequences of your choices, and communicate your decisions to different audiences.

The purpose is not to demonstrate that you remember everything in the book.

It is to see whether you can use what you have learned when everything becomes connected.

The capstone also introduces an important shift. In the earlier missions, the problem was largely defined for you. In professional practice, that will not always be the case. You may have to decide what the real problem is before deciding how to solve it.

That is part of the challenge.

Chapter 10, The Futures Scenarios, takes the next step.

Public health professionals are not only responsible for responding to today's problems. They also have to think about what may be coming next. Climate change, artificial intelligence, demographic change, geopolitical instability, antimicrobial resistance, new patterns of inequality, and changing relationships between governments, institutions, technology, and communities will continue to reshape the field.

The future cannot be predicted with certainty.

It can, however, be explored.

The scenarios in Chapter 10 are therefore not predictions. They are plausible futures designed to help you examine assumptions, recognise emerging risks, identify opportunities, and consider what different choices made today might produce tomorrow.

You will be asked to think beyond immediate responses and consider a more fundamental question:

What kind of public health professional do you want to become in a world that cannot be fully predicted?

You will also be asked to develop your own position on the future of public health and turn that position into a personal manifesto.

This is important because competency is not the final destination.

A competent practitioner can use tools effectively. A strong practitioner also knows when the tools are insufficient, when assumptions need to be challenged, and when the problem itself needs to be reconsidered.

Part IV is therefore not simply a final examination.

It is a space for integration, judgement, reflection, and imagination.

The goal is to move from using individual competencies to developing a professional way of thinking.

By the end of this part, you should be able to look at a complex public health problem and ask not only:

What should I do?

but also:

What am I seeing?

What am I missing?

Who needs to be involved?

What could happen next?

What are the consequences of acting, and of failing to act?

And what kind of public health system are my decisions helping to create?

That is the point at which competencies become professional judgement.

And professional judgement is what this book has ultimately been trying to develop.

Chapter 9

Capstone Simulation

Learning Objectives

Integrate all six core competencies in a complex, time-pressured public health crisis.

Make decisions under conditions of uncertainty with incomplete information.

Justify and communicate difficult decisions to multiple stakeholders.

Reflect critically on your own decision-making processes and assumptions.

Develop a personal framework for ethical leadership in public health.

The Scenario: The Cascading Crisis

Setting

You are the newly appointed Chief Public Health Officer of a middle-income country in Southeast Asia. Your country, which we will call Mandala, is a nation of 35 million people with a rapidly growing economy, significant income inequality, and a health system that has been underfunded for decades. Public health leadership during crises requires an ability to take initiative, a broad perspective on health threats, and a willingness to speak truth to power (McKee, 2025). These attributes are essential for navigating the complex challenges you will face.

Timeframe

The simulation covers a 72-hour period. You will receive information in stages, as the crisis unfolds. You must make decisions with whatever information is available at each stage. The ability to act proactively rather than reactively, even when faced with uncertainty, is a critical attribute of public health leadership (McKee, 2025).

The Situation

It is early December 2026. Your country has just emerged from a severe dengue outbreak that overwhelmed hospitals in urban areas. The health system is already strained. Then, the following events occur in rapid succession. Public health threats do not occur in isolation; they cascade through interconnected systems, disrupting public services, supply chains, and healthcare delivery (Li & Saad, 2024).

The crisis should be understood as a connected system rather than as two separate emergencies. The outbreak, the typhoon, health-system disruption, political interests, public trust, and international pressure may amplify one another. Figure 9.1 provides a visual overview of these relationships.

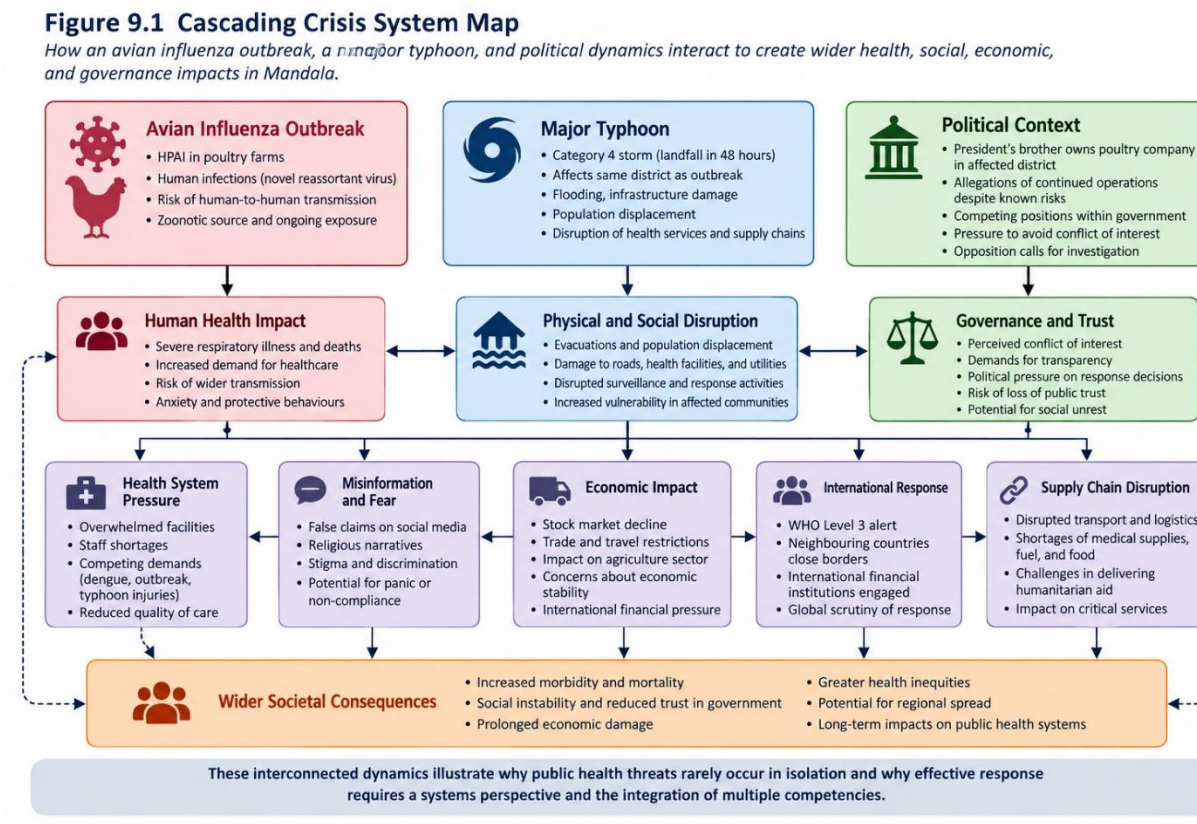


Figure 9.1. Cascading Crisis System Map. The figure should show the emerging infectious disease outbreak and typhoon as interacting shocks, with pathways to health-system disruption, displacement, communication failure, political pressure, economic effects, and international response. Feedback pathways should show how these effects can intensify one another.

Hour 0: The Initial Report

You receive a call from the Director of the National Infectious Disease Institute. A cluster of unusual respiratory illnesses has been reported in a rural district bordering a neighbouring country. Seven people are hospitalised with severe pneumonia. Two have died. The patients include farmers who work in close contact with poultry. Initial tests for common pathogens are negative.

Simultaneously, your office receives a report from the Ministry of Agriculture: an outbreak of highly pathogenic avian influenza (HPAI) has been confirmed in poultry farms in the same district. Over 10,000 birds have died or been culled.

Hour 6: The First Deaths

Two more deaths have been confirmed in the cluster. The pathogen has been provisionally identified as a novel reassortant influenza virus with pandemic potential. The World Health Organization has been notified.

Hour 12: Information Leaks

News of the outbreak has leaked to social media. False claims are circulating that the government is covering up a new pandemic. Some religious leaders are calling for quarantine of the affected

district. Others are calling it a plague from God. The stock market has fallen 3 percent. The Minister of Health is demanding an immediate response plan.

Fear of a disease can spread alongside the disease itself, influencing individuals to adopt protective behaviours that may reduce disease spread (Kitson et al., 2025). Understanding the coupled spread of fear and disease is critical for designing timely, targeted responses to emerging infectious threats (Kitson et al., 2025).

Hour 18: International Pressure

The WHO has issued a Level 3 alert. Neighbouring countries are closing their borders. The International Monetary Fund is contacting the Ministry of Finance about economic stability. The World Bank is offering emergency loans. Your country President has announced an emergency meeting for tomorrow morning.

Hour 24: The Political Dimension

You discover that the President's brother owns a large poultry company in the affected district. There are allegations that the company continued to operate despite known avian influenza risks. The opposition party is calling for an investigation. The Minister of Agriculture is protecting the company. The Minister of Health is advocating for a transparent investigation. The President is trying to avoid the appearance of conflict of interest.

Public health leaders must recognize that not everyone is committed to policies that protect and promote health (McKee, 2025). Individuals and organisations may profit from commodities that threaten health and wellbeing, and may use a wide range of tactics to block or delay policies that threaten their interests (McKee, 2025).

Hour 36: The Storm Approaches

The typhoon is now 24 hours from landfall. Evacuation orders have been issued for coastal areas, including parts of the affected district. However, moving people who may be infected could spread the virus. Keeping them in place risks death from the storm. You have a critical decision to make.

Healthcare infrastructure operations during public health emergencies exhibit significant spatial and temporal variability, with cascading failure processes affecting different facilities at different stages of an epidemic (Zhang et al., 2024). During the acceleration phase of an epidemic, a substantial proportion of healthcare facilities may experience failure (Zhang et al., 2024).

Hour 48: The Storm Makes Landfall

The typhoon has made landfall. Communication with the affected district has been lost. Reports are coming in of extensive flooding, infrastructure damage, and hundreds of casualties. The hospital in the district has been flooded. The outbreak investigation team is stranded. You have no reliable information about the outbreak status.

Hour 60: The Aftermath

The storm has passed. Emergency responders are reaching the affected areas. The outbreak has spread to a neighbouring district. Cases are now being reported in the capital city. The hospital system is overwhelmed. Vaccine development is months away. You must decide on the next steps.

Hour 72: The Crisis Peak

You are now at the height of the crisis. The outbreak is spreading. The health system is strained. The public is fearful and angry. The political pressure is intense. The international community is watching. You must make decisions that will shape the course of this crisis.

The sequence below summarises the information available at each major decision point. Use it to distinguish what was known at the time from what became known later. See Table 9.1.

Table 9.1. 72-Hour Crisis Timeline and Decision Environment

Time	What is known	Decision environment
Hour 0	Severe pneumonia cluster; 2 deaths; poultry exposure; common tests negative; HPAI confirmed in poultry.	Initial assessment, surveillance, infection control, and coordination.
Hour 6	Two additional deaths; novel reassortant influenza with pandemic potential.	Escalate response while evidence remains incomplete.
Hour 12	Information leak, misinformation, religious responses, and economic effects.	Communicate, manage trust, and address social and political pressure.
Hour 18	WHO alert, border closures, IMF concern, and World Bank offer.	Coordinate internationally and anticipate wider consequences.
Hour 24	Presidential family conflict-of-interest concern emerges.	Protect integrity, transparency, and public trust.
Hour 36	Typhoon 24 hours from landfall; evacuation creates infection and storm risks.	Make an urgent evacuation decision.
Hour 48	Storm landfall; communications lost; hospital flooded; team stranded.	Operate with severe information and infrastructure constraints.
Hour 60	Outbreak spreads; capital cases reported; health system overwhelmed.	Shift from local containment to broader national response.
Hour 72	Crisis peak; fear and political pressure intensify.	Integrate outbreak control, health-system protection, communication, ethics, and governance.

Task 1: The Initial 24 Hours (Hours 0 to 24)

You have received the initial reports. You must establish the foundation for the response.

Your Tasks

1A: Rapid Situational Assessment

Using the information available, conduct a rapid situational assessment. Your assessment should include:

What do you know about the outbreak? What don't you know?

What are the immediate public health priorities?

What are the political and social considerations?

What is your preliminary risk assessment?

1B: Initial Response Plan

Develop an initial response plan for the first 24 hours. Your plan should address:

Immediate public health measures including surveillance, case management, and infection control.

Communication strategy including what you will say, to whom, and through which channels.

Coordination across ministries and sectors.

Resource mobilisation.

Engagement with the WHO and international partners.

1C: Stakeholder Analysis

Map the key stakeholders and their positions. Table 9.2 provides a starting structure. Complete it with your own assessment of interests, influence, risks, and engagement strategies.

Table 9.2. Key Stakeholders and Competing Interests

Stakeholder	Primary interests	Influence	Potential concern or conflict	Engagement approach
Chief Public Health Officer	Public health protection; coordinated response	High	Pressure from political and economic actors	Evidence-based advice and transparent decision log
President / President's Office	Political stability; public confidence; economic continuity	Very high	Family business creates perceived conflict of interest	Independent advice and conflict-of-interest management
Ministry of Health	Outbreak control; health-system protection	High	Resource and operational constraints	Joint incident command and clear priorities
Ministry of Agriculture	Poultry sector; animal health; food supply	High	Pressure to protect affected company	One Health coordination and transparent evidence
WHO	International health security; technical coordination	High	External expectations may exceed national capacity	Timely reporting and technical collaboration
Affected communities	Safety; livelihoods; continuity of services	Variable	Mistrust, fear, and displacement	Community engagement and trusted messengers

Poultry industry	Business continuity; compensation; market access	High	Financial incentives may conflict with disease control	Regulated engagement and transparent rules
Media and social media actors	Information; audience attention	High	Rumours and rapid amplification	Proactive briefings and accessible evidence
Opposition / civil society	Accountability; transparency	Medium to high	Political contestation	Public reporting and independent oversight
Emergency responders / health workers	Safety; service continuity	High operationally	Exposure, fatigue, and limited resources	Protection, rotation, and psychosocial support

Who are the key players? What are their interests and influence?

How will you manage the political dimension, including the President's conflict of interest?

How will you balance public health, economic, and political considerations?

1D: Decision on Evacuation

You must make an initial decision on whether to evacuate the affected district ahead of the typhoon. Consider:

The health risks of moving potentially infected people.

The risks of keeping people in place during a Category 4 storm.

The communication challenges of your decision.

The political implications of your decision.

Use Figure 9.2 to structure the competing risks rather than treating evacuation as a simple yes-or-no question.

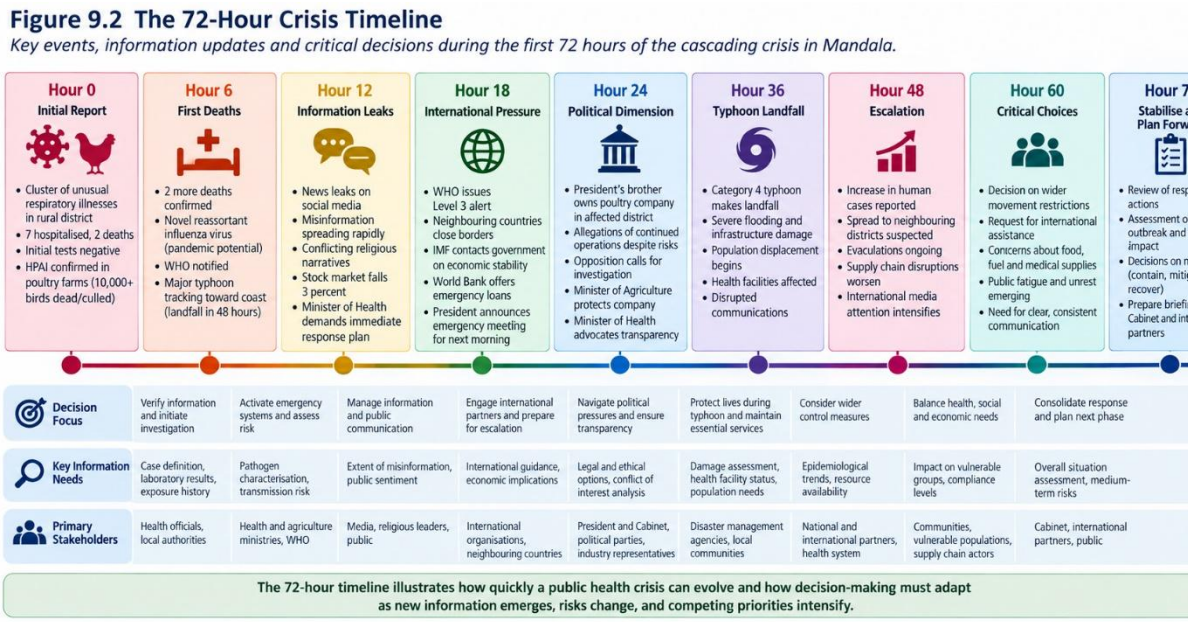


Figure 9.2. Evacuation Decision Framework. The figure should compare infection-transmission risk, storm-related mortality and injury risk, continuity of essential care, feasibility, protection of vulnerable groups, and communication. It should include a reassessment point because conditions may change.

Task 2: The 36 Hour Decision Point

The typhoon is approaching. You must make a critical decision about evacuation.

Your Tasks

2A: Risk Benefit Analysis

Conduct a structured risk-benefit analysis of the evacuation decision. Consider:

What are the health risks of evacuation, including spread of infection and disruption of treatment?

What are the health risks of staying, including storm-related deaths, injury, and loss of services?

What are the logistical challenges of evacuation?

What are the communication requirements of the evacuation?

What is the ethical framework for your decision?

2B: Decision Document

Prepare a decision document that:

States your decision clearly.

Provides the rationale for your decision.

Acknowledges the trade-offs and uncertainties.

Outlines the implementation plan.

Addresses the communication strategy.

2C: Stakeholder Communication

Draft key messages for:

The public through media.

Affected communities.

The President's Office.

The WHO.

Your own staff.

Task 3: The Crisis Response (Hours 48 to 72)

The storm has made landfall. You are now managing a complex, multifaceted crisis.

Your Tasks

3A: Response Coordination

Design the coordination structure for the response. Your structure should:

Integrate health, emergency management, agriculture, and social welfare.

Address the needs of affected communities.

Ensure communication flows between all actors.

Include mechanisms for accountability and oversight.

Support the mental health of responders.

Your proposed structure should make clear who has authority, who provides technical advice, who coordinates field operations, and how information moves between levels. See Figure 9.3.

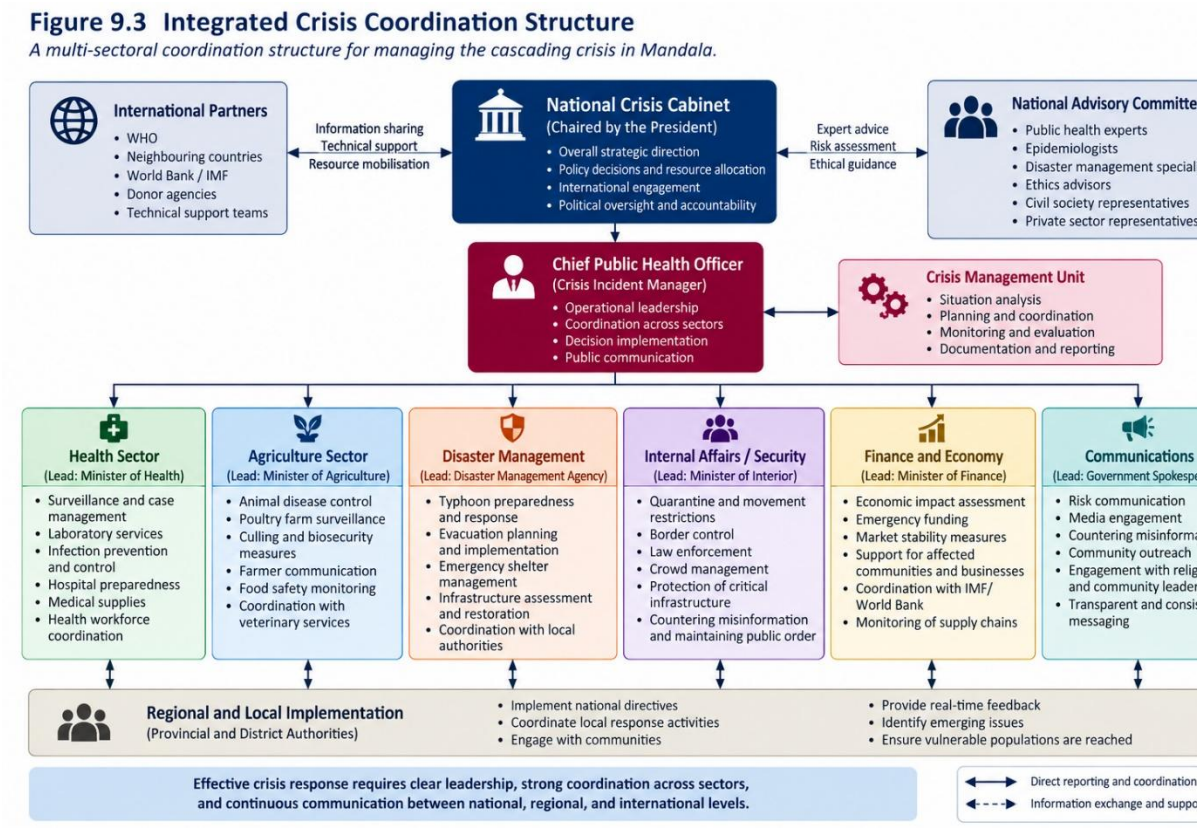


Figure 9.3. Integrated Crisis Coordination Structure. The figure should link political leadership, public health leadership, emergency management, health services, agriculture, social welfare, local government, international partners, and community representatives. Arrows should distinguish decision authority, technical advice, operational coordination, and information flow.

3B: Health System Response

Develop a health system response plan that addresses:

Surge capacity for the health system.

Outbreak containment strategies.

Management of non-outbreak health needs including chronic disease, mental health, and maternal health.

Surveillance and data collection.

Engagement with community health workers.

Table 9.3 can be used to prioritise the health-system response across immediate, short-term, and continuity needs.

Table 9.3. Health System Response Priorities

Response area	Immediate priority	Short-term action	Continuity concern	Key indicator
Surge capacity	Assess beds, staff, oxygen, and referral capacity	Expand and redistribute capacity	Sustained staffing and supplies	Occupancy and staffing levels

Outbreak containment	Case finding, isolation, and infection prevention	Expand surveillance and contact investigation	Transmission across districts	New cases and secondary transmission
Essential services	Protect urgent maternal, chronic, mental health, and emergency care	Restore disrupted services	Backlog and treatment interruption	Essential-service continuity
Surveillance	Establish minimum reporting channels	Restore field and laboratory reporting	Data quality and timeliness	Reporting completeness and timeliness
Community health workers	Protect and brief workers	Deploy to surveillance and community support	Burnout and continuity	Worker availability and safety
Infrastructure	Identify damaged facilities	Use alternative and mobile service points	Reconstruction and resilience	Functional service points

3C: Communication and Trust

Develop a comprehensive communication strategy that:

Addresses the needs of different audiences including urban, rural, and ethnic groups.

Counters misinformation and builds trust.

Acknowledges uncertainty without creating panic.

Engages community leaders and trusted messengers.

Addresses the political tensions in the response.

Public health leaders require the ability to communicate in ways that build and maintain trust and accountability (Helm-Murtagh & Erwin, 2024). This involves prioritising clarity, accessibility, and nuance while openly discussing scientific processes and how evidence is generated and evaluated.

3D: Resource Allocation

You have limited resources. Develop a plan for allocating:

Healthcare personnel including where they should be deployed.

Medical supplies including ventilators, PPE, and medications.

Food and shelter for displaced populations.

Emergency funding including your priorities.

Make the criteria for prioritisation explicit. Table 9.4 provides a decision matrix that you can adapt to justify why one use of a scarce resource takes priority over another.

Table 9.4. Resource Allocation Decision Matrix

Criterion	Question to ask	Possible evidence	Equity safeguard
Urgency	Who faces immediate risk of death or serious harm?	Clinical severity and time sensitivity	Do not exclude people because of weak political

			influence or limited resources
Expected benefit	Where can the resource produce meaningful health benefit?	Likelihood of benefit and avoidable harm	Do not base decisions on social status
Vulnerability	Who faces disproportionate risk?	Population and individual risk	Consider additional protection where justified
Feasibility	Can the intervention be delivered safely?	Staff, infrastructure, transport, and supplies	Avoid allocating resources to plans that cannot be implemented
Equity	Who may be systematically left out?	Geographic and demographic distribution	Monitor distribution across affected and host communities
Stewardship	How can scarce resources be used responsibly?	Expected use, wastage, and opportunity cost	Reassess as new information becomes available
Procedural fairness	Was the decision made transparently and consistently?	Decision record and stakeholder input	Document criteria and provide a route for review

Task 4: Reflection and Debrief

The immediate crisis has passed. You now have an opportunity to reflect.

Your Tasks

4A: Decision Review

Review the key decisions you made during the simulation:

Which decisions were the most difficult? Why?

Which decisions were you most confident about? Why?

What would you do differently with hindsight?

What assumptions did you make that were challenged?

4B: Competency Assessment

Assess your performance against the six competencies. Table 9.5 provides a structured self-assessment framework.

Table 9.5. Six-Competency Capstone Assessment Matrix

Competency	What to assess	Evidence from your decisions	Development priority
Systems Mapping	Links among outbreak, storm, politics, health system, economy, and community	Where did you identify interactions or feedback loops?	What relationships did you miss?

Data Fluency	Interpreting incomplete evidence and communicating uncertainty	How did you distinguish knowns, unknowns, and assumptions?	What information would have improved the decision?
Implementation Agility	Adapting plans as conditions changed	How did you revise the response after the storm and information loss?	Where was your plan too rigid?
Stakeholder Navigation	Managing interests, influence, conflict, and collaboration	How did you handle political and sectoral pressures?	Whose influence or perspective did you underestimate?
Ethical Foresight	Competing values, risks, and unequal consequences	What ethical principles guided evacuation and resource allocation?	Which affected groups needed stronger consideration?
Narrative Competence	Communicating clearly with different audiences under uncertainty	How did you communicate risk, uncertainty, and decisions?	Which audiences required a different approach?

Systems Mapping: How well did you understand the interconnections between the outbreak, the storm, the political context, and the health system?

Data Fluency: How well did you interpret the data you had? How did you handle uncertainty?

Implementation Agility: How well did you adapt to rapidly changing circumstances? How did you manage the gap between plans and reality?

Stakeholder Navigation: How effective were you in engaging different stakeholders and managing competing interests?

Ethical Foresight: How well did you anticipate and reason through ethical dilemmas? What principles guided your decisions?

Narrative Competence: How effective were you in communicating with different audiences? How did you build trust?

4C: Lessons Learned

Identify the key lessons from this simulation:

What would you want to do differently in a real crisis?

What would you want to learn or develop further?

What systems or structures would you want to have in place before a crisis?

What kind of public health professional do you want to be?

Mission Reflection

You have now completed the capstone simulation. This was a demanding exercise that required you to integrate all six competencies under time pressure, with incomplete information, and in a politically charged environment.

Take some time to reflect on the following questions:

What was the most difficult moment in the simulation? Why?

Which competency did you rely on most heavily? Which did you find yourself wishing you had more of?

How did you balance the competing demands of public health protection, political pressures, economic concerns, and social stability?

What role did your values play in your decisions? Were there moments when your values were challenged?

How did you handle uncertainty? What strategies helped you make decisions with incomplete information?

What would you need to feel prepared for a real-world crisis of this magnitude?

What kind of leader do you want to be in a public health crisis?

Research on public health leaders who navigated the COVID-19 pandemic has revealed gaps in crisis leadership, communication, and collaboration training (Singh et al., 2024). The findings suggest that although many of the skills needed are competencies for accredited public health training programs, effective leadership during public health emergencies may require additional training beyond what is generally provided (Singh et al., 2024).

Crisis leadership requires a set of competencies including sense making, coordinating teamwork, decision making, communications, and facilitating learning (Riggio & Newstead, 2023). Public health leaders must also have the ability to forge, facilitate, and promote partnerships, connect public health and health care systems, and build information systems that provide accessible, actionable data (Helm-Murtagh & Erwin, 2024). Centering equity and inclusivity while understanding structural racism as a fundamental driver and creator of health inequities is also essential (Helm-Murtagh & Erwin, 2024).

Public health leaders must also be able to speak truth to power, engage with leaders in other sectors, and maintain a commitment to values (McKee, 2025). The ability to take a broad view of health threats, recognising that infectious disease outbreaks cause disruption to education, employment, and essential services, is critical for effective crisis leadership (McKee, 2025).

Capstone Summary

Chapter 9 challenged you to integrate all six competencies in a complex, multifaceted crisis. You were required to:

Conduct a rapid situational assessment across multiple sectors.

Make high-stakes decisions under conditions of uncertainty.

Coordinate response across government, international partners, and communities.

Balance public health, political, economic, and social considerations.

Communicate effectively with diverse audiences.

Reflect critically on your decision-making and competencies.

This simulation demonstrated that public health leadership is not about finding the right answer. It is about making the best possible decisions with the information available, managing the trade-offs inherent in complex systems, and learning from every experience. The COVID-19 pandemic highlighted the importance of public health leadership, yet while there were many inspirational

examples, too often it was lacking (McKee, 2025). The public health community must itself take some responsibility for this, and must invest in developing the competencies and attributes that will enable effective leadership in future crises (McKee, 2025).

Chapter 10

The Futures Scenarios

Learning Objectives

Articulate your vision for the future of public health practice.

Identify the values and competencies that will guide your professional development.

Develop a personal manifesto for your public health career.

Situate your own aspirations within the broader trajectory of the field.

Introduction

This book began with a diagnosis: public health must change. The six forces reshaping health, climate change, digital disruption and AI, ageing populations, widening inequity, antimicrobial resistance, and geopolitical instability, demand new competencies, new ways of thinking, and new ways of practising.

The traditional discipline model that has structured public health education for decades was developed for a different era. It remains valuable, but it can fragment problems that need to be understood together. The question is therefore not whether the established disciplines should disappear. It is how public health professionals can connect them when the problems they face cross disciplinary boundaries.

The future of public health is not predetermined. It will be influenced by the decisions societies make, the values institutions protect, the technologies they adopt, and the relationships they build. Public health professionals will need to decide what should be preserved, what needs to be rethought, and what new possibilities are worth pursuing.

The four scenarios that follow are plausible futures for public health in 2050. They are not predictions. They are structured provocations designed to help you think critically about the direction of the field. Each scenario makes different assumptions about how the six forces reshaping health may interact and how governments, institutions, communities, and professionals may respond.

Your task is to read each scenario, examine its assumptions, consider its consequences, and then articulate your own vision for the future of public health and your place within it. The purpose is to move you from being a passive recipient of knowledge to an active participant in shaping the future.



Figure 10.1. The Six Forces Shaping Public Health Futures.

The scenarios should therefore be read as different combinations of pressures and choices rather than as four isolated stories. Figure 10.1 shows the forces that provide the underlying context for all four futures.

Scenario 1: The Fortress World

Year: 2050

Theme: Fragmentation and inequity

The World

The world has fractured. Geopolitical rivalries have deepened. Climate change has accelerated migration and conflict, while health systems in many settings are fragmented and under resourced.

In high income countries, public health has become closely tied to national security. Surveillance systems monitor populations for emerging threats. Borders close quickly when disease threats emerge, and wealthy nations protect access to vaccines and other critical technologies. The role of multilateral institutions has weakened, and global health governance has become far less effective.

In low and middle income countries, health systems have deteriorated severely in many regions. Antimicrobial resistance is widespread. Climate change has damaged agriculture and displaced large populations. In some settings, life expectancy has declined. Progress toward global development

goals has stalled, and the gap between the health of wealthy and poor populations has become much wider.

Public health professionals are polarised. In wealthier countries, many work in highly protected institutions, managing threats to national populations. Their work is technical, data driven, and focused on containment. In poorer settings, professionals work in humanitarian environments, providing essential services and advocating for basic health rights. Their work is often precarious, under resourced, and dangerous.

The COVID-19 pandemic can be read as an early warning of this type of future. Unequal access to vaccines, weaknesses in global cooperation, persistent antimicrobial resistance, and declining trust in international institutions all demonstrate how health threats can become more difficult to manage when countries and institutions prioritise narrow interests over collective action.

Questions for Reflection

What is the role of public health in this world? Is it still primarily about population health, or has it become something else?

What competencies would you need to work in this world? Which of the six competencies would be most important?

What ethical dilemmas would you face? How would you navigate them?

What would you do differently if you found yourself in this world?

How does this scenario challenge your assumptions about the trajectory of public health?

Scenario 2: The Data Driven State

Year: 2050

Theme: Digital authoritarianism and efficiency

The World

Digital technology has transformed health. AI systems predict disease outbreaks before they occur. Personalised health monitoring is widespread. Genomic sequencing is routine, and many health decisions are supported or made by algorithms.

But this transformation has come at a cost. Privacy has been eroded. Health data is used for surveillance, policing, and social control. Health insurance and access to services may be influenced by algorithmic risk scores. Marginalised populations are penalised when they lack access to digital health services or when the data used to represent them are incomplete.

The digital divide has become one of the central health inequities of the century. People with access to advanced technologies enjoy major improvements in prevention, diagnosis, and longevity. Those without that access are left behind. The gap between data rich and data poor populations becomes as consequential as other forms of economic inequality.

Research in the 2020s had already demonstrated that algorithms can reproduce or amplify inequities when they are developed from biased data. Evidence from healthcare showed that apparently efficient systems can produce unequal outcomes when the variables used in an algorithm are poor proxies for need. In low and middle income settings, weaker data infrastructure and limited regulatory oversight can create additional risks.

The concept of algorithmic colonialism has also become relevant to this future. Data generated by communities in the Global South may be extracted, aggregated, and used to train systems owned and governed elsewhere. The resulting technologies can then be sold back to the same populations without meaningful local control over the data, the models, or the benefits they produce.

Public health professionals in this world are technocrats. They design algorithms, interpret data, and manage technology intensive health systems. They are powerful, but their choices are constrained by the institutions and political systems in which they work. Their central ethical dilemmas concern efficiency and equity, privacy and security, innovation and justice, and the question of who owns health data and who benefits from its use.

Questions for Reflection

Is public health better in this world? What have we gained and what have we lost?

What competencies would you need to work in this world? Which of the six competencies would be most important?

What ethical dilemmas would you face? How would you navigate them?

What would you do differently if you found yourself in this world?

How does this scenario challenge your assumptions about the role of technology in public health?

Scenario 3: The Community Renaissance

Year: 2050

Theme: Localism, participation, and health equity

The World

The failures of centralised health systems have led to a resurgence of community based health. Communities have reclaimed greater control over their health. Local health councils, composed of community members, help determine priorities and allocate resources. Community health workers are the backbone of the system.

Health is understood as both a social and ecological issue. Climate action is integrated with health promotion. Food systems are more local and sustainable. Housing and urban planning are treated as health policy. Social justice is a central principle of health decision making.

Technology is used in service of communities rather than the other way around. Digital tools support community health workers, facilitate data sharing, and enable community monitoring of health services. Communities retain meaningful control over their data and participate in decisions about how digital systems are used.

This future builds on models that were already emerging in the 2020s. Community based long term care initiatives in Indonesia and Viet Nam demonstrated ways to connect older people, caregivers, communities, and local government. In India, programmes such as Vriddha Mitra explored the use of trained local youth to support older people at home. Such approaches suggest how locally organised services can complement formal health systems.

Public health professionals in this world are facilitators and partners. They bring technical expertise but make space for community leadership. They work across sectors, advocate for health justice, and support communities in achieving their own health goals. Their role is not simply to tell communities what to do, but to help communities build the capacity and conditions to decide what they want to do.

Questions for Reflection

Is public health better in this world? What have we gained and what have we lost?

What competencies would you need to work in this world? Which of the six competencies would be most important?

What ethical dilemmas would you face? How would you navigate them?

What would you do differently if you found yourself in this world?

How does this scenario challenge your assumptions about the relationship between communities and health systems?

Scenario 4: The Planetary Health Era

Year: 2050

Theme: Integration and sustainability

The World

Planetary health has become the organising framework for public health. The interdependence of human health and natural systems is widely understood. Climate action is a core public health function. Biodiversity is protected as a health asset, and food systems are designed to be more sustainable and equitable.

Health governance has been transformed. Multilateral institutions have been strengthened, and international financing mechanisms support universal health coverage and climate adaptation. Health considerations are incorporated into decisions about transport, agriculture, housing, energy, food, and economic development.

The planetary health approach builds on earlier scholarship that connected human health with the condition of the natural systems on which human societies depend. In this future, that connection has moved from the margins of public health into mainstream policy and professional practice.

Technology serves both health and environmental goals. AI supports health system planning while efforts are made to reduce its environmental footprint. Renewable energy powers health facilities. Digital health reduces unnecessary travel and can improve access to services. The digital divide has narrowed through sustained investment in infrastructure, skills, and institutional capacity in low and middle income countries.

Antimicrobial resistance is addressed through a comprehensive One Health approach. Prevention, infection prevention and control, water, sanitation and hygiene, vaccination, biosecurity, responsible antimicrobial use, surveillance, and environmental action are treated as connected components of the response. The updated WHO Global Action Plan on AMR for 2026 to 2036 provides a contemporary policy framework for this scenario (World Health Organization, 2026).

Public health professionals in this world are integrators. They understand the interconnections between human, animal, and environmental health. They work across sectors and disciplines, combine technical knowledge with ethical reasoning, and communicate across different audiences. Their training emphasises the competencies developed throughout this book: systems mapping, data fluency, implementation agility, stakeholder navigation, ethical foresight, and narrative competence.

Questions for Reflection

Is public health better in this world? What have we gained and what have we lost?

What competencies would you need to work in this world? Which of the six competencies would be most important?

What ethical dilemmas would you face? How would you navigate them?

What would you do differently if you found yourself in this world?

How does this scenario challenge your assumptions about the scope of public health?

Comparing the Scenarios

The four scenarios represent different combinations of governance, technology, values, and public health priorities. None should be treated as a complete description of the future. Each highlights choices that could push public health toward a particular direction. Table 10.1 provides a structured comparison.

Dimension	Fortress World	Data Driven State	Community Renaissance	Planetary Health Era
Governance	Fragmented, nationalist	Centralised, algorithmic	Local, participatory	Integrated, global
Technology	Surveillance and control	Dominates decision making	Serves community needs	Serves health and environment
Equity	Deeply inequitable	Digital divide is central inequity	Equity is a core principle	Equity is integrated
Dominant values	Security, containment	Efficiency, optimisation	Participation, justice	Sustainability, integration
Public health role	Security function	Technocratic management	Community facilitation	Systems integration

Table 10.1. Four Possible Public Health Futures in 2050. The comparison highlights differences in governance, technology, equity, values, and the professional role of public health.

These differences also reveal that the future of public health is partly a question of values. A society can use advanced technology while limiting participation. It can decentralise services while reproducing inequality. It can pursue efficiency while weakening privacy or autonomy. Conversely, it can integrate environmental and social priorities while accepting that some decisions may take longer because more voices are involved.

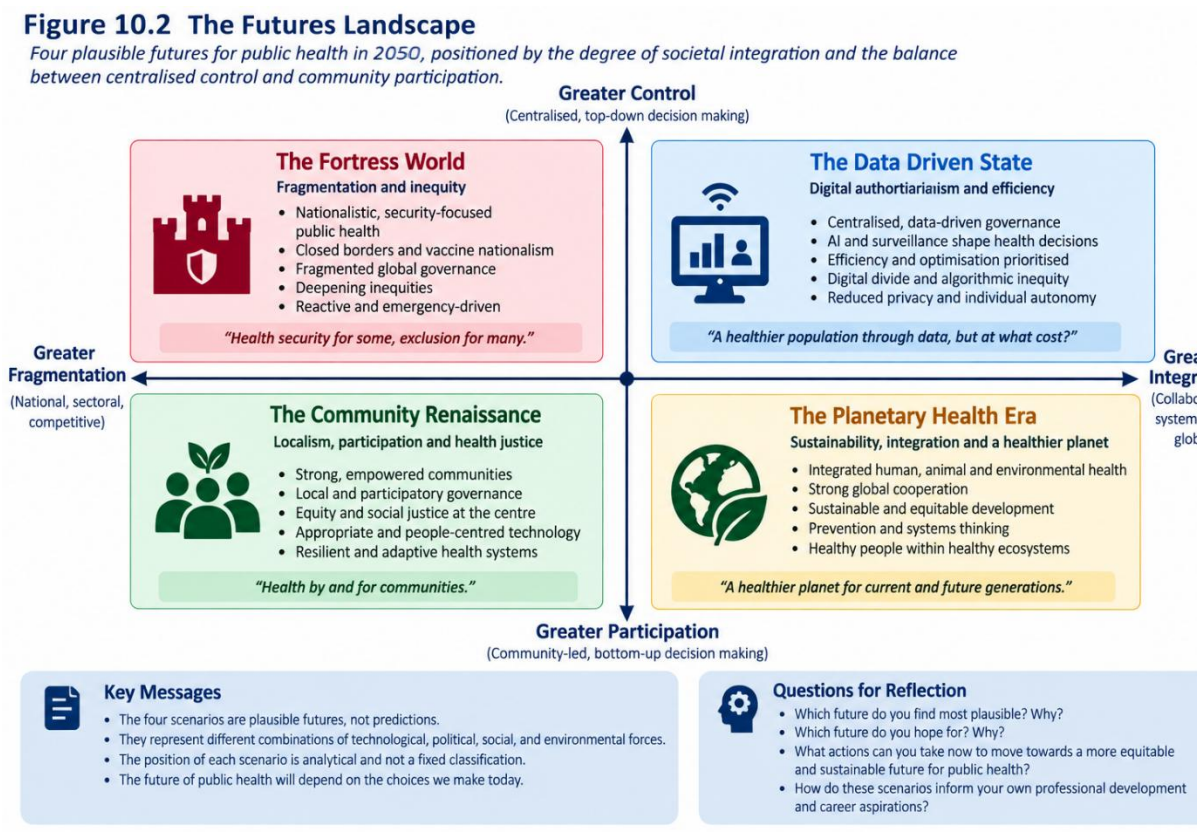


Figure 10.2. The Futures Landscape.

Figure 10.2 should be read as an analytical device rather than a prediction. The scenarios can overlap, and real societies may contain elements of more than one future at the same time.

Your Public Health Manifesto

Having considered four possible futures, it is time to articulate your own vision for public health and your place within it. This exercise asks you to clarify the values that will guide your decisions, identify the competencies you need to strengthen, and make a commitment to the kind of professional you want to become.

Part 1: Your Values

What do you believe public health is for?

What values guide your work? Consider equity, solidarity, autonomy, efficiency, innovation, justice, sustainability, and participation.

What trade offs are you unwilling to make? What boundaries will you not cross?

Part 2: Your Competencies

Which of the six competencies are you strongest in? Which do you need to develop?

What other competencies do you believe are essential for the future of public health?

How will you continue to develop your competencies over your career?

Part 3: Your Practice

What kind of public health professional do you want to be?

Where will you work? Consider government, community organisations, research institutions, international agencies, or the private sector.

What issues will you focus on?

What will you be known for?

Part 4: Your Legacy

What do you want to contribute to the field of public health?

What do you want your legacy to be?

What would you want to be remembered for?

Part 5: Your Commitment

Write a personal manifesto that captures your vision, your values, and your commitment to public health. This can be a statement of purpose, a set of principles, a vision for the future, or a personal pledge.

Your manifesto should be:

Specific enough to guide your decisions.

Ambitious enough to inspire you.

Authentic enough to reflect who you are.

Flexible enough to evolve as you learn and grow.

Chapter Summary

Chapter 10 invited you to look forward to the future of public health. Four scenarios offered different visions of what 2050 might hold:

1. The Fortress World: fragmented, inequitable, and security focused.

2. The Data Driven State: efficient but authoritarian, with deep digital inequities.

3. The Community Renaissance: local, participatory, and justice focused.

4. The Planetary Health Era: integrated, sustainable, and equity oriented.

Your task was not to choose the scenario that is most likely to occur. It was to examine the assumptions behind each future, consider what might be gained or lost, and articulate your own vision for public health.

The public health manifesto is intended to turn that reflection into a professional commitment. The future is shaped by decisions, values, institutions, technologies, and relationships. The competencies developed throughout this book can help you participate in that shaping process.

Reflection Questions

Which scenario resonates most with your vision for the future of public health? Why?

Which scenario concerns you most? Why?

What can you do, starting today, to move towards the future you want?

What obstacles might stand in your way? How will you overcome them?

Who do you need to partner with to achieve your vision?

How will you stay true to your values when faced with pressure to compromise?

What would success look like for you in 10 years? In 20 years?

PART V

The Public Health Knowledge Base

Earlier parts of this book asked you to practise. This part gives you the foundational knowledge you may need when the work becomes more difficult.

Public health professionals still need epidemiology, biostatistics, environmental health, health systems knowledge, social and behavioural science, research methods, communication, leadership, ethics, economics, and an understanding of global health. The point of organising these subjects here is not to make them less important. It is to give you a place to return when you need deeper knowledge to support a decision.

This section contains Chapters 11 to 31. The chapters cover the major areas of public health knowledge and extend the critical perspective used throughout the book. They are not meant to replace formal study in any of these fields. They are meant to help you connect foundational knowledge with the kinds of problems you will meet in practice.

The chapters are deliberately connected. Consider an outbreak in a large city. Epidemiology helps you understand the pattern of disease. Environmental health may reveal conditions that increase exposure. Health systems knowledge tells you whether services can respond. Communication helps you work with fear and misinformation. Economics helps you think about scarce resources. Ethics helps you decide how competing interests should be handled. Policy knowledge helps you work with decision makers. Community knowledge may reveal something that none of the formal datasets can show.

That is why these chapters should not be treated as isolated subjects. They are different ways of understanding the same public health world.

The connection to the six competencies is equally important. Systems Mapping depends on understanding what is happening within a system. Data Fluency depends on knowing how data are produced and what they can and cannot tell us. Implementation Agility requires knowledge of people, institutions, resources, and policy. Stakeholder Navigation requires an understanding of interests and power. Ethical Foresight requires knowledge of the values and principles at stake. Narrative Competence requires both sound evidence and an understanding of the people who need to hear it.

Use this section when you need it. Read it as a student preparing for an examination. Read it as a practitioner trying to solve a problem. Read it as a researcher looking for a starting point. Return to a chapter when you realise that you know what you want to do but need a stronger understanding of why it might work, where it could fail, or who might be affected.

And come back to it as your experience grows. You may read the same chapter differently five years from now because the problems you encounter will change the questions you ask. Good practice often sends us back to knowledge we thought we already understood.

The foundation matters. But knowledge becomes useful only when we put it to work.

Chapter 11

Epidemiology and Biostatistics

Learning Objectives

By the end of this chapter, you will be able to:

Critically evaluate the core concepts of epidemiology and their limitations

Analyse the strengths and weaknesses of different study designs for answering public health questions

Distinguish between association and causation and apply frameworks for causal inference

Identify and critique common statistical fallacies in public health research

Assess the role of quantitative methods in shaping public health policy and practice

Apply epidemiological and biostatistical reasoning to public health challenges

11.1 What Is Epidemiology? A Critical Examination

Epidemiology is conventionally defined as the study of the distribution and determinants of health-related states and events in specified populations and the application of this study to the control of health problems (Last, 2001). This definition, while widely accepted, obscures significant debates about the nature, scope, and purpose of epidemiological inquiry.

The Descriptive-Analytic Distinction

The distinction between descriptive and analytic epidemiology is foundational to the field. Descriptive epidemiology concerns itself with the distribution of disease: who gets sick, where, and when. Analytic epidemiology concerns itself with determinants: why some people get sick and others do not. This distinction appears straightforward, yet it masks important assumptions.

Descriptive epidemiology is not merely descriptive. The choice of what to describe, how to categorise populations, and which comparisons to make reflects theoretical commitments and value judgments (Krieger, 2014). The categories of race, class, and gender that are central to descriptive epidemiology are social constructs, not biological facts. Their use in epidemiological research both reflects and reinforces social hierarchies (Krieger, 2011).

Analytic epidemiology is not merely analytic. The identification of determinants depends on prior assumptions about what counts as a cause, what level of analysis is appropriate, and what evidence is sufficient (Rothman et al., 2008). These assumptions are often implicit, unexamined, and shaped by disciplinary traditions and institutional constraints.

The Population Perspective

Epidemiology's population perspective is often presented as its distinctive contribution. Unlike clinical medicine, which focuses on individual patients, epidemiology focuses on groups. This population perspective is essential for understanding patterns of disease and for designing interventions that improve the health of communities.

However, the population perspective also has limitations. It can obscure individual experiences and the heterogeneity within populations. It can lead to ecological fallacies, where associations observed

at the group level are wrongly attributed to individuals. It can also lead to a focus on average effects that may not apply to specific subgroups (Greenland, 2009).

Epidemiology and Public Health Action

The application of epidemiological findings to public health action is central to the field's identity. Epidemiology is not merely an academic discipline; it is a tool for improving health. This applied orientation shapes the questions epidemiologists ask, the methods they use, and the ways they interpret findings.

However, the relationship between epidemiological evidence and public health action is complex and contested. Evidence does not speak for itself; it is interpreted and used in the context of competing interests and values. Epidemiological findings can be ignored, distorted, or selectively used to support predetermined policy positions (Brown, 2010). The translation of epidemiological evidence into action is shaped by political, economic, and social factors that are outside the scope of epidemiological inquiry.

Table 11.1. Core Epidemiological Concepts and Their Practical Use

Concept or area	What it means	Why it matters in practice
Disease frequency	Incidence, prevalence, mortality and related measures	Describe how much disease exists and how it changes over time.
Study design	Cross-sectional, case-control, cohort, experimental and other designs	Match the design to the question and recognise what each design can and cannot establish.
Association	Risk ratios, odds ratios, rate ratios and related measures	Quantify relationships without automatically treating them as causal effects.
Bias and confounding	Systematic error and mixing of effects	Assess whether a finding may be distorted before drawing conclusions.
Causal inference	Reasoning about whether an exposure contributes to an outcome	Move from association toward defensible causal explanations.
Statistical inference	Uncertainty, estimation, testing and interpretation	Avoid overstating what a numerical result tells us.

11.2 Measures of Disease Frequency: Uses and Limitations

Measures of disease frequency are the building blocks of epidemiological description and analysis. However, these measures are not neutral technical tools; they embody assumptions and shape how health problems are understood.

Incidence

Incidence measures the occurrence of new cases of disease in a population over a specified period. Incidence proportion, or cumulative incidence, is the proportion of people who develop the disease during a specified period. Incidence rate, or incidence density, is the number of new cases divided by the total person-time at risk.

The distinction between incidence proportion and incidence rate is not merely technical. Incidence proportion assumes a fixed population and a specified time period. It is useful for describing the risk of disease in a population but is sensitive to the length of follow-up and the competing risk of death. Incidence rate does not assume a fixed population and can accommodate varying follow-up times. It is useful for comparing disease occurrence across populations but is more difficult to interpret clinically (Rothman et al., 2008).

Both measures depend on the definition of the population at risk. The population at risk excludes individuals who already have the disease or who are not susceptible. The definition of who is at risk reflects assumptions about the nature of the disease and its determinants. These assumptions can be contested and can shape the findings of epidemiological studies (Greenland, 2009).

Prevalence

Prevalence measures the proportion of people in a population who have the disease at a specific point in time. Prevalence is a measure of disease burden, not disease occurrence. The relationship between incidence and prevalence, where prevalence equals incidence times duration, is often used to understand disease dynamics.

Prevalence is useful for planning health services and for understanding the burden of disease in populations. However, prevalence can be misleading for diseases with long duration or for populations with high mortality. Prevalence also depends on the definition of disease, which can vary across studies and over time (Rothman et al., 2008).

Mortality Measures

Mortality measures describe deaths in populations. Crude mortality rates, cause-specific mortality rates, and case fatality rates are all used in epidemiological research. Mortality measures are often more reliable than morbidity measures because deaths are more systematically recorded.

However, mortality measures have limitations. They do not capture non-fatal health outcomes, which may be more common or more burdensome than fatal outcomes. They can be affected by diagnostic practices and by the quality of death certification. They also depend on the age structure of the population, which can confound comparisons across populations (Rothman et al., 2008).

11.3 Study Designs: Strengths and Limitations

Epidemiologists use different study designs to answer different types of questions. Each design has strengths and limitations, and the choice of design depends on the research question, the availability of data, and practical considerations. Critical appraisal of study designs is essential for interpreting epidemiological evidence.

Descriptive Studies

Descriptive studies describe the distribution of disease in populations. They do not test hypotheses about causation. Case reports, case series, and cross-sectional surveys are all descriptive study designs. Descriptive studies are useful for generating hypotheses and monitoring disease trends.

However, descriptive studies have significant limitations. They cannot establish causation because they do not compare exposed and unexposed groups. They are susceptible to selection bias and information bias. They can also be misleading if the population is not well defined or if the data are not representative (Grimes & Schulz, 2002).

Cross-Sectional Studies

Cross-sectional studies measure exposure and outcome at the same point in time. They are useful for estimating prevalence and for identifying associations. However, cross-sectional studies cannot establish temporal sequence because exposure and outcome are measured simultaneously. They are also susceptible to selection bias and information bias (Rothman et al., 2008).

Case-Control Studies

Case-control studies compare people with the disease (cases) to people without the disease (controls) and look back in time to compare exposure histories. They are efficient for studying rare diseases and for investigating multiple exposures. Case-control studies are often used in outbreak investigations and in studies of chronic diseases.

However, case-control studies have significant limitations. They are susceptible to recall bias, where cases remember exposures differently than controls. They are susceptible to selection bias, where cases and controls differ in ways that affect the exposure distribution. They can only estimate odds ratios, which approximate risk ratios only when the disease is rare (Rothman et al., 2008).

Cohort Studies

Cohort studies follow a group of people over time, comparing those who are exposed to those who are not exposed, and measuring outcomes as they occur. Cohort studies can establish temporal sequence and are useful for studying rare exposures. They can estimate incidence rates and risk ratios.

However, cohort studies can be expensive and time-consuming. They are susceptible to loss to follow-up, which can introduce bias. They are also susceptible to confounding, which can distort the association between exposure and outcome. The choice of cohort, the definition of exposure, and the measurement of outcomes all shape the findings (Grimes & Schulz, 2002).

Randomized Controlled Trials

Randomized controlled trials are considered the gold standard for establishing causation. Participants are randomly assigned to receive an intervention or a control, and outcomes are measured over time. Randomisation balances known and unknown confounders, allowing for causal inference.

However, RCTs are not always feasible or ethical. They are expensive and time-consuming. They often have strict inclusion and exclusion criteria, which limit generalisability. They can also be susceptible to biases, including attrition bias and performance bias. The results of RCTs may not apply to real-world settings where adherence is lower and populations are more diverse (Grimes & Schulz, 2002).

Systematic Reviews and Meta-Analyses

Systematic reviews synthesise the findings of multiple studies on a specific topic. They use explicit, transparent methods to identify, appraise, and synthesise evidence. Meta-analyses use statistical methods to combine the results of multiple studies, producing a single summary estimate of effect.

Systematic reviews and meta-analyses are valuable for summarising evidence and for identifying sources of heterogeneity. However, they are only as good as the studies they include. They can be affected by publication bias, where studies with positive findings are more likely to be published. They can also be affected by heterogeneity, where studies differ in ways that make combination inappropriate (Higgins & Green, 2011).

11.4 Measures of Association: Interpretation and Critique

Measures of association quantify the strength of the relationship between an exposure and an outcome. However, these measures are not value-neutral; they shape how we understand the relationship between exposures and health outcomes.

Risk Ratio and Rate Ratio

The risk ratio compares the risk of disease among the exposed to the risk among the unexposed. The rate ratio compares the incidence rate in the exposed to the incidence rate in the unexposed. Both measures quantify the strength of association and are useful for causal inference.

However, risk ratios can be misleading when the outcome is common. When the outcome is common, the risk ratio may overestimate the strength of association. Rate ratios are less affected by the commonness of the outcome but require person-time data, which are not always available (Rothman et al., 2008).

Odds Ratio

The odds ratio compares the odds of exposure among cases to the odds of exposure among controls. It is the measure of association used in case-control studies. When the disease is rare, the odds ratio approximates the risk ratio.

However, the odds ratio is often misinterpreted. Many researchers interpret the odds ratio as if it were a risk ratio, which is only appropriate when the outcome is rare. The odds ratio can also be misleading when the outcome is common, as it can overestimate the strength of association (Greenland, 2009).

Risk Difference

The risk difference, or attributable risk, is the absolute difference in risk between the exposed and the unexposed. The risk difference provides a measure of the public health impact of the exposure. It is useful for planning interventions and for communicating risk.

However, the risk difference depends on the baseline risk, which varies across populations. A risk difference that is large in one population may be small in another. The risk difference also does not capture the strength of the association, which is better captured by the risk ratio (Rothman et al., 2008).

Population Attributable Fraction

The population attributable fraction is the proportion of disease in the population that is attributable to the exposure. It depends on both the strength of the association and the prevalence of the exposure. It is useful for estimating the public health impact of removing an exposure.

However, the population attributable fraction is often misinterpreted. It assumes that the exposure is causal and that removing it would eliminate the disease. It also assumes that the relationship between exposure and disease is uniform across the population, which may not be the case (Greenland, 2009).

11.5 Bias, Confounding, and Effect Modification: Critical Perspectives

Bias, confounding, and effect modification are central concepts in epidemiological methodology. They are often presented as technical problems that can be addressed through appropriate study

design and analysis. However, they also reflect deeper issues about the nature of epidemiological knowledge and the limits of causal inference.

Bias

Bias is systematic error in the design, conduct, or analysis of a study that leads to an incorrect estimate of the association between exposure and outcome. Selection bias and information bias are the two main types of bias.

Selection bias can be subtle and difficult to detect. It can arise from the selection of participants into the study, from loss to follow-up, or from the exclusion of certain groups. Selection bias can distort the association between exposure and outcome in ways that are not easily corrected through statistical adjustment (Rothman et al., 2008).

Information bias can also be subtle and difficult to detect. It can arise from errors in measuring exposure or outcome, from recall bias, or from misclassification. Information bias can distort the association between exposure and outcome, and the direction of distortion is not always predictable (Rothman et al., 2008).

Confounding

Confounding occurs when a third variable is associated with both the exposure and the outcome and distorts the association between them. Confounding can be addressed through study design (restriction, matching) or through analysis (stratification, multivariable models).

However, confounding is not merely a technical problem. The identification of confounders depends on assumptions about the causal structure of the problem. Different assumptions about causality lead to different conclusions about what should be adjusted for (Greenland et al., 2008). The adjustment for confounders can also introduce new biases, such as collider bias.

Effect Modification

Effect modification occurs when the association between exposure and outcome differs across levels of a third variable. Effect modification is not a bias to be controlled; it is a phenomenon to be understood and explained.

However, effect modification is often treated as a nuisance or as a source of heterogeneity. It is often underreported and under-analysed. The failure to identify effect modification can lead to interventions that are ineffective for certain subgroups or that are harmful for others (Rothman et al., 2008).

11.6 Causation: Frameworks and Critiques

Establishing causation is one of the central challenges of epidemiology. Association does not necessarily imply causation, and distinguishing between association and causation is essential for public health action. However, the frameworks for causal inference are themselves contested.

The Bradford Hill Criteria

The Bradford Hill criteria provide a framework for assessing whether an observed association is causal. The criteria include strength, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy. They are widely used in epidemiological research and in public health practice.

However, the Bradford Hill criteria have been subject to significant critique. They are not a checklist but a set of considerations. No single criterion is sufficient to establish causation. The criteria are also ambiguous and open to interpretation. The application of the criteria depends on the judgment of the researcher, which can be influenced by prior beliefs and interests (Greenland, 2009).

The Counterfactual Framework

The counterfactual framework provides an alternative approach to causal inference. It defines causation in terms of counterfactuals: the effect of an exposure is the difference between the outcome that would occur if the exposure were present and the outcome that would occur if the exposure were absent. The counterfactual framework has been influential in shaping modern causal inference methods.

However, the counterfactual framework has limitations. It requires specifying the intervention that would remove the exposure, which may be difficult in practice. It also requires assumptions about the comparability of the exposed and unexposed groups, which may not hold in observational studies (Greenland et al., 2008).

Causal Inference in Practice

Causal inference in epidemiology is ultimately a judgment. It requires integrating evidence from multiple sources, assessing the plausibility of different causal explanations, and considering alternative interpretations. The judgment is shaped not only by the evidence but also by the values, interests, and commitments of the researcher.

The acknowledgment that causal inference is a judgment does not mean it is arbitrary. It means that causal inference is a deliberative process that requires transparency, critical reflection, and engagement with alternative perspectives (Krieger, 2014).

11.7 Common Statistical Fallacies

Understanding common statistical fallacies is essential for interpreting public health data and for avoiding errors in one's own work. These fallacies are not merely technical errors; they reflect deeper misunderstandings about the nature of statistical inference.

The Observational Interpretation Fallacy

The observational interpretation fallacy occurs when coincidental observational data are erroneously interpreted as indicative of causality (D'Amico et al., 2025). A systematic review identified 16 notable cases where observational associations, initially thought to influence clinical practices and guidelines positively, were later contradicted by findings from randomized controlled trials. Misinterpretation of observational findings negatively affects patient care and public health policies (D'Amico et al., 2025).

This fallacy reflects a failure to distinguish between association and causation. It also reflects a failure to consider alternative explanations for observed associations, including confounding and bias. The observational interpretation fallacy is not simply a matter of poor statistical reasoning; it is also a matter of epistemic humility and the acknowledgment of uncertainty (Rovetta & Mansournia, 2025).

The Table 2 Fallacy

The Table 2 fallacy occurs when regression models are erroneously interpreted as showing causal effects for each predictor (Wood, 2024). In a multivariable regression model, it is incorrect to

interpret the coefficients of each predictor as estimates of causal effects, as each predictor variable possesses its own set of unaccounted confounders. During the COVID-19 pandemic, a high-profile example involved a paper that reported adjusted hazard ratios for each risk factor, leading to the unintentional conclusion that current smoking status was protective against COVID-19-related death, which was disseminated as misinformation (Wood, 2024).

The Table 2 fallacy reflects a failure to distinguish between the primary exposure of interest and other variables in the model. It also reflects a failure to consider the causal structure of the problem and the role of confounders. The Table 2 fallacy is not simply a matter of poor statistical reasoning; it is also a matter of the failure to articulate a causal framework for the analysis (Rovetta & Mansournia, 2025).

Confusing Statistical Significance with Practical Significance

Statistical significance does not correspond to practical significance. The P value does not reflect the practical importance of a finding, as it blends effect size with statistical precision (Rovetta & Mansournia, 2025). Statistically significant results can be observed even when effects are weak, while statistically nonsignificant results can occur despite substantial effects.

The confusion between statistical and practical significance reflects a failure to distinguish between statistical inference and substantive judgment. It also reflects the institutional and disciplinary pressures that favour statistically significant findings. The confusion can lead to the overinterpretation of weak effects and the underinterpretation of strong effects (Rovetta & Mansournia, 2025).

The Dichotomization Fallacy

The dichotomization into significant versus nonsignificant is misleading and dangerous. Practical reality resists sharp schematization (Rovetta & Mansournia, 2025). Dichotomous thinking has also infiltrated artificial intelligence programs built on large language models, now increasingly leveraged in scientific research and decision-making.

The dichotomization fallacy reflects a failure to appreciate the continuum of evidence and the role of judgment in interpretation. It also reflects the institutional and disciplinary pressures that favour clear-cut answers. The fallacy can lead to the dismissal of important findings that are not statistically significant and the overemphasis of trivial findings that are statistically significant (Rovetta & Mansournia, 2025).

Misunderstanding the P Value

The P value is neither the posterior probability that the null hypothesis is true nor the posterior probability that the obtained result is due to chance. It is computed under the assumption that the null hypothesis is 100% true and that chance is always the sole source of error (Rovetta & Mansournia, 2025). This misconception remains widespread, even in literature explicitly aimed at correcting such misunderstandings.

The misunderstanding of the P value reflects a failure to distinguish between the probability of the data given the hypothesis and the probability of the hypothesis given the data. It also reflects a failure to consider the role of prior beliefs and the context of the research. The misunderstanding can lead to the overinterpretation of P values and the neglect of other forms of evidence (Rovetta & Mansournia, 2025).

Misinterpreting Confidence Intervals

A 100(1-alpha) percent confidence interval does not specify the probability that the true effect lies within the interval already calculated. Under ideal, and in the medical sciences largely unattainable, conditions, of a high number of confidence intervals across a large series of perfectly executed studies, the expected percentage contain the true effect. This property applies to the ensemble of intervals, not to any specific calculated interval (Rovetta & Mansournia, 2025). Real-world studies are often subject to nonrandom uncertainties that violate the assumptions underpinning this inferential mechanism.

The misinterpretation of confidence intervals reflects a failure to distinguish between frequency probability and subjective probability. It also reflects a failure to consider the role of prior beliefs and the context of the research. The misinterpretation can lead to the overinterpretation of confidence intervals and the neglect of other forms of uncertainty (Rovetta & Mansournia, 2025).

11.8 The Role of Epidemiology in Public Health: A Critical Assessment

Epidemiology plays a central role in public health. It provides the evidence base for understanding disease patterns, identifying risk factors, and evaluating interventions. However, the role of epidemiology in public health is not simply technical; it is also political, social, and ethical.

Epidemiology and Health Policy

Epidemiological evidence is often used to support health policy. However, the relationship between evidence and policy is complex. Evidence does not speak for itself; it is interpreted and used in the context of competing interests and values. Epidemiological findings can be ignored, distorted, or selectively used to support predetermined policy positions (Brown, 2010).

The use of epidemiological evidence in policy also raises questions about the role of values. The identification of health problems, the choice of interventions, and the assessment of outcomes all reflect value judgments. The idea that epidemiology can provide value-neutral evidence for policy is misleading (Krieger, 2014).

Epidemiology and Health Inequities

Epidemiology has been central to the identification and documentation of health inequities. Epidemiological research has shown that health is shaped by social, economic, and political factors and that health inequities are produced by unjust social arrangements (Marmot, 2015).

However, epidemiology has also been complicit in the reproduction of health inequities. The use of categories such as race, class, and gender in epidemiological research can both reveal and obscure health inequities. The categories are social constructs, not biological facts, and their use can reinforce social hierarchies (Krieger, 2011).

The Limits of Epidemiology

Epidemiology has limits. It can identify associations but cannot establish causation. It can quantify risk but cannot predict individual outcomes. It can produce evidence but cannot make decisions. The limits of epidemiology reflect the limits of quantitative methods and the complexity of health and disease.

Acknowledging the limits of epidemiology is not a critique of the field. It is an acknowledgment that epidemiology is one tool among many and that it must be used in conjunction with other forms

of knowledge, including clinical knowledge, community knowledge, and theoretical knowledge (Krieger, 2014).

11.9 Key Takeaways

Epidemiology is not merely a technical discipline; it is shaped by theoretical commitments, value judgments, and institutional constraints

Measures of disease frequency, study designs, and measures of association are not neutral technical tools; they embody assumptions and shape how health problems are understood

Each study design has strengths and limitations, and the choice of design depends on the research question and context

Bias, confounding, and effect modification are not merely technical problems; they reflect deeper issues about the nature of epidemiological knowledge

The Bradford Hill criteria provide a framework for assessing causation but are not a checklist; causal inference is a judgment that requires transparency and critical reflection

Common statistical fallacies reflect deeper misunderstandings about the nature of statistical inference and the limits of quantitative methods

The role of epidemiology in public health is not simply technical; it is also political, social, and ethical

Acknowledging the limits of epidemiology is essential for using it effectively and for integrating it with other forms of knowledge

Chapter 12

Environmental Health and One Health

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of environmental health and its evolution

Evaluate the evidence for environmental determinants of health and their distribution

Assess the strengths and limitations of the One Health approach

Critically examine the concept of planetary health and its implications for public health practice

Analyse the relationship between environmental health and social justice

Apply environmental health and One Health frameworks to public health challenges

12.1 What Is Environmental Health? A Critical Examination

Environmental health is conventionally defined as the branch of public health that focuses on the relationships between people and their environment, promotes human health and wellbeing, and fosters healthy and safe communities. The World Health Organization defines environmental health as addressing all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours (WHO, 2021). This definition, while widely accepted, obscures significant debates about the scope, methods, and purposes of environmental health inquiry.

The Scope of Environmental Health

The scope of environmental health is contested. Does it include only traditional environmental hazards such as air and water pollution? Does it include the built environment, occupational exposures, and climate change? Does it include the social environment, which shapes exposure to environmental hazards and vulnerability to their effects?

The expansion of environmental health to include climate change, the built environment, and social determinants reflects a recognition that environmental health is not merely about managing discrete hazards. It is about understanding the complex relationships between human health and the environments in which people live, work, and play (Frumkin, 2021). However, this expansion also creates challenges for environmental health practice, including the need for new methods, new partnerships, and new forms of expertise.

The Environmental Health Paradigm

The traditional environmental health paradigm focuses on identifying hazards, assessing exposures, and evaluating health effects. This paradigm has been successful in identifying and controlling many environmental hazards, including lead, asbestos, and air pollutants. However, the paradigm has significant limitations.

The hazard-exposure-effect paradigm is linear and reductionist. It assumes that environmental health problems can be understood by tracing a single hazard from source to exposure to effect. This assumption is often violated in practice, where environmental health problems are shaped by multiple hazards, multiple exposures, and multiple effects that interact in complex ways (Frumkin, 2021).

The paradigm also focuses on individual hazards rather than on the systems that produce them. Environmental hazards are not random; they are produced by social, economic, and political systems. Focusing on individual hazards can obscure the systemic drivers of environmental health problems and can lead to solutions that address symptoms rather than causes (Krieger, 2014).

Environmental Health and Social Justice

Environmental health problems are not distributed equally. They are concentrated in low-income and minority communities, which are more likely to be exposed to environmental hazards and less likely to have the resources to avoid or mitigate their effects. This pattern is not accidental; it is produced by social, economic, and political systems that systematically disadvantage certain communities (Bullard, 2000).

The environmental justice movement emerged in response to the inequitable distribution of environmental hazards. Environmental justice is the principle that all people, regardless of race, ethnicity, income, or social status, are entitled to equal protection from environmental hazards and equal access to environmental benefits. Environmental justice has been influential in shifting environmental health practice toward a focus on equity and community engagement (Bullard, 2000).

However, environmental justice is not simply about the distribution of hazards. It is also about the distribution of power. Communities that are exposed to environmental hazards often lack the political power to influence decisions about siting, regulation, and remediation. Addressing environmental health inequities requires not only the reduction of hazards but also the redistribution of power (Schlosberg, 2007).

Table 12.1. Environmental Health and One Health: Key Areas of Action

Concept or area	What it means	Why it matters in practice
Environmental exposures	Air, water, soil, chemicals, heat and other hazards	Identify exposures that shape health across populations.
Built and social environments	Housing, work, transport, sanitation and urban conditions	Connect environmental conditions with everyday health risks.
One Health	Human, animal and environmental health considered together	Address problems such as zoonoses and AMR across sectors.
Planetary health	Human health within the limits of natural systems	Link climate, biodiversity, food and health policy.
Environmental justice	Unequal exposure, protection and decision-making power	Ask who carries environmental risks and who benefits from development.

12.2 Major Environmental Health Challenges: A Critical Analysis

Environmental health challenges are extensive and varied. They include air pollution, water and sanitation, chemical exposures, and climate change. Each of these challenges is shaped by social, economic, and political factors and requires a critical analysis of its causes and consequences.

Air Pollution

Air pollution is one of the most significant environmental health risks globally. It is estimated that ambient air pollution causes approximately 4.2 million premature deaths each year, with household air pollution causing an additional 3.8 million deaths annually (WHO, 2021). The health effects of air pollution are extensive, including respiratory diseases, cardiovascular diseases, lung cancer, and adverse pregnancy outcomes.

However, the burden of air pollution is not distributed equally. It falls disproportionately on low and middle-income countries, where rapid urbanisation and industrialisation have led to deteriorating air quality. Within countries, the burden falls disproportionately on low-income communities, which are more likely to be located near sources of air pollution and less likely to have access to healthcare (Bullard, 2000).

The distribution of air pollution reflects systemic inequalities. The siting of polluting facilities, the enforcement of environmental regulations, and the availability of clean energy are all shaped by social, economic, and political factors. Addressing air pollution requires not only technical solutions but also political action to address the systemic drivers of pollution and inequity (Schlosberg, 2007).

Water, Sanitation, and Hygiene

Unsafe water, inadequate sanitation, and poor hygiene are responsible for approximately 1.4 million deaths each year, with diarrhoeal diseases being a leading cause of death among children under five (WHO, 2021). Access to safe water and sanitation is a basic human right, yet billions of people still lack access to safely managed water and sanitation services.

The burden of water-related diseases falls disproportionately on low and middle-income countries and on poor communities within countries. The lack of access to safe water and sanitation reflects systemic inequalities in the distribution of infrastructure, resources, and political power. Addressing water and sanitation challenges requires not only technical solutions but also political action to address the systemic drivers of inequity (Bartram & Cairncross, 2010).

Chemical Exposures

Chemical exposures, both natural and synthetic, pose significant health risks. Lead exposure, particularly in children, causes cognitive impairment and developmental delays. Mercury exposure affects neurological development. Pesticide exposure is associated with cancer, reproductive toxicity, and neurological damage. Industrial chemicals are widespread in the environment, yet the health effects of many chemicals are poorly understood.

The regulation of chemicals is shaped by political and economic factors. The chemical industry has significant influence over regulation, and the burden of proof often falls on those who would restrict chemicals rather than on those who produce them. This asymmetry of power has led to the widespread use of chemicals that may be harmful and to the inadequate protection of vulnerable populations (Landrigan et al., 2018).

Climate Change

Climate change is the most significant environmental health threat of the twenty-first century (Watts et al., 2021). The health impacts of climate change are extensive and include heat-related mortality, changes in infectious disease patterns, food and water insecurity, mental health impacts, and displacement. The WHO has projected that climate change will cause an estimated 250,000 additional deaths per year between 2030 and 2050 (WHO, 2025).

The burden of climate change is not distributed equally. The people bearing the worst consequences are those in low and middle-income countries, who have contributed the least to greenhouse gas emissions (Anton et al., 2024). Within countries, the burden falls disproportionately on low-income communities and on populations that are already vulnerable due to age, disability, or other factors.

Climate change is not merely an environmental problem; it is a problem of social, economic, and political inequality. Addressing climate change requires action on multiple fronts, including mitigation, adaptation, and climate justice. It also requires addressing the systemic drivers of climate change, including the reliance on fossil fuels and the pursuit of economic growth at the expense of environmental sustainability (Watts et al., 2021).

12.3 The One Health Approach: Promises and Limitations

One Health is an approach that recognises the interconnection between people, animals, plants, and their shared environment. The One Health High Level Expert Panel defines it as an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems (WHO, 2021). The concept of One Health has gained increasing recognition as the interconnections between human, animal, and environmental health have become more apparent.

The Origins and Evolution of One Health

The concept of One Health has multiple origins. The veterinary medicine tradition has long recognised the importance of animal health for human health. The ecological tradition has recognised the importance of ecosystems for human health. The public health tradition has recognised the importance of zoonotic diseases and food safety.

The modern One Health movement emerged in the context of emerging infectious diseases, including avian influenza, SARS, and COVID-19. These diseases demonstrated the interconnections between human, animal, and environmental health and the need for a more integrated approach to health surveillance, research, and practice (Zinsstag et al., 2015).

The One Health Paradigm

The One Health paradigm emphasises collaboration across disciplines, sectors, and institutions. It recognises that health problems cannot be addressed by the health sector alone and that veterinary, environmental, and agricultural sectors must be involved. The paradigm also emphasises the importance of surveillance, research, and practice that spans human, animal, and environmental health.

The One Health paradigm has been influential in shaping global health policy, including the response to antimicrobial resistance and emerging infectious diseases. It has also been influential in shaping research funding and institutional structures (Zinsstag et al., 2015).

Critiques of One Health

The One Health approach has been subject to multiple critiques. One critique is that it is insufficiently critical of the systems that produce health problems. The One Health approach focuses on managing diseases at the human-animal-environment interface but does not address the systemic drivers of disease emergence, including habitat destruction, agricultural intensification, and climate change (Hinchliffe, 2015).

Another critique is that One Health remains anthropocentric. While it recognises the importance of animal and environmental health, it ultimately prioritises human health. This anthropocentrism is reflected in the focus on zoonotic diseases that threaten humans and in the instrumentalisation of animal and environmental health for human ends. Critics argue that One Health should be expanded to include a broader concern for animal and environmental wellbeing (Hinchliffe, 2015).

A third critique is that One Health remains institutionally fragmented. The implementation of One Health requires collaboration across ministries, agencies, and institutions that have historically been separate and that may have conflicting mandates and priorities. The institutional fragmentation of health governance is a significant barrier to One Health implementation (Zinsstag et al., 2015).

One Health in Practice

Despite these critiques, One Health has been implemented in multiple contexts. Surveillance systems that span human, animal, and environmental health have been established. Collaborative research programmes have been developed. Institutional structures have been created to facilitate One Health collaboration.

However, the implementation of One Health has been uneven. Some countries have made significant progress, while others have made little. The implementation of One Health is shaped by political, economic, and institutional factors, including the availability of resources, the commitment of leadership, and the capacity of institutions (Zinsstag et al., 2015).

12.4 Antimicrobial Resistance as a One Health Problem

Antimicrobial resistance is one of the most pressing One Health challenges. The misuse and overuse of antibiotics in human medicine, animal agriculture, and the environment have accelerated the evolution of resistant pathogens. Resistant bacteria and resistance genes can spread between humans, animals, and the environment through direct contact, food, water, and waste.

The AMR Crisis

The WHO has declared AMR one of the top ten global public health threats facing humanity (WHO, 2021). An estimated 1.27 million deaths were directly attributable to bacterial AMR in 2019, more than HIV/AIDS or malaria (GBD AMR Collaborators, 2022). Without concerted action, this figure is projected to rise to 10 million annually by 2050, with an economic cost of 100 trillion dollars (O'Neill, 2016).

The AMR crisis reflects systemic failures. The overuse of antibiotics in human medicine is driven by diagnostic uncertainty, perverse incentives, and patient demand. The overuse of antibiotics in animal agriculture is driven by industrial livestock production, weak regulation, and economic pressures. The environmental contamination with antibiotics and resistant bacteria is driven by inadequate waste management and weak environmental regulation (Laxminarayan et al., 2013).

AMR and Inequality

The AMR crisis is not distributed equally. The burden of AMR falls disproportionately on low and middle-income countries, where surveillance is weak, regulation is limited, and access to effective

antibiotics is constrained. Within countries, the burden falls disproportionately on poor communities, which are more likely to be exposed to resistant bacteria and less likely to have access to effective treatment (Laxminarayan et al., 2013).

The response to AMR has also been inequitable. High income countries have invested in research and development of new antibiotics, but these antibiotics are often unaffordable in low and middle-income countries. The global governance of AMR is shaped by the interests of high-income countries and of the pharmaceutical industry, which has a limited interest in developing new antibiotics that are affordable in low and middle-income countries (O'Neill, 2016).

The Updated WHO Global Action Plan

The updated WHO Global Action Plan on AMR for 2026 to 2036 strengthens the One Health framework and emphasises prevention-first interventions, including infection prevention and control, water, sanitation and hygiene, vaccination, biosecurity, and environmental measures (WHO, 2026). The plan recognises that addressing AMR requires coordinated action across human, animal, and environmental sectors.

However, the implementation of the Global Action Plan has been uneven. Many countries have developed National Action Plans on AMR, but studies on their progression and level of implementation are scarce. A study of five LMICs in the Asia-Pacific region found that participants believed NAP-AMR implementation was more advanced in human health than in animal or environmental health, with 45 percent of participants perceiving minimal or no focus on the environmental health sector (Adhikari et al., 2025). Nearly all participants believed that their country needed local antimicrobial prescribing guidelines for humans (94 percent) and animals (86 percent) (Adhikari et al., 2025). Unrestricted access to antimicrobials and poor implementation status of surveillance systems across human, animal and environmental sectors were identified as areas where more progress is needed (Adhikari et al., 2025).

12.5 Planetary Health: Critical Perspectives

Planetary health is a concept that emerged in response to the growing recognition that human health depends on the health of natural systems. The Rockefeller Foundation-Lancet Commission on Planetary Health defined it as the health of human civilisation and the state of the natural systems on which it depends (Whitmee et al., 2015).

The Planetary Health Paradigm

The planetary health paradigm builds on and extends the One Health approach. While One Health focuses on the interconnections between human, animal, and environmental health, planetary health places these interconnections within the broader context of the Earth's natural systems. It recognises that human health is ultimately dependent on the health of the planet, including its climate, ecosystems, and biodiversity.

The planetary health paradigm is based on several key insights. First, human health is dependent on natural systems. Second, human activities are degrading natural systems at an unprecedented rate. Third, the degradation of natural systems poses fundamental threats to human health. Fourth, addressing these threats requires fundamental changes in how societies are organised (Whitmee et al., 2015).

The Anthropocene and Health

The Anthropocene is the current geological epoch in which human activity has become the dominant influence on the environment. The Anthropocene is characterised by rapid environmental change, including climate change, biodiversity loss, land use change, and pollution. These changes have profound implications for human health.

The Lancet Countdown on Health and Climate Change has documented the health impacts of the Anthropocene. The 2024 report found that climate change is already harming human health and that these harms will accelerate unless urgent action is taken (Lancet Countdown, 2024). The report called for a rapid transition away from fossil fuels, increased investment in climate-resilient health systems, and stronger international cooperation.

Critiques of Planetary Health

The planetary health concept has been subject to multiple critiques. One critique is that it is insufficiently critical of the systems that produce environmental degradation. The planetary health paradigm focuses on the health impacts of environmental degradation but does not address the systemic drivers of environmental degradation, including capitalism, colonialism, and the pursuit of economic growth (Horton et al., 2019).

Another critique is that planetary health remains anthropocentric. While it recognises the importance of natural systems for human health, it ultimately prioritises human health. Critics argue that planetary health should be expanded to include a broader concern for the intrinsic value of nature and for the wellbeing of non-human species (Horton et al., 2019).

A third critique is that planetary health is insufficiently attentive to social justice. The burden of environmental degradation falls disproportionately on low-income communities and on populations in low and middle-income countries. The planetary health paradigm recognises these inequities but does not always address them adequately. Critics argue that planetary health must centre social justice if it is to be effective (Horton et al., 2019).

12.6 Environmental Health and Social Justice: The Challenge of Equity

Environmental health problems are not distributed equally. The pattern of environmental health inequities is not random; it is produced by social, economic, and political systems that systematically disadvantage certain communities. Addressing environmental health inequities requires a critical analysis of these systems and their effects.

The Environmental Justice Movement

The environmental justice movement emerged in response to the inequitable distribution of environmental hazards. The movement was led by communities of colour and low-income communities that were disproportionately exposed to environmental hazards. The movement has been influential in shifting environmental health practice toward a focus on equity and community engagement (Bullard, 2000).

The environmental justice movement has articulated several key principles. First, environmental justice requires that all people be protected from environmental hazards. Second, environmental justice requires that communities have a voice in decisions that affect their environment. Third, environmental justice requires that environmental benefits be distributed equitably. Fourth, environmental justice requires that the root causes of environmental inequities be addressed (Bullard, 2000).

Environmental Racism

Environmental racism is the disproportionate exposure of communities of colour to environmental hazards. Environmental racism is not an accident; it is produced by systemic racism in housing, land use, and regulatory decisions. Environmental racism is a form of structural violence that causes significant harm to communities of colour (Bullard, 2000).

Environmental racism has been documented extensively. Communities of colour are more likely to be located near hazardous waste sites, industrial facilities, and highways. They are more likely to be exposed to air and water pollution. They are less likely to have access to green spaces and other environmental amenities. These disparities are not random; they are produced by systemic racism (Bullard, 2000).

Environmental Justice and Climate Change

Climate change is an environmental justice issue. The people who are most affected by climate change are those who have contributed the least to greenhouse gas emissions. Within countries, the people who are most affected by climate change are low-income communities and communities of colour, which are more likely to live in areas that are vulnerable to heat waves, flooding, and other climate impacts (Schlosberg, 2007).

Addressing climate change requires attention to climate justice. Climate justice is the principle that the benefits and burdens of climate action should be distributed equitably. Climate justice requires that the voices of affected communities be heard in climate decisions. It also requires that climate action address the root causes of climate change, including inequality and the pursuit of economic growth (Schlosberg, 2007).

Community Engagement and Environmental Health

Community engagement is essential for effective environmental health practice. Communities affected by environmental hazards must be involved in identifying problems, developing solutions, and monitoring progress. Community engagement builds trust, ensures that interventions are culturally appropriate, and promotes health equity.

However, community engagement is not always easy. Communities may be distrustful of government agencies and researchers. Power imbalances between communities and institutions can undermine genuine engagement. The time and resources required for meaningful engagement may be underestimated. Despite these challenges, community engagement is essential for addressing environmental health inequities (Bullard, 2000).

12.7 The Role of Environmental Health in the 21st Century

Environmental health is facing significant challenges in the 21st century, including climate change, environmental degradation, and persistent inequities. Addressing these challenges requires a critical approach that addresses systemic drivers and centres justice.

Rethinking Environmental Health

Rethinking environmental health requires moving beyond the traditional hazard-exposure-effect paradigm. It requires understanding environmental health problems as produced by social, economic, and political systems. It requires addressing the root causes of environmental health

problems, not just their symptoms. It requires centring justice and equity in environmental health practice (Frumkin, 2021).

Rethinking environmental health also requires new methods, new partnerships, and new forms of expertise. Environmental health problems are complex and require interdisciplinary approaches. They require collaboration across the health sector, environmental sector, and other sectors. They require the involvement of communities in identifying problems and developing solutions (Frumkin, 2021).

Environmental Health and Public Health Practice

Environmental health is an essential part of public health practice. Environmental health professionals work in government agencies, academic institutions, non-governmental organisations, and communities. They conduct surveillance, research, policy development, and community engagement.

Environmental health practice faces significant challenges. These include limited resources, inadequate regulatory frameworks, and persistent inequities. Addressing these challenges requires political action, institutional reform, and community mobilisation. It also requires a commitment to the principles of environmental justice and a critical analysis of the systems that produce environmental health inequities (Frumkin, 2021).

The Future of Environmental Health

The future of environmental health is uncertain. Climate change, environmental degradation, and persistent inequities pose significant threats. However, there are also opportunities for innovation and transformation. The growing recognition of the importance of environmental health, the development of new methods and technologies, and the emergence of social movements for environmental justice all offer opportunities for progress.

The future of environmental health depends on the choices we make. Will we continue with business as usual, addressing environmental health problems one hazard at a time? Or will we transform environmental health practice to address the systemic drivers of environmental health problems and to centre justice and equity? The answer depends on the commitment of environmental health professionals, the mobilisation of communities, and the political will of decision-makers (Frumkin, 2021).

12.8 Key Takeaways

Environmental health is not merely about managing discrete hazards; it is about understanding the complex relationships between human health and the environments in which people live

Environmental health problems are not distributed equally; they are concentrated in low-income and minority communities, reflecting systemic inequalities

The traditional hazard-exposure-effect paradigm is linear and reductionist; it must be supplemented with approaches that address systemic drivers

The One Health approach recognises the interconnections between human, animal, and environmental health but has been subject to critiques about anthropocentrism and institutional fragmentation

Antimicrobial resistance is a One Health problem that requires coordinated action across human, animal, and environmental sectors

Planetary health places human health within the broader context of the Earth's natural systems but has been subject to critiques about insufficient attention to justice and systemic drivers

Environmental justice is a framework for addressing the inequitable distribution of environmental hazards and for centring community voices in decision-making

Addressing environmental health challenges requires political action, institutional reform, and community mobilisation, as well as technical solutions

The future of environmental health depends on the choices we make, including our commitment to addressing systemic drivers and centring justice and equity

Chapter 13

Health Systems and Policy

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of health systems and their core functions

Evaluate different health system models and their implications for equity and efficiency

Assess the strengths and limitations of health financing mechanisms

Critically examine the health policy process and the role of evidence in policymaking

Analyse the concept of health system resilience and its limitations

Apply health systems and policy frameworks to contemporary health challenges

13.1 What Is a Health System? A Critical Examination

A health system is conventionally defined as all organisations, institutions, resources, and people whose primary purpose is to promote, restore, or maintain health (WHO, 2000). This definition, while widely accepted, obscures significant debates about the boundaries, purposes, and performance of health systems.

The Boundaries of Health Systems

The boundaries of health systems are contested. Does a health system include only healthcare services, or does it include public health functions? Does it include the social determinants of health, such as housing, education, and employment? The answer to these questions has significant implications for how health systems are designed, financed, and evaluated.

The WHO's definition includes all organisations whose primary purpose is to promote, restore, or maintain health. This includes not only healthcare services but also public health functions. However, the definition excludes organisations whose primary purpose is not health but that have significant health impacts, such as housing, education, and employment agencies. This exclusion reflects a narrow view of health systems that is increasingly challenged (Gilson, 2012).

The Goals of Health Systems

The World Health Report 2000 identified three intrinsic goals of health systems: improving the health of the population, providing financial risk protection, and responding to the legitimate non-health expectations of the population (WHO, 2000). These goals have been influential in shaping health system evaluation and reform.

However, the goals of health systems are not value-neutral. The prioritisation of health improvement, financial protection, and responsiveness reflects a particular set of values that may not be shared by all stakeholders. The goals also omit other important values, such as equity, participation, and accountability. The choice of goals has significant implications for how health systems are designed, financed, and evaluated (Gilson, 2012).

Health Systems as Complex Adaptive Systems

Health systems are increasingly understood as complex adaptive systems. They are composed of multiple interacting components that respond to each other and to the external environment in nonlinear ways. Understanding health systems requires attention not only to the individual building blocks but also to how they interact and influence each other (Gilson, 2012).

The complex adaptive systems perspective has significant implications for health system reform. It suggests that simple, linear interventions are unlikely to produce predictable outcomes. It suggests that reform must be adaptive, iterative, and responsive to local context. It also suggests that reform must attend to the relationships and power dynamics that shape health system performance (Gilson, 2012).

Table 13.1. Health Systems: Main Functions and Critical Questions

Concept or area	What it means	Why it matters in practice
Governance	Stewardship, regulation, accountability and coordination	Who sets priorities and who is accountable for results?
Financing	Revenue raising, pooling and purchasing	Who pays, who is protected from financial hardship, and who decides how money is spent?
Service delivery	Organisation and delivery of preventive and curative care	Are services accessible, acceptable, safe and responsive?
Health workforce	People, skills, distribution and working conditions	Does the system have the right workforce in the right places?
Information	Data, surveillance and knowledge systems	Can decision makers obtain reliable information in time to act?
Medicines and technologies	Selection, procurement, regulation and access	Are essential technologies available, affordable and used appropriately?

13.2 The WHO Health System Building Blocks Framework: A Critical Analysis

The WHO has identified six building blocks that constitute a health system. These building blocks provide a framework for understanding health system structure and for identifying areas for strengthening (WHO, 2007). However, the building blocks framework has been subject to significant critique.

The Six Building Blocks

The six building blocks are service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership and governance. Each building block is essential for health system functioning, and weaknesses in any building block can undermine health system performance.

Service delivery refers to the provision of health services to individuals and populations. Effective service delivery requires that services are accessible, acceptable, appropriate, and of good quality. The health workforce includes all people engaged in health-related activities. An adequate health workforce is essential for health system functioning. Health information systems collect, analyse, and disseminate health data. Access to essential medicines and other health technologies is a fundamental component of health systems. Health financing involves revenue collection, pooling

of funds, and purchasing of services. Leadership and governance involves ensuring that the health system is well organised, accountable, and responsive to the needs of the population (WHO, 2007).

Critiques of the Building Blocks Framework

The building blocks framework has been subject to multiple critiques. One critique is that it is descriptive rather than analytical. The framework lists the components of health systems but does not explain how they interact or why they perform as they do. The framework does not provide guidance on how to strengthen health systems or how to address the root causes of health system dysfunction (Gilson, 2012).

Another critique is that the building blocks framework is insufficiently attentive to power and politics. Health systems are shaped by power relations, and health system reform is a political process. The building blocks framework treats health systems as technical systems that can be improved through technical interventions. It neglects the political dynamics that shape health system performance and reform (Gilson, 2012).

A third critique is that the building blocks framework is insufficiently attentive to the social determinants of health. Health systems are only one determinant of health, and the most important determinants of health lie outside the health system. The building blocks framework focuses on the health system and neglects the broader social, economic, and political context that shapes health (Gilson, 2012).

13.3 Health Financing and Universal Health Coverage: Promises and Limitations

Health financing is a central function of health systems. The way health systems are financed affects access to services, quality of care, and financial protection for individuals and families. Universal health coverage is the goal of ensuring that all people have access to the health services they need without suffering financial hardship (WHO, 2010).

Revenue Collection

Revenue collection involves raising funds for health services. The main sources of revenue are general taxation, social health insurance, private health insurance, and out-of-pocket payments. The choice of financing mechanism has important implications for equity.

General taxation and social health insurance are progressive financing mechanisms, meaning that the burden of financing falls more heavily on those with greater ability to pay. Out-of-pocket payments are regressive, meaning that they fall more heavily on those with less ability to pay. They can also create barriers to access and cause financial hardship (WHO, 2010).

The choice of financing mechanism is not purely technical; it is political. The choice reflects the balance of power among different stakeholders, the ideological commitments of policymakers, and the historical trajectory of health system development. The choice also has significant implications for the distribution of health and wealth in society (WHO, 2010).

Pooling of Funds

Pooling involves accumulating funds to spread financial risk across the population. The purpose of pooling is to ensure that the costs of healthcare are shared across the population rather than borne by individuals at the time of illness. Pooling protects against the financial risk of illness and ensures that resources are available to cover the costs of care for those who need it (WHO, 2010).

However, pooling is often incomplete in practice. In many low and middle-income countries, formal pooling mechanisms cover only a portion of the population, and the poor and informal workers are often excluded. This fragmentation of pooling undermines financial protection and creates inequities in access to care (WHO, 2010).

Purchasing of Services

Purchasing involves allocating funds to service providers. This includes decisions about what services will be covered, how much providers will be paid, and how payments will be structured. Strategic purchasing is a key function of health financing. It involves directing resources to priority services and providers, with the goal of improving population health and health equity (WHO, 2010).

However, strategic purchasing is often weak in practice. Purchasing decisions are often driven by historical patterns, provider interests, and political pressures rather than by evidence of effectiveness and equity. The weakness of strategic purchasing undermines health system performance and perpetuates inequities (WHO, 2010).

Universal Health Coverage: Promises and Limitations

Universal health coverage is a goal of health systems worldwide. It is included in the Sustainable Development Goals and has been endorsed by countries across the political spectrum. The goal of universal health coverage has been influential in shaping health policy and in mobilising resources for health (WHO, 2010).

However, universal health coverage has been subject to significant critique. One critique is that it is insufficiently attentive to the quality of care. Universal health coverage focuses on coverage and financial protection but neglects the quality of services provided. Poor quality care can be harmful and can undermine the benefits of universal health coverage (Kruk et al., 2018).

Another critique is that universal health coverage is insufficiently attentive to the social determinants of health. Universal health coverage focuses on healthcare services but neglects the social, economic, and political conditions that shape health. The most important determinants of health lie outside the health system, and universal health coverage cannot address them (Marmot, 2015).

A third critique is that universal health coverage can be co-opted by powerful interests. The pursuit of universal health coverage can justify austerity measures, privatisation, and the erosion of public health systems. The goal of universal health coverage must be pursued in a way that strengthens public health systems and advances health equity (Marmot, 2015).

13.4 Health Policy Analysis: Frameworks and Critiques

Health policy analysis is a systematic approach to understanding how health policies are developed, implemented, and evaluated. It involves analysing the content of policy, the process of policy development, the actors involved, and the context in which policy is made (Walt & Gilson, 1994).

The Policy Process

The policy process is often described as a series of stages: agenda setting, policy formulation, decision-making, implementation, and evaluation. This stage model provides a useful framework for understanding how policy is made. However, policy processes are rarely linear. They are often iterative and characterised by feedback loops, where implementation shapes subsequent policy decisions (Walt & Gilson, 1994).

Agenda setting involves identifying problems that warrant policy attention. Problems can come to the attention of policymakers through various mechanisms, including epidemiological evidence, media attention, political pressure, and advocacy by interest groups. Understanding how problems are defined and framed is important for understanding why some issues receive attention and others do not (Walt & Gilson, 1994).

Policy formulation involves developing policy options to address identified problems. This can be done through various mechanisms, including expert committees, stakeholder consultations, and policy analysis. The range of options considered is shaped by the ideas and interests of those involved (Walt & Gilson, 1994).

Decision making involves selecting among policy options. This can be a rational process of weighing evidence and assessing trade-offs. However, decision-making is also shaped by political considerations, including the relative power of different actors, the distribution of resources, and the preferences of key decision makers (Walt & Gilson, 1994).

Implementation involves putting policy into practice. Implementation is often where policies fail, as the assumptions made during formulation are tested against reality. Implementation requires attention to resources, capacity, and stakeholder engagement (Walt & Gilson, 1994).

Critiques of Policy Analysis Frameworks

The conventional policy analysis framework has been subject to multiple critiques. One critique is that it is too rational and linear. The framework assumes that policy is made through a deliberate, sequential process. In reality, policy is often made through a messy, iterative process that is shaped by power, interests, and chance (Walt & Gilson, 1994).

Another critique is that the framework is insufficiently attentive to power. The framework describes the policy process but does not explain why some actors have more influence than others. It does not explain why some issues receive attention while others are ignored. It does not explain why some policy options are considered while others are excluded (Walt & Gilson, 1994).

A third critique is that the framework is insufficiently attentive to the role of ideas. The framework focuses on interests and institutions but neglects the role of ideas in shaping policy. Ideas about what constitutes a problem, what solutions are possible, and what counts as evidence all shape the policy process (Walt & Gilson, 1994).

Evidence-Informed Policymaking: Promises and Critiques

Evidence-informed policymaking emphasises that policy decisions should be informed by the best available evidence and follow a systematic and transparent approach (Haby et al., 2025). The idea has been influential in health policy and is often presented as a way to improve the quality and legitimacy of policy decisions.

However, the relationship between evidence and policy is complex and contested. Evidence does not speak for itself; it is interpreted and used in the context of competing interests and values. Evidence-informed policymaking can be co-opted to justify predetermined policy positions. It can also marginalise forms of knowledge that are not easily quantified, including community knowledge and experiential knowledge (Haby et al., 2025).

The idea that evidence should inform policy does not mean that policy should be determined by evidence alone. Policy decisions are also shaped by values, political considerations, and resource constraints. The challenge is not to eliminate these considerations but to make them explicit and subject to democratic deliberation (Haby et al., 2025).

Political Economy Analysis

Political economy analysis involves understanding the distribution of power, resources, and interests that shape policy decisions (Reich, 2022). It recognises that policy is not simply a technical exercise but is shaped by political dynamics. Political economy analysis can help anticipate who will support or oppose a policy, what resources and strategies they will deploy, and how these dynamics can be navigated (Reich, 2022).

Political economy analysis is essential for understanding why policies that are technically sound often fail. Policies fail because they are not politically feasible or because they are undermined by powerful interests. Understanding the political economy of health policy is essential for designing policies that are both technically sound and politically feasible (Reich, 2022).

13.5 Health System Resilience: Promises and Limitations

Health system resilience has become a central concern in health policy, particularly following the COVID-19 pandemic. Health system resilience refers to the capacity of a health system to prepare for, withstand, and recover from shocks while maintaining its core functions and sustaining improvement (Kruk et al., 2015).

Defining Resilience

Health system resilience involves anticipation, preparation, response, recovery, and growth. Anticipation involves creating arrangements and infrastructure to identify and analyse risks. Preparation involves planning and developing response plans. Response involves reacting to crisis conditions. Recovery involves returning to normal functions. Growth involves sustainable change through learning, ensuring that future crises do not cause similar damage (Mousavinejhad et al., 2025).

Key attributes of resilient health systems include awareness, surge capacity, flexibility, resistance, and access to resources. Awareness involves the creation of arrangements to detect, monitor, interpret, and disseminate information. Surge capacity involves enhancing the capacity of health system building blocks to withstand crises. Flexibility involves providing alternative solutions and resources to respond to crisis effects. Resistance involves maintaining the stability of health system functions. Access to resources involves the timely mobilisation, acquisition, and distribution of essential resources (Mousavinejhad et al., 2025).

Critiques of Resilience Frameworks

The concept of health system resilience has been subject to multiple critiques. One critique is that it is insufficiently critical of the systems that produce vulnerability. Resilience frameworks focus on the capacity of health systems to withstand shocks but do not address the underlying causes of vulnerability, including inequality, marginalisation, and weak governance (Kruk et al., 2015).

Another critique is that resilience frameworks can be co-opted to justify austerity. The pursuit of resilience can be used to cut costs, reduce services, and shift responsibility to individuals and communities. The idea that health systems should be resilient can be used to argue that they need less resources, not more (Kruk et al., 2015).

A third critique is that resilience frameworks are insufficiently attentive to equity. Resilience is often defined in terms of system-level outcomes, such as the maintenance of essential services. However, the impacts of shocks are not distributed equally. Vulnerable populations are often

disproportionately affected, and resilient health systems must attend to these disparities (Kruk et al., 2015).

Resilience Strategies

Health systems can adopt absorptive, adaptive, or transformative resilience strategies. Absorptive strategies are short-term strategies that maintain current health system methods and structures to preserve and restore its functions. Adaptive strategies are medium-term strategies that facilitate gradual changes across health system building blocks. Transformative strategies enact long-term, significant changes in the structure and functions of the health system (Mousavinejhad et al., 2025).

The choice of resilience strategy has significant implications. Absorptive strategies may be appropriate for short-term shocks but do not address underlying vulnerabilities. Adaptive strategies may address some vulnerabilities but do not transform the system. Transformative strategies may be necessary for addressing the root causes of vulnerability and for building health systems that are truly resilient (Mousavinejhad et al., 2025).

13.6 Health Systems in Low and Middle Income Countries: Critical Perspectives

Health systems in low and middle-income countries face particular challenges. They are often characterised by limited resources, weak governance, fragmented service delivery, and high out-of-pocket payments. These challenges are exacerbated by the burden of communicable diseases, the rising burden of noncommunicable diseases, and the pressures of climate change and other global threats (Mills, 2014).

The Legacy of Colonialism

Health systems in low and middle-income countries have been shaped by colonialism. Colonial health systems were designed to serve colonial interests, not the needs of local populations. They were often curative and hospital-centred, neglecting preventive and primary care. They were also fragmented, with different services provided for different populations (Arnold, 1993).

The legacy of colonialism persists in many health systems. They remain curative and hospital-centred. They remain fragmented, with different services provided for different populations. The colonial legacy shapes the priorities, structures, and relationships of health systems in ways that are often unrecognised and unexamined (Arnold, 1993).

Structural Adjustment and Health Systems

Structural adjustment programmes, imposed by the International Monetary Fund and the World Bank, have had significant impacts on health systems in low and middle-income countries. The programmes required cuts in public spending, including health spending. They required privatisation and user fees. They undermined public health systems and contributed to health inequities (Stuckler et al., 2017).

The impacts of structural adjustment are still felt today. Health systems that were weakened by structural adjustment are less able to respond to health challenges. The legacy of structural adjustment shapes the constraints and opportunities for health system reform (Stuckler et al., 2017).

Health Systems Strengthening

Health systems strengthening is the process of improving the performance of health systems. It involves strengthening the building blocks of health systems: service delivery, health workforce,

health information systems, access to essential medicines, financing, and governance. Health systems strengthening is essential for achieving universal health coverage and for responding to emerging health threats (Mills, 2014).

However, health systems strengthening is often constrained by political, economic, and institutional factors. Resources are limited. Governance is weak. Corruption is endemic. The interests of powerful actors, including the pharmaceutical industry and the private sector, may conflict with the goals of health systems strengthening (Mills, 2014).

Implementation Science from LMIC Contexts

Implementation science derived from low and middle-income country contexts has been essential for advancing global health. Locally driven approaches that confront health systems realities directly, rather than simply adapting high-income country frameworks, have been essential for identifying what works, for whom, and under what conditions (Sánchez et al., 2025). These approaches recognise that health systems in low and middle-income countries are not simply deficient versions of health systems in high-income countries but are shaped by their own histories, contexts, and opportunities (Sánchez et al., 2025).

13.7 Health Systems and the Social Determinants of Health

Health systems are only one determinant of health. The most important determinants of health lie outside the health system, in the social, economic, and political conditions in which people live. Health systems can address the social determinants of health, but they are often poorly equipped to do so.

The Role of Health Systems in Addressing Social Determinants

Health systems can play a role in addressing the social determinants of health. They can provide services that mitigate the health impacts of social disadvantage. They can identify and address the social determinants of health in clinical practice. They can advocate for policies that address the social determinants of health (Marmot, 2015).

However, health systems are often poorly equipped to address the social determinants of health. They are oriented towards acute, episodic care. They are funded to treat disease, not to address its causes. They are often complicit in reproducing social inequities, through the distribution of services and the treatment of patients (Marmot, 2015).

Intersectoral Action

Addressing the social determinants of health requires action across sectors. Health systems cannot address the social determinants of health alone. They must work with housing, education, employment, and other sectors. This requires intersectoral action, which is often challenging to achieve (Marmot, 2015).

Intersectoral action is challenging because different sectors have different mandates, priorities, and incentives. Health is often not a priority for other sectors. Intersectoral action requires political commitment, institutional mechanisms, and resources. It also requires a shared understanding of the social determinants of health and a commitment to addressing them (Marmot, 2015).

Health in All Policies

Health in All Policies is an approach that emphasises the integration of health considerations into policymaking across all sectors. It recognises that health is shaped by policies in all sectors and that health impacts should be considered in all policy decisions. Health in All Policies has been influential in health policy and has been adopted in multiple countries (Kickbusch & Nutbeam, 2017).

However, Health in All Policies has been subject to critique. It can be co-opted by powerful interests, becoming a rhetorical commitment without meaningful action. It can be undermined by the fragmentation of governance and the lack of political will. It also requires resources, capacity, and political support that are often lacking (Kickbusch & Nutbeam, 2017).

13.8 Key Takeaways

Health systems are complex adaptive systems with contested boundaries and goals

The WHO building blocks framework is descriptive but insufficiently attentive to power, politics, and social determinants

Health financing mechanisms have significant implications for equity and access

Universal health coverage is an important goal but is insufficiently attentive to quality and social determinants

Policy analysis frameworks often neglect power and the role of ideas

Evidence-informed policymaking is valuable but must acknowledge the limits of evidence

Health system resilience is important but must be critical of the systems that produce vulnerability

Health systems in low and middle-income countries have been shaped by colonialism and structural adjustment

Addressing the social determinants of health requires intersectoral action

Chapter 14

Social and Behavioural Sciences

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the social determinants of health framework and its limitations

Evaluate the strengths and weaknesses of dominant health behaviour theories

Assess the role of power, culture, and place in shaping health outcomes and interventions

Critically examine community engagement as a practice and its ethical dimensions

Analyse the relationship between social structures, individual behaviour, and health equity

Apply critical social and behavioural science perspectives to public health challenges

14.1 The Social Determinants of Health: A Critical Examination

The social determinants of health framework has become a dominant paradigm in public health. It identifies the conditions in which people are born, grow, live, work, and age as the primary drivers of health outcomes (WHO, 2008). This framework has been influential in shifting attention from individual behaviours to the social, economic, and political forces that shape health. However, the SDOH framework has also been subject to significant critique.

The Problem of Medicalisation

The institutionalisation of SDOH within healthcare systems has created a paradox. While the framework was intended to address the root causes of health inequities, its incorporation into clinical practice has led to what some scholars term the "medicalisation" of social determinants (Pfeiffer & Mendez, 2026). Federal policies in the United States have increasingly constructed socioeconomic conditions as health problems, driving SDOH medicalisation through screening tools and referral programs (Pfeiffer & Mendez, 2026).

This medicalisation has unintended consequences. Research examining social-risk-screening-and-care programs found that while medicalisation offered some benefits, it also played a role in reproducing existing inequities and limiting program effectiveness (Pfeiffer & Mendez, 2026). Healthcare systems invest in SDOH programs, yet little evidence suggests that such programs significantly improve the lives and health of people (Pfeiffer & Mendez, 2026). The medicalisation of social determinants can reinforce beliefs about the centrality of individuals for addressing poor health at the population level, obscuring the structural forces that create and sustain conditions harmful to human lives (Gutin, 2024).

The Limits of Categorical Approaches

The SDOH framework, particularly when operationalised through diagnostic categories such as Z-codes in the International Classification of Diseases, demonstrates the limited capacity of diagnoses to capture the complex individual and social aetiology of health (Gutin, 2024). These codes for social determinants are powerful bureaucratic tools for framing and responding to psychosocial

risks commensurate with biophysiological symptoms. However, they potentially reinforce beliefs about the centrality of individuals for addressing poor health at the population level (Gutin, 2024).

Sociology benefits from looking further upstream to identify the structural forces constraining the scope and utility of diagnoses (Gutin, 2024). The diagnostic shift toward codifying social determinants as medical problems may be counterproductive, as it focuses attention on individual-level interventions rather than on the systemic changes needed to address health inequities (Pfeiffer & Mendez, 2026).

Dialectical and Ecosocial Alternatives

The SDOH framework has limitations that may restrict its value as the world undergoes rapid ecological and social change (Friedman et al., 2025). SDOH does not adequately incorporate rapidly changing or "far upstream" social processes, particularly social movements, the dialectics of social conflict and creative social innovation, or bidirectional causation (Friedman et al., 2025). Ecosocial theory addresses some of these issues, yet dialectical frameworks offer additional insights during periods of rapid social change and disruption (Friedman et al., 2025).

The dialectical approach recognises that health outcomes are shaped by social conflicts, power struggles, and creative innovations that cannot be captured by static models of social determinants. This perspective has implications for research methods and practice, suggesting that public health must attend to the dynamic, contested nature of social processes (Friedman et al., 2025).

Table 14.1. Social and Behavioural Influences on Health

Concept or area	What it means	Why it matters in practice
Social conditions	Income, education, housing, work and social position	Shape exposure, opportunity and access to protection.
Behaviour	Habits, decisions and social practices	Reflect both individual choices and the conditions in which choices are made.
Power	Who has authority, resources and voice	Helps explain why some interests shape policy more than others.
Culture	Shared meanings, values and practices	Affects how health problems and interventions are understood.
Community engagement	Relationships between institutions and communities	Can improve relevance and trust when participation is meaningful and power is shared.

14.2 Health Behaviour Theories: Strengths and Limitations

Behavioural science provides insights into why people behave the way they do and how behaviour can be changed. Dominant theories such as the Health Belief Model, Theory of Planned Behaviour, Protection Motivation Theory, and the Transtheoretical Model have been widely applied in public health. However, these theories have significant limitations that constrain their utility for understanding and changing health behaviour.

Protection Motivation Theory: A Critical Review

Protection motivation theory is a prominent health behaviour theory purposed to predict participation in health protection and risk behaviours (Ballaa & Hagger, 2025). The theory posits that protection motivation, a construct equivalent to behavioural intention, mediates the effects of threat appraisals (perceived severity and susceptibility) and coping appraisals (response efficacy, self-efficacy, and response costs) on behaviour (Ballaa & Hagger, 2025).

However, researchers have identified significant shortcomings in the application of PMT. There is a dearth of comprehensive theory tests, sparse evidence of theory sufficiency, overuse of correlational and cross-sectional research designs, a paucity of intervention studies and tests of theory-consistent mechanisms of action, few tests of intrapersonal and environmental moderators, and measurement concerns (Ballaa & Hagger, 2025). These limitations restrict the inferences that can be drawn from PMT research and impede theory and intervention development (Ballaa & Hagger, 2025).

The overreliance on cross-sectional designs is particularly problematic. Such designs cannot establish directional effects or permit causal inference. They cannot capture the temporal and contextual variability of behavioural enactment (Ballaa & Hagger, 2025). The field requires cross-lagged panel and factorial experimental research designs to test directional effects and mechanisms of action (Ballaa & Hagger, 2025).

The Intention-Behaviour Gap

The intention-behaviour gap remains a persistent challenge in health psychology. While intentions are widely recognized as proximal determinants of behaviour, they frequently fail to translate into action (European PMC, 2026). Dominant models of the intention-behaviour gap, including the Explained Variance Approach and the Action Control Framework, have theoretical and empirical limitations (European PMC, 2026).

These models fail to address intra-individual fluctuations, situational contingencies, and the time-indexed nature of behavioural regulation (European PMC, 2026). The overuse of between-person research designs inadequately captures the temporal and contextual variability of behavioural enactment (European PMC, 2026). To close the intention-behaviour gap, future research should integrate dynamic methodologies and real-time interventions that align with situational and motivational states, such as just-in-time adaptive interventions and implementation intentions (European PMC, 2026).

The Transtheoretical Model Under Scrutiny

The Transtheoretical Model, also known as the Stages of Change model, has been widely used in behaviour change interventions. However, the model has been subject to significant critique. While the model offers a clear sequence of stages, it often fails to reflect how people actually change, especially when living with chronic conditions (Letter to the Editor, 2025). Patients do not progress neatly from contemplation to maintenance; their motivation fluctuates, they pause, regress, and adapt based on circumstances (Letter to the Editor, 2025).

The idea that someone reaches a stable "termination" phase of change may work in theory, but it rarely holds in practice, particularly after structured support is withdrawn (Letter to the Editor, 2025). Other models may offer a better fit for long-term behaviour change. Established frameworks such as Self-Determination Theory and Social Cognitive Theory place more emphasis on sustained motivation, perceived autonomy, and environmental reinforcement (Letter to the Editor, 2025). These frameworks do not assume that change unfolds in fixed stages. Instead, they treat behavioural maintenance as something that must be supported continuously (Letter to the Editor, 2025).

The choice of a behavioural model is not a technical detail. It defines the scope of the intervention, the outcomes we expect, and how we interpret success. It is worth asking whether our theories need to evolve in order to keep pace with the people and technologies they are meant to serve (Letter to the Editor, 2025).

14.3 Power, Place, and Health

Understanding health inequalities requires attention to power dynamics and the places in which people live. Power shapes who is exposed to health risks, who has access to resources, and whose voices are heard in decision-making. Place shapes the material and social conditions that affect health. Yet, public health evaluation often neglects these dimensions.

Theorising Power in Community Health

Community health promotion interventions aimed at reducing health inequalities often fail to achieve their intended outcomes because they neglect how power affects people's health and engagement with programmes (Powell et al., 2026). Evaluations of complex public health programmes, including theory-of-change, realist evaluation, and systems evaluation, often miss a crucial issue: how power affects people's health and engagement with programmes (Powell et al., 2026).

An ethnographic study of a community health promotion programme informed by figurational sociology, a social theory of power, demonstrated the explanatory value of attending to power dynamics (Powell et al., 2026). When looking at how power dynamics played out in the targeted community, researchers could see why residents often did not trust the people running the programme, and why local status was so important to them. When programme staff understood these power dynamics, they were better able to connect with residents and help them improve their wellbeing (Powell et al., 2026).

The study concluded that combining attention to power with observational approaches gives a much clearer understanding of how complex public health programmes work and why they succeed or fail in their aims (Powell et al., 2026).

Place, Disadvantage, and Health

Research into place, health, and disadvantage has demonstrated the explanatory value of a relational, dynamic view of place (Powell et al., 2026). Massey (2005) drew attention to the different meanings of place across time and between people, illustrating that routes to health vary for different people living within the same locality. Defining place in fluid and relational terms means that relations between people in neighbouring areas might be of relevance to understanding the experiences of people targeted by interventions (Powell et al., 2026).

The interdependence of material and relational aspects of place challenges the problematic separation of compositional and contextual factors that shape health (Powell et al., 2026). Work in social geography has explored places as affective assemblages of "human and non-human matter" (Powell et al., 2026). A materialist conceptualisation of space shows how different assemblages of people and material things produce different consequences for people's health (Powell et al., 2026).

There are renewed efforts to refocus analysis of place-based health disadvantage on power relations (Powell et al., 2026). Recent research has set out frameworks to help identify the types of power that impact health in disadvantaged places, while other scholars have argued for a political economy approach to researching place and health that connects local experiences with national and international decision-making (Powell et al., 2026).

Power Mapping in Community Engagement

Community engagement efforts often rely on homogenous understandings of "community" that underestimate the significance of power, creating a risk of exclusionary practices (Enria et al., 2026). Participatory power mapping workshops provide a useful method to identify who has authority and who is trusted by whom (Enria et al., 2026).

Workshops conducted in Sierra Leone provided granular insights on authority structures and the relationship between power and trust (Enria et al., 2026). These discussions highlighted that trust is not homogeneous nor static, and helped kickstart conversations about the role of citizens not simply as recipients of health interventions but also as active participants in how health interventions are designed and delivered (Enria et al., 2026). Tracing power dynamics with and within communities can help make power visible in health interventions, maintaining a critical lens on how interventions themselves intervene dynamically on its distribution (Enria et al., 2026).

14.4 Culture, Cultural Competence, and Cultural Tailoring

Culture shapes health beliefs, practices, and systems. Cultural competence and cultural tailoring are widely promoted as strategies for addressing health inequities. However, these approaches have been subject to significant critique regarding their conceptual foundations, implementation, and effectiveness.

Progress and Challenges in Cultural Tailoring

After two decades of research on culturally sensitive behavioural interventions, significant progress and challenges remain (Griffith et al., 2024). Researchers have defined common tailoring constructs including culture, race, and ethnicity, and have examined when it is useful to culturally tailor and when tailoring may not be necessary or appropriate for achieving behaviour change (Griffith et al., 2024).

However, there are critical questions about the quality of research in this domain, particularly regarding the internal validity of empirical findings (Griffith et al., 2024). The ways in which cultural sensitivity, group targeting, and individual tailoring have incorporated culture in health promotion and health communication require continued scrutiny (Griffith et al., 2024). Unanswered questions remain about the conditions under which cultural tailoring is effective and the mechanisms through which it operates (Griffith et al., 2024).

Intercultural Competence Training

The training of health professionals in intercultural competencies presents epistemological challenges (Arias-Ortega et al., 2025). Professional training is often based on scientific knowledge as the sole and true means of understanding health, which denies and omits the existence of other forms of knowledge, limiting interventions with sociocultural relevance (Arias-Ortega et al., 2025).

Even when intercultural health policies are promoted within health systems, they are often based on an interculturality that serves the interests of a neoliberal state (Arias-Ortega et al., 2025). This poses the challenge of rethinking the training of health professionals so that they are capable of operating from a perspective of social, cultural, and territorial relevance in their professional work (Arias-Ortega et al., 2025).

Critical Perspectives on Culture

Critical approaches to culture in public health recognise that cultural competence can be tokenistic and may obscure power relations. A critical social and behavioural science seeks to reimagine dominant ways of understanding by analysing power structures and relations, unsettling widely held assumptions in public health and uncovering the roots to health problems that lie within social systems and institutions (Cochrane South Africa, n.d.).

This critical perspective recognises that culture is not a static attribute of groups but is dynamic, contested, and shaped by power relations. Cultural interventions must attend to the structural forces that shape health and must be evaluated for their effectiveness and their unintended consequences.

14.5 Community Engagement: Promises and Critiques

Community engagement is increasingly seen as a key component of public health responses. Recent outbreaks have highlighted the importance of working through existing structures and identifying trusted local leaders who can help design context-appropriate interventions (Enria et al., 2026). However, community engagement is not always effective or ethical.

The Promise of Community Engagement

Community engagement offers the promise of more appropriate, equitable, and effective services (Powell et al., 2026). It can build trust, ensure that interventions are culturally appropriate, and promote health equity. Community engagement is particularly important in health emergencies, where rapid and effective responses depend on community cooperation (Enria et al., 2026).

However, community engagement is often poorly implemented. It can be tokenistic, with communities consulted but not empowered. It can be undermined by power imbalances between communities and institutions. It can be constrained by limited resources and time.

Power and Trust in Community Engagement

Community engagement efforts often rely on homogenous understandings of community that underestimate the significance of power (Enria et al., 2026). Communities are not homogeneous; they are characterised by power dynamics, competing interests, and internal divisions. Understanding these dynamics is essential for effective engagement.

Trust is not homogeneous nor static (Enria et al., 2026). Trust must be built over time and can be easily undermined. Trust is shaped by historical relationships, including experiences of discrimination, exploitation, and neglect. Building trust requires acknowledging this history and demonstrating through action that communities will be respected and their interests protected.

Ethical Dimensions of Community Engagement

Community engagement in public health programmes raises significant ethical challenges (Kaur et al., 2026). These include concerns about consent, confidentiality, and power imbalance. Community-based interventions often lead to substantial gains in screening, adherence, and trust, but they also show persisting dilemmas concerning breach of confidentiality, fuzzy consent, unequal loss of power, and risk transfer onto volunteers and peer supporters (Kaur et al., 2026).

Ethical issues differ across social contexts, requiring adaptive and participatory governance rather than standardised solutions (Kaur et al., 2026). Ethically informed community engagement is not just a moral requirement but also an empirical necessity for sustainable health programmes and requires continuing ethical reflexivity, improved safeguards, and policy frameworks that foster partners in the community as co-producers of health (Kaur et al., 2026).

14.6 Applying Social and Behavioural Sciences to Public Health

Critical Social and Behavioural Science

A critical social and behavioural science for public health goes beyond identifying determinants and designing interventions. It seeks to reimagine dominant ways of understanding by analysing power structures and relations, unsettling widely held assumptions, and uncovering the roots to health problems that lie within social systems and institutions (Cochrane South Africa, n.d.). This perspective is essential for addressing health inequities and for developing interventions that are truly effective and just.

The Role of Social Sciences in One Health

The social sciences have a valuable role to play in One Health frameworks, yet they have been notably absent from One Health collaborations (Carter et al., 2024). Efforts to position social scientists as experts on behaviour change and health decision-making have helped articulate a concrete role for progressing One Health collaborations. However, there are other equally valuable functions the social scientist has in understanding complex systems (Carter et al., 2024).

Social scientists can contribute to understanding the power dynamics, cultural contexts, and institutional arrangements that shape health outcomes. They can identify how health interventions are experienced by different groups and how they can be made more equitable and effective. Articulating these contributions more clearly invites a broader set of interdisciplinary perspectives to One Health discussions, allowing for stronger connections between sectors, actors, disciplines, and sub-systems (Carter et al., 2024).

Critical social theory holds potential for addressing challenges within One Health, including medicalisation, anthropocentrism, and colonial-capitalism (Van Patter et al., 2023). Feminist, posthuman, and anti-colonial approaches can encourage a deeper transdisciplinarity within One Health, one that is open to a genuine engagement with insights from critical social theory and a re-orientation towards more creative and radical re-imaginings in the service of wellbeing for diverse peoples, animals, other beings, and the land (Van Patter et al., 2023).

Health Equity and Social Justice

Health equity requires attention to the social, economic, and political forces that create and sustain health inequities. This requires a critical approach that addresses power, culture, and place. It requires interventions that go beyond individual behaviour change to address structural determinants. It requires community engagement that is meaningful and empowering, not tokenistic.

Behaviour change interventions are more likely to be optimally efficacious if they are based on theoretical approaches that offer insight into the reliable determinants of health promoting behaviours and the processes involved (Ballaa & Hagger, 2025). However, these theories must be critically evaluated and refined. The choice of a theoretical model defines the scope of the intervention, the outcomes we expect, and how we interpret success (Ballaa & Hagger, 2025).

14.7 Key Takeaways

The SDOH framework has been influential but is subject to critiques regarding medicalisation, categorical approaches, and neglect of dialectical processes (Friedman et al., 2025; Gutin, 2024; Pfeiffer & Mendez, 2026)

Health behaviour theories have significant limitations, including overreliance on cross-sectional designs, failure to capture intra-individual fluctuations, and neglect of dynamic processes (Ballaa & Hagger, 2025; European PMC, 2026)

The intention-behaviour gap remains a persistent challenge, requiring dynamic methodologies and context-sensitive strategies (European PMC, 2026)

Power and place are essential but often neglected dimensions of health, requiring attention to power dynamics, relational views of place, and political economy approaches (Powell et al., 2026; Enria et al., 2026)

Cultural competence and cultural tailoring have progressed but face challenges regarding conceptual foundations and implementation (Griffith et al., 2024; Arias-Ortega et al., 2025)

Community engagement is promising but must attend to power dynamics, heterogeneity within communities, and ethical dimensions (Enria et al., 2026; Kaur et al., 2026)

Social sciences have a valuable but often neglected role in One Health and other interdisciplinary frameworks (Carter et al., 2024; Van Patter et al., 2023)

Health equity requires critical approaches that address structural determinants, power, culture, and place

Chapter 15

Global Health and Development

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of global health and its evolution

Evaluate the effectiveness and limitations of global health governance institutions

Assess the strengths and weaknesses of the Sustainable Development Goals framework

Analyse the tensions between humanitarian principles and operational realities

Critically examine the relationship between health and development paradigms

Apply analytical frameworks to contemporary global health challenges

15.1 The Concept of Global Health: A Critical Analysis

The term global health has become ubiquitous, yet its meaning remains contested. Koplan and colleagues (2009) proposed a definition that emphasises transnational issues, interdisciplinary collaboration, and the synthesis of population-based prevention with individual-level clinical care. However, this definition obscures as much as it reveals.

What Global Health Is Not

Global health is not simply international health with a new name. International health traditionally concerned itself with the health of low and middle-income countries, often through bilateral relationships that reflected colonial and neocolonial power dynamics (Brown et al., 2006). Global health purports to transcend these dynamics by emphasising shared challenges and mutual responsibility. Yet the persistence of North-South power imbalances in global health institutions raises questions about whether this transcendence has been achieved (Buse & Hawkes, 2015).

Global health is also not simply public health on a global scale. Public health has traditionally been understood as the domain of the nation state, focused on national populations (Frieden, 2010). Global health challenges this national framing by emphasising transnational threats and solutions. However, the nation state remains the primary actor in global health governance, creating tensions between global and national priorities (Fidler, 2010).

The Power Dynamics of Global Health

Global health is shaped by power relations. The institutions that govern global health are dominated by high-income countries and their interests (Shiffman, 2009). The WHO, despite its universal membership, is constrained by its funding structure, with a significant portion of its budget coming from voluntary contributions from high-income countries. These contributions often come with conditions that reflect donor priorities rather than recipient needs (Harman, 2012).

The power dynamics of global health are also evident in the composition of the global health workforce. Health workers from low and middle-income countries migrate to high-income countries, creating a brain drain that undermines health systems in countries that can least afford it

(Labonté et al., 2015). This migration is facilitated by recruitment practices in high-income countries and by the inequitable distribution of training opportunities (Aluttis et al., 2014).

The Colonial Legacy in Global Health

The colonial legacy in global health is increasingly recognised and debated. Colonial medicine served colonial interests, including the extraction of resources, the maintenance of order, and the legitimation of colonial rule (Arnold, 1993). Global health institutions and practices have inherited some of these patterns, including the extraction of data and knowledge from low and middle-income countries without adequate benefit sharing (Abimbola & Pai, 2020).

The concept of decolonising global health has gained traction in recent years. Proponents argue that global health must confront its colonial legacy, address power imbalances, and centre the voices and priorities of low and middle-income countries (Kwete et al., 2022). Critics argue that decolonisation rhetoric can be tokenistic and that meaningful decolonisation requires fundamental changes in funding, governance, and knowledge production (Büyüm et al., 2020).

Table 15.1. Major Components of Global Health

Concept or area	What it means	Why it matters in practice
Global governance	International rules, institutions and collective action	Shapes how countries respond to problems that cross borders.
Global health equity	Distribution of health, resources and decision-making power	Keeps attention on unequal benefits, risks and influence.
Development	Economic and social conditions that affect health	Connects health outcomes with poverty, education, work and social protection.
Humanitarian health	Health action during conflict, displacement and disasters	Requires rapid response while protecting dignity, safety and access.
Global health security	Preparedness, surveillance and response to shared threats	Protects populations while raising questions about sovereignty and fairness.
Decolonisation	Examining historical and present power relations	Challenges unequal knowledge, funding and leadership arrangements.

15.2 The Architecture of Global Health: Institutions and Governance

The global health architecture has grown increasingly complex, with a proliferation of actors, institutions, and funding mechanisms. This complexity raises questions about coordination, accountability, and effectiveness.

The World Health Organization: Strengths and Limitations

The WHO is the only UN agency with a specific mandate for health. Its constitutional definition of health, a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (WHO, 1948), remains aspirational and largely unrealised. The WHO has played important roles in setting norms and standards, providing technical assistance, and coordinating the global response to health emergencies (Lee, 2009).

However, the WHO's limitations are significant. Its budget is smaller than that of many mid-sized hospitals in high-income countries (Clinton & Sridhar, 2017). Its funding structure gives disproportionate influence to major donors (Hanrieder, 2015). Its governance structure, where member states set priorities and policies, can be slow and politicised (Gostin & Wiley, 2020). The WHO's response to the COVID-19 pandemic was criticised for being too slow, too cautious, and too influenced by member state politics (Horton, 2020).

The debate about WHO reform reflects deeper tensions about the role of the organisation. Should the WHO be a technical agency, providing expertise and guidance? Should it be a political agency, advocating for health as a human right? Should it be an operational agency, delivering health services in emergencies? These different visions are difficult to reconcile within a single organisation (Sridhar & Gostin, 2011).

The Rise of Public-Private Partnerships

The emergence of public-private partnerships has transformed global health governance. The Global Fund to Fight AIDS, Tuberculosis and Malaria and Gavi, the Vaccine Alliance represent a new model of global health financing, bringing together governments, philanthropic organisations, and the private sector. These partnerships have mobilised substantial resources and contributed to measurable health gains (Kamradt-Scott, 2016).

However, public-private partnerships also raise concerns. They can fragment global health governance, with different partnerships focusing on different issues and operating with different governance structures (Ruger, 2012). They can create accountability gaps, with private actors exercising significant influence without the democratic accountability of public institutions (Storeng & Béhague, 2017). They can also reflect donor priorities rather than recipient needs, with funding flowing to issues that are politically and economically salient rather than to those that are most burdensome (Gautier et al., 2017).

The Role of Philanthropy

Philanthropic organisations, particularly the Bill and Melinda Gates Foundation, have become major actors in global health. The Gates Foundation's influence is substantial, shaping research agendas, funding priorities, and policy debates (McCoy et al., 2009). Its focus on vaccines and infectious diseases has contributed to important health gains (Gates, 2021).

However, the role of philanthropy in global health raises questions about democracy, accountability, and equity. Philanthropic organisations are not democratically accountable (McGoey, 2012). Their priorities reflect the preferences of their founders rather than the needs of affected populations (Birn, 2014). Their influence can crowd out other voices and priorities, including those from low and middle-income countries (Storeng & Béhague, 2017).

15.3 The Sustainable Development Goals: Promise and Critique

The Sustainable Development Goals represent an ambitious attempt to set a global agenda for development. They build on the Millennium Development Goals, which were adopted in 2000 and expired in 2015. The SDGs are broader and more ambitious than the MDGs, covering not only health but also poverty, education, gender, inequality, and environmental sustainability (United Nations, 2015).

What the SDGs Achieved

The SDGs have provided a framework for global action. They have mobilised resources and attention around health and development (Buse & Hawkes, 2015). They have encouraged countries to set national targets and to monitor progress (Sachs, 2012). They have promoted multisectoral action, recognising that health is shaped by factors beyond the health sector (Kickbusch & Nutbeam, 2017).

The SDGs have also elevated the importance of equity. The commitment to leave no one behind is a recognition that progress must be inclusive and that the poorest and most marginalised must be reached (United Nations, 2015). This commitment has been important in shaping policies and programmes (Marmot & Bell, 2016).

Critiques of the SDGs

The SDGs have been subject to multiple critiques. One critique is that they are too numerous and too broad, making them difficult to implement and monitor. With 17 goals and 169 targets, the SDGs lack the focus and clarity of the MDGs (Easterly, 2015). This breadth has diluted attention and resources (Hulme, 2019).

Another critique is that the SDGs are insufficiently ambitious. The targets are often framed as aspirations rather than as binding commitments (Sridhar & Gostin, 2011). The means of implementation, including financing and technology transfer, are inadequately addressed (Ooms et al., 2014). The SDGs do not address the structural drivers of health inequities, including global economic inequalities and the power of transnational corporations (Labonté et al., 2015).

A third critique is that the SDGs are state-centric, assuming that nation states are the primary actors in development (Fukuda-Parr, 2016). This assumption is increasingly questionable in a globalised world where non-state actors, including corporations and civil society organisations, play significant roles. The SDGs do not adequately address the governance challenges of this globalised world (Fidler, 2010).

The SDGs and the COVID-19 Pandemic

The COVID-19 pandemic set back progress on many SDG targets. Immunisation coverage declined, maternal and child health services were disrupted, mental health worsened, and more people were pushed into poverty (Lancet, 2021). The pandemic exposed the fragility of progress and the inadequacy of the SDG framework to address systemic shocks (Gostin & Wiley, 2020).

The pandemic also exposed the contradictions of the SDG framework. The goal of universal health coverage was undermined by the reallocation of resources to pandemic response (WHO, 2020). The goal of poverty reduction was undermined by the economic impacts of the pandemic. The goal of global partnership was undermined by vaccine nationalism and the hoarding of resources by high-income countries (Horton, 2020).

15.4 Humanitarian Health: Principles and Practice

Humanitarian health involves providing health services in humanitarian emergencies. These emergencies include armed conflicts, natural disasters, and disease outbreaks. Humanitarian health is provided by a range of actors, including UN agencies, NGOs, and national governments (Bennet et al., 2015).

The Principles of Humanitarian Action

Humanitarian action is guided by four principles. Humanity requires that human suffering be addressed wherever it is found. Neutrality requires that humanitarian action not take sides in

hostilities. Impartiality requires that humanitarian action be provided based on need alone. Independence requires that humanitarian action be independent of political, economic, or military objectives (ICRC, 2019).

These principles are essential for maintaining access to affected populations and ensuring that humanitarian action is accepted by all parties. However, these principles are often challenged. Humanitarian actors may be targeted. Access to affected populations may be denied. The politicisation of humanitarian action is a growing concern (Slim, 2015).

Critiques of Humanitarian Action

Humanitarian action has been subject to multiple critiques. One critique is that humanitarian action can perpetuate the conditions that create suffering. By providing relief without addressing the underlying causes of conflict and displacement, humanitarian action may enable the continuation of violence (Terry, 2002).

Another critique is that humanitarian action can be co-opted by political and military agendas. The integration of humanitarian action with political and military objectives, as has occurred in some conflicts, undermines the principles of neutrality and independence (Collinson & Elhawary, 2012). This integration can also put humanitarian actors at risk (Abbing, 2015).

A third critique is that humanitarian action is insufficiently accountable to affected populations. Humanitarian decisions are often made by external actors rather than by communities themselves (Anderson, 1999). The voices and priorities of affected populations are often marginalised in humanitarian response (IASC, 2017).

The Challenges of Health in Humanitarian Emergencies

Health needs in humanitarian emergencies are often severe. They include injuries, communicable diseases, malnutrition, and mental health problems. Health systems are often damaged or destroyed. Health workers may be displaced or targeted (WHO, 2017).

The health response in humanitarian emergencies includes immediate life-saving interventions and longer-term recovery. Immediate interventions include emergency medical care, disease surveillance, and water and sanitation. Longer-term interventions include health system strengthening and capacity building (Sphere Project, 2018).

However, health response in humanitarian emergencies faces significant challenges. These include insecurity, limited funding, logistical constraints, and political interference. Health actors may struggle to maintain coordination, ensure quality, and reach the most vulnerable populations (Bennet et al., 2015).

15.5 Health and Development: Competing Paradigms

Health and development are closely linked. Health is both a contributor to development and an outcome of development. Improving health contributes to economic growth, poverty reduction, and human development. Development contributes to health by improving living conditions, increasing access to services, and reducing poverty (WHO, 1999).

Health as an Investment

The Commission on Macroeconomics and Health, chaired by Jeffrey Sachs, made the case for health as an investment (WHO, 2001). The commission argued that investing in health is not only

a moral imperative but also a smart economic investment. The commission estimated that the economic returns on health investment are substantial (Sachs, 2001).

The case for health as an investment has been influential in shaping global health policy. It has contributed to increased funding for global health (Buse & Hawkes, 2015). However, it has also been criticised for instrumentalising health and for neglecting the intrinsic value of health and health equity (Labonté et al., 2015).

Critiques of the Investment Approach

The investment approach to health has been subject to multiple critiques. One critique is that it prioritises economic productivity over human wellbeing. By framing health in terms of its economic value, the investment approach marginalises populations that are less economically productive, including the elderly, people with disabilities, and those who are economically marginalised (Sen, 2002).

Another critique is that the investment approach does not address the structural determinants of health. By focusing on health services and interventions, the investment approach neglects the social, economic, and political conditions that shape health. It does not address poverty, inequality, or the power of transnational corporations (Labonté et al., 2015).

A third critique is that the investment approach can justify policies that are harmful to health. Policies that promote economic growth at the expense of social protection and environmental sustainability may be justified in the name of health investment. This tension between economic growth and health equity is a central challenge of global health governance (Ooms et al., 2014).

Alternative Paradigms

Alternative paradigms for health and development have been proposed. The health and human rights paradigm emphasises that health is a human right and that governments have a duty to respect, protect, and fulfil this right. This paradigm has been influential in advocacy for health equity and for addressing the social determinants of health (Mann et al., 1999).

The health and social justice paradigm emphasises that health inequities are produced by unjust social and economic systems. Addressing health inequities requires transforming these systems, not just providing health services. This paradigm has been influential in the social determinants of health movement and in advocacy for health equity (Marmot, 2015).

15.6 Contemporary Global Health Challenges

The Erosion of Multilateralism

The past two decades have seen a marked erosion of multilateralism. Geopolitical rivalries, the rise of nationalist movements, and the fragmentation of global governance have weakened the institutions that coordinate pandemic preparedness, health financing, and humanitarian response (Gostin & Wiley, 2020; Horton, 2020). The WHO's budget is smaller than that of many mid-sized hospitals in high-income countries (Clinton & Sridhar, 2017).

The erosion of multilateralism poses a fundamental threat to global health. Many health challenges, including pandemics, climate change, and antimicrobial resistance, require global cooperation (Fidler, 2010). Rebuilding multilateralism is essential for addressing these challenges. However, rebuilding multilateralism requires addressing the underlying causes of its erosion, including geopolitical rivalries and the fragmentation of global governance (Horton, 2020).

Health Inequity

Despite decades of progress, global health inequities are persistent and, in some cases, worsening. Life expectancy in Sierra Leone, at 54.3 years, is more than three decades shorter than in Japan, at 84.5 years (United Nations, 2022). Within countries, the gaps are equally stark. In the United States, life expectancy for the wealthiest 1 percent exceeds that of the poorest 1 percent by approximately 15 years for men and 10 years for women (Chetty et al., 2016).

Health inequity is not an isolated issue. It intersects with every major global challenge. Climate change affects the poor most severely. AI bias harms those already marginalised. Chronic disease burdens are highest among those with the least access to prevention and care. Addressing global health inequity requires action on the structural drivers of health (Marmot, 2015; Watts et al., 2021).

Climate Change and Health

Climate change is the most significant global health threat of the twenty-first century (Watts et al., 2021). The health impacts of climate change are extensive and include heat-related mortality, changes in infectious disease patterns, food and water insecurity, mental health impacts, and displacement (WHO, 2023). The people bearing the worst consequences are those who have contributed the least to greenhouse gas emissions (Anton et al., 2024).

Addressing climate change requires action on multiple fronts. Mitigation involves reducing greenhouse gas emissions. Adaptation involves preparing for the health impacts of climate change. Health systems must be strengthened to respond to climate-related health emergencies. Health professionals must advocate for climate action (Whitmee et al., 2015).

15.7 Key Takeaways

Global health is not simply international health or public health on a global scale. It is shaped by power dynamics and colonial legacies (Koplan et al., 2009; Brown et al., 2006; Abimbola & Pai, 2020)

The global health architecture includes multiple actors and institutions with overlapping mandates and competing interests (Frenk & Moon, 2013)

The WHO has strengths and limitations. Its governance structure, funding model, and political constraints affect its effectiveness (Clinton & Sridhar, 2017; Gostin & Wiley, 2020)

Public-private partnerships and philanthropic organisations have mobilised resources but raise concerns about accountability and democracy (Ruger, 2012; Storeng & Béhague, 2017)

The SDGs provide a framework for global action but are subject to critiques about breadth, ambition, and state-centrism (Easterly, 2015; Fukuda-Parr, 2016)

Humanitarian action is guided by principles of humanity, neutrality, impartiality, and independence, but these principles are often challenged (Slim, 2015; Terry, 2002)

The investment approach to health has been influential but is subject to critiques about instrumentalisation and neglect of structural determinants (Labonté et al., 2015; Sen, 2002)

Contemporary global health challenges include the erosion of multilateralism, persistent health inequity, and climate change (Gostin & Wiley, 2020; Marmot, 2015; Watts et al., 2021)

Addressing global health challenges requires action on the structural drivers of health and cooperation among all countries

Chapter 16

Research Methods and Evidence Synthesis

Learning Objectives

By the end of this chapter, you will be able to:

Critically evaluate the politics of evidence production and whose knowledge counts in public health

Analyse the limitations and biases of dominant research methods and their implications for health equity

Assess the role of qualitative, participatory, and decolonial methods in challenging dominant paradigms

Critique the evidence synthesis enterprise and its assumptions about what constitutes valid knowledge

Apply critical research perspectives to public health challenges

16.1 The Politics of Evidence: Whose Knowledge Counts?

Public health research is often presented as objective, value-neutral, and technocratic. Yet the production of evidence is deeply political. What counts as evidence, who produces it, and how it is used reflect power relations, institutional interests, and epistemological assumptions that are rarely examined (Greenhalgh & Wieringa, 2011).

The Hierarchy of Evidence

The evidence hierarchy, with systematic reviews and randomised controlled trials at the top, is a cornerstone of evidence-based medicine and public health. This hierarchy privileges certain forms of knowledge while marginalising others. It assumes that quantitative, experimental methods produce more reliable knowledge than qualitative, observational, or participatory methods (Greenhalgh & Wieringa, 2011).

The hierarchy is not merely a technical classification. It is a value system that reflects particular assumptions about what constitutes valid knowledge. It privileges generalisability over contextual understanding, statistical significance over practical significance, and researcher expertise over community knowledge. It marginalises forms of knowledge that do not fit its criteria, including Indigenous knowledge, experiential knowledge, and community-based knowledge (Smith, 2021).

Who Produces Knowledge?

The production of public health knowledge is concentrated in high-income countries and in elite institutions within those countries. Research agendas are shaped by the priorities of funders, who are often located in high-income countries. Research questions reflect the interests of researchers and their institutions, not necessarily the needs of communities (Smith, 2021).

The global distribution of research production is profoundly unequal. Low and middle-income countries produce a fraction of the world's health research despite bearing the majority of the global disease burden. Research that is conducted in low and middle-income countries is often led by

researchers from high-income countries, with local researchers in subordinate roles. This pattern reflects colonial legacies and neocolonial power relations (Abimbola & Pai, 2020).

Epistemic Justice

Epistemic justice concerns who is recognised as a knower and what forms of knowledge are recognised as valid (Fricker, 2007). Epistemic injustice occurs when certain groups are systematically excluded from knowledge production or when their knowledge is dismissed as invalid. Epistemic injustice is not merely a matter of individual prejudice; it is built into the structures and practices of research.

Epistemic justice requires recognising that communities have knowledge and expertise that is essential for understanding health and developing interventions. It requires challenging the hierarchy of evidence and recognising multiple forms of knowledge. It requires shifting power in research relationships and ensuring that communities have a voice in setting research agendas and interpreting findings (Smith, 2021).

Table 16.1. Research Approaches and the Questions They Help Answer

Concept or area	What it means	Why it matters in practice
Quantitative research	Measures, estimates and tests relationships	Useful for describing patterns and estimating effects, while requiring careful attention to bias and assumptions.
Qualitative research	Explores meanings, experiences, relationships and processes	Helps explain how people understand and experience health problems.
Participatory research	Researchers and communities share parts of the research process	Can make research more relevant and redistribute some control over knowledge production.
Decolonising methods	Questions who defines the problem, owns data and controls interpretation	Addresses power and historical inequalities in research relationships.
Evidence synthesis	Brings findings from multiple studies together	Helps decision makers assess a wider body of evidence rather than relying on one study.

16.2 Quantitative Methods: Critical Perspectives

Quantitative methods are the dominant approach in public health research. They are often presented as objective and value-neutral. Yet quantitative methods are shaped by assumptions, values, and power relations that are rarely examined.

The Problem of Categories

Quantitative research relies on categories to describe populations and measure health outcomes. These categories, such as race, class, and gender, are not natural kinds. They are social constructs that reflect historical power relations. The use of these categories in research can both reveal and obscure health inequities (Krieger, 2011).

The choice of categories is not innocent. Categories reflect the interests and assumptions of researchers. They can reinforce social hierarchies by treating socially constructed categories as fixed

and natural. They can obscure the complexity and heterogeneity of populations. They can also create categories that are meaningful for researchers but not for communities (Krieger, 2011).

The Problem of Measurement

Measurement is central to quantitative research. Yet measurement is not neutral. The choice of what to measure, how to measure it, and how to interpret measurements reflects assumptions and values. Measures of health, disease, and risk are shaped by cultural, social, and political factors.

Health outcomes are not simply objective phenomena waiting to be measured. They are constructed through social processes. The definition of disease, the diagnosis of illness, and the recording of health events are shaped by medical knowledge, institutional practices, and social norms. Quantitative measures capture these constructed phenomena, not objective reality (Krieger, 2011).

The Problem of Generalisability

Quantitative research aims for generalisability: findings that apply beyond the specific sample studied. Generalisability is achieved through sampling, statistical inference, and replication. Yet generalisability is often limited in practice.

Populations in research are often not representative of the broader population. Research participants are often healthier, more educated, and more advantaged than the general population. Findings may not apply to populations that differ from the research sample. The pursuit of generalisability can obscure local variation and contextual specificity (Greenhalgh & Wieringa, 2011).

16.3 Qualitative Methods: Strengths and Critiques

Qualitative methods offer an alternative to quantitative approaches. They provide rich, contextual understanding of health and illness. They capture the experiences, perspectives, and meanings of people. Yet qualitative methods are not immune to critique.

The Value of Qualitative Methods

Qualitative methods are valuable for understanding the social, cultural, and political dimensions of health. They can reveal how people understand health and illness, how they experience healthcare, and how they navigate health systems. They can capture the complexity and heterogeneity of populations that are obscured by quantitative methods.

Qualitative methods are also valuable for generating hypotheses and developing interventions. They can identify the factors that shape health behaviours, the barriers to accessing services, and the contextual factors that affect intervention effectiveness. They can provide insights that are not accessible through quantitative methods (Green & Thorogood, 2018).

Critiques of Qualitative Methods

Qualitative methods have been subject to critique. One critique is that they are insufficiently rigorous. They rely on small samples, subjective interpretation, and non-standardised procedures. They are vulnerable to researcher bias and may not be replicable. These critiques reflect a positivist epistemology that privileges quantitative methods (Green & Thorogood, 2018).

Another critique is that qualitative methods are insufficiently critical. They can describe experiences but not explain the structural forces that shape them. They can capture individual perspectives but not the power relations that produce those perspectives. They can be co-opted by dominant institutions to legitimate existing power relations (Green & Thorogood, 2018).

A third critique is that qualitative methods are insufficiently attentive to positionality. Researchers bring their own perspectives, assumptions, and power relations to research. These shape what they see, how they interpret, and what they produce. The positionality of the researcher is often unexamined in qualitative research (Smith, 2021).

16.4 Participatory and Community-Based Research

Participatory research methods involve communities in the research process. They are based on the principle that communities have knowledge and expertise that is essential for understanding health and developing interventions. They challenge the traditional power relations of research.

Principles of Participatory Research

Participatory research is based on several principles. First, communities are partners in research, not subjects. Second, research should be relevant to community needs and priorities. Third, research should benefit communities, not just researchers. Fourth, communities should have a voice in setting research agendas, conducting research, and interpreting findings.

Community-based participatory research is a specific approach that involves collaboration between researchers and communities throughout the research process. CBPR is based on principles of equity, mutual respect, and shared power. It aims to build community capacity and promote social change (Wallerstein et al., 2018).

Critiques of Participatory Research

Participatory research has been subject to critique. One critique is that it can be tokenistic. Communities may be consulted but not empowered. Power imbalances between researchers and communities may persist despite participatory rhetoric. The interests of funders and institutions may shape research in ways that undermine community priorities (Wallerstein et al., 2018).

Another critique is that participatory research can be co-opted. The language of participation can be used to legitimate research that serves institutional interests rather than community needs. Participatory methods can be used to gain community trust and access without genuinely sharing power (Wallerstein et al., 2018).

A third critique is that participatory research is insufficiently attentive to diversity within communities. Communities are not homogeneous; they are characterised by power dynamics, competing interests, and internal divisions. Participatory research must attend to these dynamics and ensure that all voices are heard, not just those of community leaders (Wallerstein et al., 2018).

16.5 Decolonising Research Methods

Decolonising research methods is a movement to challenge colonial legacies in research and to centre Indigenous and non-Western knowledge systems. It is based on the recognition that research has been a tool of colonialism, extracting knowledge from colonised peoples while marginalising their knowledge systems (Smith, 2021).

Colonial Legacies in Research

Research has been central to colonialism. Colonial powers used research to understand and control colonised peoples. Research was used to classify populations, measure bodies, and justify domination. Research institutions and practices were established to serve colonial interests, not the interests of colonised peoples (Smith, 2021).

The colonial legacy persists in research. Research continues to be conducted by outsiders on communities, often without consent or benefit. Research continues to extract knowledge from communities without returning benefits. Research continues to marginalise Indigenous and non-Western knowledge systems (Smith, 2021).

Decolonising Approaches

Decolonising research methods involves several strategies. First, it requires challenging the assumption that Western knowledge systems are superior. Second, it requires centring Indigenous and non-Western knowledge systems and methods. Third, it requires shifting power in research relationships and ensuring that communities have ownership of research and its outcomes (Smith, 2021).

Decolonising research methods is not simply about adding Indigenous methods to existing research practices. It requires a fundamental rethinking of what research is for, who it serves, and how it is conducted. It requires challenging the institutional structures and power relations that shape research (Smith, 2021).

Challenges of Decolonising Research

Decolonising research methods faces significant challenges. Institutional structures are resistant to change. Funding mechanisms favour Western methods and priorities. The criteria for academic success reward Western research practices. Decolonising research requires changes at multiple levels, from individual practice to institutional structures to global governance (Smith, 2021).

16.6 Evidence Synthesis: Critical Perspectives

Evidence synthesis, including systematic reviews and meta-analyses, is central to evidence-based public health. Yet evidence synthesis is not a neutral technical process. It reflects assumptions, values, and power relations that are rarely examined.

The Limitations of Systematic Reviews

Systematic reviews aim to synthesise all available evidence on a specific question. They use explicit, transparent methods to identify, appraise, and synthesise evidence. Yet systematic reviews have significant limitations (Higgins & Green, 2011).

One limitation is that systematic reviews are only as good as the studies they include. If the underlying studies are biased, the review will be biased. Publication bias, where studies with positive findings are more likely to be published, can distort reviews. Language bias, where studies published in English are more likely to be included, can also distort reviews (Higgins & Green, 2011).

Another limitation is that systematic reviews often ignore context. They combine studies from different settings, populations, and time periods, assuming that findings can be generalised. This assumption may not hold. Interventions that work in one context may not work in another. The search for generalisability can obscure contextual specificity (Greenhalgh & Wieringa, 2011).

A third limitation is that systematic reviews are often insufficiently attentive to equity. Reviews may not consider whether interventions are equitable or whether they benefit some groups more than others. Reviews may not include studies from low and middle-income countries or from marginalised populations (Higgins & Green, 2011).

The Politics of Evidence Synthesis

Evidence synthesis is not simply a technical process. It is shaped by political and institutional factors. The choice of which questions to address, which studies to include, and how to interpret findings reflects interests, values, and power relations.

Evidence synthesis can be used to support predetermined policy positions. Those who want to justify a policy can commission a review that supports their position. Those who want to challenge a policy can commission a review that undermines it. The proliferation of conflicting reviews can create confusion and undermine trust in evidence (Greenhalgh & Wieringa, 2011).

16.7 Key Takeaways

The production of evidence is political. What counts as evidence, who produces it, and how it is used reflect power relations and institutional interests (Greenhalgh & Wieringa, 2011; Smith, 2021)

The hierarchy of evidence privileges certain forms of knowledge while marginalising others, including qualitative, participatory, and Indigenous knowledge (Smith, 2021)

Quantitative methods are not objective or value-neutral. They are shaped by assumptions about categories, measurement, and generalisability (Krieger, 2011)

Qualitative methods provide rich, contextual understanding but are not immune to critique regarding rigour, criticality, and positionality (Green & Thorogood, 2018)

Participatory research involves communities in the research process but faces challenges of tokenism, co-optation, and diversity (Wallerstein et al., 2018)

Decolonising research methods challenges colonial legacies and centres Indigenous and non-Western knowledge systems (Smith, 2021)

Evidence synthesis is not a neutral technical process. It is shaped by publication bias, language bias, and assumptions about generalisability (Higgins & Green, 2011; Greenhalgh & Wieringa, 2011)

A critical approach to research methods requires examining whose knowledge counts and why

Chapter 17

Health Communication and Media Literacy

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the political economy of health communication and its implications for health equity

Evaluate the limitations of dominant health communication models and their assumptions about audiences

Assess the role of media, platforms, and algorithms in shaping health narratives and misinformation

Analyse the relationship between health literacy, power, and social position

Apply critical communication frameworks to public health challenges

17.1 The Political Economy of Health Communication

Health communication is often presented as a neutral technical practice: identifying the right message, the right channel, and the right audience to achieve health outcomes. This framing obscures the political and economic forces that shape what is communicated, by whom, and for what purposes (Dorfman et al., 2005).

Who Controls the Narrative?

The production and dissemination of health information are concentrated in the hands of powerful institutions. Governments, corporations, and media conglomerates shape what health issues receive attention, how they are framed, and what solutions are considered legitimate. The voices of communities, particularly marginalised communities, are often excluded or marginalised (Dorfman et al., 2005).

Commercial interests play a particularly significant role in shaping health communication. Corporations that profit from unhealthy products, including tobacco, alcohol, and ultra-processed foods, invest heavily in marketing and public relations. They shape the narrative about their products, casting doubt on health evidence and promoting individual responsibility over regulation (Moodie et al., 2013).

The commercial determinants of health are not limited to product marketing. Media conglomerates, which are owned by a small number of corporations, shape the news and entertainment content that influences health beliefs and behaviours. The concentration of media ownership limits the diversity of perspectives and reinforces dominant narratives (Dorfman et al., 2005).

The Commercial Determinants of Health

The commercial determinants of health framework has emerged to address the role of corporations in shaping health. It recognises that commercial actors have substantial influence over health through their products, marketing, and political influence. Commercial actors shape the information environment, influencing what people believe about health and what they understand to be healthy (Moodie et al., 2013).

The commercial determinants framework challenges the idea that health communication is simply about providing information. It recognises that information is produced and disseminated in a context shaped by commercial interests. Effective health communication requires addressing not only individual knowledge but also the commercial forces that shape the information environment (Moodie et al., 2013).

Health Communication and Power

Health communication is not simply about transmitting information. It is about power. Those who control the information environment have power over what people know, believe, and do. Health communication can be a tool of domination, reinforcing dominant narratives and marginalising alternative perspectives. It can also be a tool of liberation, challenging dominant narratives and amplifying marginalised voices (Airhihenbuwa, 2007).

The power dynamics of health communication are evident in the framing of health issues. Who is represented as the cause of health problems? Who is represented as the solution? What solutions are considered legitimate? The answers to these questions reflect power relations and shape health policy and practice (Airhihenbuwa, 2007).

Table 17.1. Health Communication: From Message Delivery to Public Dialogue

Concept or area	What it means	Why it matters in practice
Message design	What is said and how it is framed	Makes evidence understandable and relevant to a particular audience.
Audience context	Beliefs, values, language, experience and trust	Determines how a message is likely to be interpreted.
Information environment	Platforms, algorithms, media and social networks	Shapes what people encounter, repeat and believe.
Health literacy	Ability to access, understand, evaluate and use information	Supports informed decisions without placing the entire burden on individuals.
Misinformation response	Correction, prebunking, social listening and trusted messengers	Reduces harm while avoiding responses that deepen distrust.

17.2 Dominant Health Communication Models: A Critical Analysis

Several models have been developed to guide health communication. These models are often presented as technical tools for designing effective messages. Yet they embody assumptions about audiences, communication, and behaviour that are rarely examined.

The Knowledge-Attitude-Behaviour Model

The knowledge-attitude-behaviour model is one of the most influential health communication models. It assumes that providing information will change attitudes, which will change behaviour. This model underlies many health education and communication campaigns (Tones & Green, 2004).

The KAB model has been subject to significant critique. One critique is that it assumes a linear, rational process of behaviour change. It assumes that people are rational actors who make decisions

based on information. This assumption is often violated in practice. Behaviour is shaped by many factors beyond knowledge, including social norms, structural constraints, and unconscious processes (Tones & Green, 2004).

Another critique is that the KAB model is insufficiently attentive to power. It focuses on individual knowledge and behaviour while neglecting the social, economic, and political forces that shape both. It places responsibility on individuals for their health while ignoring the structural barriers that constrain their choices (Airhihenbuwa, 2007).

A third critique is that the KAB model is insufficiently attentive to culture. It assumes that health messages are received and interpreted in the same way across different cultural contexts. This assumption is often false. Health messages are interpreted through cultural frameworks that shape their meaning and their effects (Airhihenbuwa, 2007).

The Social Marketing Model

Social marketing applies commercial marketing techniques to social issues. It involves identifying target audiences, understanding their motivations, and designing messages and interventions that appeal to them. Social marketing has been widely used in health communication (Tones & Green, 2004).

Social marketing has been subject to critique. One critique is that it treats people as consumers rather than as citizens. It focuses on changing individual behaviour through persuasion rather than on empowering communities and challenging structural forces. It can reinforce consumerism and individual responsibility (Tones & Green, 2004).

Another critique is that social marketing is often co-opted by commercial interests. The techniques of social marketing are used to sell unhealthy products as well as healthy ones. The boundary between social marketing and commercial marketing is often blurred, with commercial interests appropriating the language of health (Tones & Green, 2004).

The Diffusion of Innovations Model

The diffusion of innovations model explains how new ideas and practices spread through populations. It identifies categories of adopters, from innovators to laggards, and factors that influence adoption. The model has been applied to the spread of health behaviours and interventions (Rogers, 2003).

The diffusion model has been subject to critique. One critique is that it is insufficiently attentive to power. It assumes that innovations spread through rational decision-making, neglecting the role of power relations, commercial interests, and structural constraints. Innovations that serve powerful interests are more likely to be adopted than those that challenge them (Rogers, 2003).

Another critique is that the diffusion model is insufficiently attentive to context. It assumes that innovations are adopted in similar ways across different contexts, neglecting the role of local social, cultural, and political factors. Interventions that are effective in one context may not diffuse effectively in another (Rogers, 2003).

17.3 The Information Environment: Platforms, Algorithms, and Misinformation

The information environment has been transformed by digital platforms. These platforms shape what information people see, how they interpret it, and what they believe. They also shape the

spread of misinformation, which has become a major challenge for public health (Bak-Coleman et al., 2022).

Platforms and Algorithms

Social media platforms are not neutral conduits for information. They are commercial enterprises that optimise for engagement, not for accuracy or public health. Their algorithms amplify content that generates attention, which often includes sensational, polarising, and misleading content (Bak-Coleman et al., 2022).

Algorithms are not simply technical systems. They embody assumptions, values, and power relations. They are shaped by the interests of platform companies, which are primarily commercial interests. They reflect the biases of their designers, which are often unexamined. They can amplify existing inequalities and create new ones (Bak-Coleman et al., 2022).

The opacity of algorithms is a significant concern. The inner workings of algorithms are often proprietary, making it difficult to understand how they work or to hold them accountable. This opacity limits the ability of regulators, researchers, and the public to assess their effects (Bak-Coleman et al., 2022).

Misinformation and Disinformation

Misinformation is false or misleading information shared without harmful intent. Disinformation is false information shared with the intent to deceive. Both have become major challenges for public health, particularly during health emergencies (World Health Organization, 2025).

Misinformation spreads through the same mechanisms as accurate information. It is shared through social networks, amplified by algorithms, and reinforced by social norms. However, misinformation often spreads faster and more widely than accurate information because it is more novel, more emotional, and more aligned with pre-existing beliefs (Bak-Coleman et al., 2022).

The spread of misinformation is not simply a matter of individual gullibility. It is shaped by social, political, and economic factors. People are more likely to believe misinformation that aligns with their identity, values, and interests. They are more likely to share misinformation that reinforces their social connections. The spread of misinformation is embedded in social networks and power relations (Bak-Coleman et al., 2022).

The Infodemic Equity Gap

The term "infodemic" has been widely used to describe the overabundance of information, accurate and false, which complicates identification of trustworthy guidance (World Health Organization, 2025). Research increasingly recognises that rapidly propagating false and misleading health claims do not strike all societies evenly. Structural digital inequalities, uneven platform governance leverage, gaps in multilingual health literacy, and divergent political information climates have combined to produce what is now termed the "infodemic equity gap": a patterned disparity in exposure to, resilience against, and recoverability from health misinformation between and within countries (National Institutes of Health, 2025).

This gap is not a static binary but a gradient produced by interacting layers: physical and data infrastructure, regulatory and platform governance leverage, trust architectures and literacy ecosystems, and adaptive intervention tooling (NIH, 2025). High-literacy populations embedded in curricula that cultivate verification heuristics absorb algorithmically surfaced falsehoods differently from low-literacy, linguistically fragmented audiences relying on closed messaging loops (NIH,

2025). Political contestation intensifies vulnerability, as health narratives become partisan identity markers, modulating the uptake of verified guidance (NIH, 2025).

The equity dimension extends beyond transnational north-south comparisons to intranational differentials, including rural-urban divides, linguistic minorities, and socioeconomically marginalised groups shaped by infrastructure penetration, health literacy gradients, and trust stratification (NIH, 2025). The World Health Organization has declared that health misinformation is a structural threat to global health equity (Prakash, 2025).

17.4 Health Literacy: A Critical Examination

Health literacy is defined as the ability to access, understand, and use health information to make health decisions. It has become a major focus of health communication and policy. Yet the concept of health literacy has been subject to significant critique (Nutbeam, 2008).

The Individual Model of Health Literacy

The dominant model of health literacy is individualistic. It focuses on the skills and knowledge of individuals, treating health literacy as a characteristic of individuals. This model has been influential in shaping health communication and education (Nutbeam, 2008).

The individual model has been subject to critique. One critique is that it blames individuals for their health outcomes. It suggests that health problems are caused by a lack of knowledge or skills, neglecting the structural factors that shape health. It places responsibility on individuals for navigating complex health systems that are often poorly designed and inequitable (Nutbeam, 2008).

Another critique is that the individual model is insufficiently attentive to context. It treats health literacy as a stable characteristic of individuals, neglecting the role of context in shaping health literacy. People may have different levels of health literacy in different contexts. The demands of health systems vary, and health literacy is a function of both individual skills and system demands (Nutbeam, 2008).

Critical Health Literacy

Critical health literacy extends the concept beyond individual skills to include the ability to critically analyse health information and to advocate for health (Nutbeam, 2008). Critical health literacy involves understanding the social, economic, and political determinants of health. It involves questioning the sources and interests behind health information. It involves advocating for policies that address the structural determinants of health.

Critical health literacy has been influential in shifting health communication toward empowerment and social change. It recognises that health literacy is not simply about providing information but about building the capacity of individuals and communities to challenge the forces that shape their health (Nutbeam, 2008).

Health Literacy and Power

Health literacy is not simply a matter of individual skills. It is shaped by power relations. Those who control the information environment have power over what people know, believe, and do. Those who design health systems have power over how information is presented and how decisions are made.

Health literacy interventions that focus solely on individual skills can reinforce power relations. They can place responsibility on individuals for navigating systems that are poorly designed and

inequitable. Health literacy interventions that address the demands of health systems, the quality of health information, and the power relations that shape health can challenge these power relations (Nutbeam, 2008).

17.5 Countering Misinformation: Critical Perspectives

Countering misinformation has become a major focus of public health communication. However, many approaches to countering misinformation have significant limitations that must be critically examined.

Debunking and Its Limitations

Debunking involves correcting false information after it has spread. Debunking has been shown to be effective under certain conditions but has significant limitations (Lewandowsky et al., 2012).

One limitation is that debunking can backfire. Correcting false information can reinforce it, particularly if the correction is complex or if it challenges deeply held beliefs. The backfire effect occurs when people become more convinced of false information after being exposed to a correction. This effect is more likely when the false information is aligned with identity or values (Lewandowsky et al., 2012).

Another limitation is that debunking is reactive. It responds to misinformation after it has spread rather than preventing it from spreading in the first place. The reactive approach is resource-intensive and can fail to keep up with the volume of misinformation (Lewandowsky et al., 2012).

A third limitation is that debunking is often inequitable. It requires attention and cognitive resources that may not be equally available. People with higher education and more resources are better able to process corrections and update their beliefs. Debunking can widen gaps in knowledge and belief (Lewandowsky et al., 2012).

Prebunking and Inoculation

Prebunking, or inoculation, involves exposing people to a weakened form of misinformation before they encounter it, building resistance to future exposure (Lewandowsky et al., 2012). Inoculation has been shown to be effective in building resilience to misinformation.

Inoculation has several advantages over debunking. It is proactive rather than reactive. It builds resilience that can protect against future misinformation. It can be delivered at scale through media and education (Lewandowsky et al., 2012).

However, inoculation also has limitations. It requires identifying threats before they emerge, which is often difficult. It may not work for all types of misinformation. It may be less effective for people who are already committed to false beliefs (Lewandowsky et al., 2012).

Trusted Messengers

Trusted messengers are individuals or organisations that are trusted by specific communities. They can be effective in countering misinformation because they are seen as credible and relatable (EUPHA, 2025).

Trusted messengers are particularly important for communities that distrust official institutions. Government officials and public health authorities may not be trusted by communities that have experienced discrimination, exploitation, or neglect. Community leaders, religious figures, and local health workers may be more effective messengers (EUPHA, 2025).

However, trusted messengers can also spread misinformation. Community leaders and influencers may not have accurate information or may have their own interests. The effectiveness of trusted messengers depends on their credibility and accuracy, which must be assessed and supported (EUPHA, 2025).

Structural Approaches

Countering misinformation requires not only individual-level interventions but also structural approaches. Structural approaches address the conditions that enable misinformation to spread and to be believed (NIH, 2025).

Structural approaches include regulating platforms and algorithms, investing in media literacy education, addressing the commercial determinants of health, and strengthening trust in institutions. These approaches address the root causes of misinformation rather than its symptoms (NIH, 2025).

However, structural approaches face significant challenges. They require political will, institutional capacity, and resources. They face opposition from powerful interests that benefit from the current information environment. They require international cooperation, which is often difficult to achieve (NIH, 2025).

17.6 Media Literacy and Critical Consumption

Media literacy is the ability to access, analyse, evaluate, and create media. It has become increasingly important in the context of misinformation and the complex media environment.

Media Literacy as Empowerment

Media literacy is often presented as a tool for individual empowerment. It enables people to critically evaluate media messages, identify bias and misinformation, and make informed decisions. Media literacy education has been shown to improve critical thinking and reduce susceptibility to misinformation (Livingstone, 2004).

However, media literacy has limitations. It places responsibility on individuals to navigate a complex and often deceptive media environment. It may be less effective for people with limited education, time, or cognitive resources. It may not address the structural forces that shape the media environment (Livingstone, 2004).

Critical Media Literacy

Critical media literacy extends beyond individual skills to include analysis of power and ideology. It involves understanding how media are produced, who controls them, and what interests they serve. It involves challenging dominant narratives and amplifying marginalised voices (Livingstone, 2004).

Critical media literacy is particularly important for public health. It enables people to understand the commercial and political interests that shape health information. It enables people to question the framing of health issues and to advocate for alternative perspectives. It enables people to recognise and resist the manipulation of health information (Livingstone, 2004).

Media Literacy and Equity

Media literacy education has significant potential for promoting health equity. It can empower marginalised communities to critically analyse health information and to advocate for their health. It can challenge the dominant narratives that marginalise certain communities and reinforce health inequities (Livingstone, 2004).

However, media literacy education must be attentive to equity. It must be accessible to diverse populations, including those with limited education, language barriers, or cognitive challenges. It must be culturally appropriate and sensitive to the experiences of marginalised communities. It must avoid blaming individuals for their media consumption habits (Livingstone, 2004).

17.7 Key Takeaways

Health communication is not neutral. It is shaped by commercial interests, political forces, and power relations (Dorfman et al., 2005; Moodie et al., 2013)

Dominant health communication models embody assumptions about audiences and behaviour that are often problematic (Tones & Green, 2004; Airhihenbuwa, 2007)

Digital platforms and algorithms shape the information environment in ways that amplify misinformation and inequity (Bak-Coleman et al., 2022)

The infodemic equity gap reflects structural inequalities in information infrastructure, literacy, and trust (NIH, 2025)

Health literacy is not just an individual skill but a function of the demands placed on individuals by health systems and the information environment (Nutbeam, 2008)

Debunking misinformation has limitations and can backfire; inoculation and trusted messengers are promising alternatives (Lewandowsky et al., 2012)

Structural approaches to countering misinformation address its root causes but face significant challenges (NIH, 2025)

Critical media literacy enables people to understand power and ideology in media and to challenge dominant narratives (Livingstone, 2004)

Chapter 18

Leadership and Management in Public Health

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of leadership in public health and its relationship to power

Evaluate the limitations of dominant leadership frameworks and their assumptions about hierarchy and authority

Assess the role of ideology, evidence, and politics in shaping public health leadership

Analyse alternative and critical approaches to leadership, including feminist, decolonial, and community-centred models

Apply critical leadership perspectives to public health challenges

18.1 What Is Leadership in Public Health? A Critical Examination

Leadership in public health is conventionally understood as the ability to guide, influence, and enable individuals and organisations to achieve health goals. It is often framed as a set of competencies, skills, and behaviours that can be taught and assessed. This framing, while widely accepted, obscures significant questions about power, authority, and the purposes of leadership.

Leadership Versus Management

Public health discourse often distinguishes between leadership and management. Management is framed as maintaining systems and ensuring efficiency. Leadership is framed as creating vision, inspiring change, and navigating complexity. This distinction is not merely descriptive; it carries value judgments that elevate certain forms of practice while marginalising others.

The conflation of leadership with management has been identified as a significant problem in health systems. Leaders are often equipped with the technical skills to manage established services but lack the skills to lead transformative change (Han, 2026). This conflation reflects institutional priorities that favour stability and control over innovation and adaptation. It also reflects power relations, where those who maintain existing systems are rewarded, while those who challenge them are marginalised.

Leadership as a Contested Concept

Leadership is not a neutral concept. Different definitions of leadership reflect different assumptions about power, authority, and the purposes of collective action. Dominant definitions often reflect the interests and perspectives of those in positions of power. They emphasise individual leaders, formal authority, and hierarchical structures. They assume that leadership is exercised by those at the top of organisations and that its purpose is to achieve organisational goals.

Alternative definitions challenge these assumptions. They emphasise collective leadership, shared power, and community accountability. They recognise that leadership can be exercised by those without formal authority and that its purpose is not just to achieve organisational goals but to advance social justice and community wellbeing. The choice of definition has significant implications for who is recognised as a leader, what forms of leadership are valued, and what purposes leadership serves.

The Crisis of Public Health Leadership

Public health leadership is facing a crisis. The COVID-19 pandemic exposed significant failures in public health leadership at multiple levels. Governments appointed leaders who lacked scientific literacy and who prioritised ideology over evidence. Mixed messages from leadership deepened public confusion and amplified resistance to health measures (Sallam, 2025).

The crisis of public health leadership reflects deeper systemic problems. Public health institutions have been weakened by decades of divestment and political attack. The public health workforce has experienced mass attrition, particularly among Black women (Ponder et al., 2026). Public trust has eroded, partly due to inconsistent and politicised communication. The crisis is not simply a matter of individual leaders failing; it is a matter of systems that do not support effective leadership and that actively undermine it.

Table 18.1. Public Health Leadership: Questions for Practice

Concept or area	What it means	Why it matters in practice
Purpose	What is the leader trying to change?	Clarifies whether leadership is serving a public purpose rather than personal authority.
Power	Who can influence the decision and who is excluded?	Makes formal and informal power visible.
Relationships	Who needs to trust, cooperate or disagree productively?	Recognises that public health work depends on people, not only structures.
Adaptation	What should change when circumstances change?	Prevents rigid plans from becoming barriers to effective action.
Accountability	Who answers for the decision and its consequences?	Links leadership to responsibility and public trust.

18.2 Dominant Leadership Frameworks: A Critical Analysis

Several leadership frameworks have been developed for public health and healthcare. These frameworks are often presented as evidence-based tools for developing leaders. Yet they embody assumptions, values, and power relations that are rarely examined.

Competency-Based Leadership Frameworks

Competency-based leadership frameworks are widely used in public health. They identify the knowledge, skills, and behaviours that leaders should possess. The Pan American Health Organization has identified leadership as a core competency for public health professionals (Rodríguez-Feria et al., 2024). The World Health Organization and the Association of Schools of

Public Health in the European Region have developed competency frameworks that include leadership and systems thinking.

Competency-based frameworks have been subject to critique. One critique is that they are decontextualised. They assume that leadership competencies are universal and can be applied in any context. This assumption neglects the role of context in shaping what effective leadership looks like. Competencies that work in one context may not work in another (Rodríguez-Feria et al., 2024).

Another critique is that competency-based frameworks are individualistic. They focus on the attributes of individual leaders, neglecting the role of systems, structures, and relationships in shaping leadership effectiveness. They assume that leadership is primarily about individual knowledge and skills, not about collective action and social change (Rodríguez-Feria et al., 2024).

A third critique is that competency-based frameworks are insufficiently attentive to power. They describe what leaders should do but do not address how power operates in leadership contexts. They do not address the structural barriers that limit who can become a leader and what leaders can achieve (Rodríguez-Feria et al., 2024).

Transformational Leadership

Transformational leadership is one of the most influential leadership theories. It emphasises the role of leaders in inspiring followers, articulating a vision, and motivating change. Transformational leadership is often contrasted with transactional leadership, which emphasises rewards and punishments.

Transformational leadership has been subject to critique. One critique is that it is hero-centric. It focuses on the charismatic individual leader, neglecting the role of followers and the collective nature of leadership. It can reinforce hierarchies and create dependence on leaders (Han, 2026).

Another critique is that transformational leadership can be manipulative. Leaders can use charisma and vision to pursue their own interests rather than the collective good. The theory does not adequately address the ethical dimensions of leadership or the potential for abuse (Sallam, 2025).

A third critique is that transformational leadership is insufficiently attentive to context. It assumes that leadership is exercised through the same mechanisms in all contexts, neglecting the role of culture, institutions, and power relations. Interventions that work in one context may not work in another (Han, 2026).

Adaptive and Complex Systems Leadership

Recent scholarship has emphasised the need for adaptive leadership in complex health systems. Adaptive leadership involves navigating uncertainty, learning from experience, and mobilising collective action. It is particularly relevant for wicked problems, which are complex, ambiguous, and resistant to traditional solutions (de Klerk et al., 2026).

A systematic review of leadership for wicked problems in public healthcare found that current leadership responses are frequently constrained by limited information collaborations, inflexible policy design, and hierarchical decision-making (de Klerk et al., 2026). The review proposed an Adaptive Systems Framework as an alternative to static management models, advocating for adaptive, collaborative, and reflexive leadership actions essential for navigating the persistence of wicked problems (de Klerk et al., 2026).

The Adaptive Systems Framework is an important contribution. However, it has limitations. It does not adequately address the power relations that shape wicked problems and their solutions. It assumes that leaders have the authority and resources to adopt adaptive approaches, which is often

not the case. It does not address the structural barriers that constrain adaptive leadership (de Klerk et al., 2026).

18.3 Power, Politics, and Public Health Leadership

Power and politics are central to public health leadership, yet they are often neglected in leadership discourse. Public health leaders operate in contexts shaped by power relations, competing interests, and political contestation. Understanding these dynamics is essential for effective and ethical leadership.

The Three Dimensions of Power

Political theorist Steven Lukes argues that power has three dimensions: visible, hidden, and invisible. Visible power is the formal exercise of decision-making authority. Hidden power encompasses the systems and structures that shape how decisions are made. Invisible power includes the beliefs and assumptions about how the world works that are often embedded into our institutions, professions, and societal structures (Han, 2026).

Health leaders must attend to each of these dimensions of power to achieve transformative change. Leaders may wield a degree of institutional power. But in highly contested domains of change, power dynamics within institutions, health fields, and society at large stymie efforts to shift the status quo. Achieving major change requires an intentional strategy to shift the balance of power (Han, 2026).

However, health leaders often see power as fixed, determined by their position within the institutional hierarchy. If leaders perceive this stock of power to be insufficient, a sense of learned helplessness sets in. Successful leaders of social movements understood that power is not fixed but is a dynamic relationship. Power is not conferred by others but is the product of a set of strategic choices (Han, 2026).

Politics and Evidence-Based Leadership

The relationship between politics and public health leadership is fraught. While politicians hold the democratic mandate to set policy, public health decisions must be guided by evidence and professional expertise rather than ideology. Protecting population health requires leadership appointments and research priorities to be based on competence and science, not political alignment (Ciurleo et al., 2025).

History offers many lessons on the dangers of health policies that are not scientifically based. In South Africa, HIV denialism led to over 330,000 preventable deaths due to the delayed implementation of antiretroviral therapy (Sallam, 2025). In Nigeria, vaccine misinformation led to the resurgence of polio, reversing years of progress in eradication efforts (Sallam, 2025). The COVID-19 pandemic offered recent evidence of how controversial leadership can destabilise public health systems, with conflicting messages from political leaders fuelling partisan divides (Sallam, 2025).

The tension between politics and evidence is not inevitable. It is produced by the institutional arrangements that shape public health leadership. In some systems, public health leaders are appointed by politicians and are accountable to them. In others, public health leaders are appointed based on professional competence and are accountable to professional standards. The choice of institutional design has significant implications for the quality and integrity of public health leadership (Ciurleo et al., 2025).

Ideology and Public Health Leadership

The ascent of figures shaped by misinformation and conspiracy narratives poses a grave threat to public health. Controversial appointments risk fracturing the public trust necessary for collective action, polarising societies, and destabilising global health systems (Sallam, 2025).

Conspiracy narratives often frame public health interventions as tools of control rather than empowerment, exploiting historical grievances and mistrust. When such narratives gain power via policymakers, the results are invariably catastrophic. The lessons from history are clear: public health depends on leaders who prioritise evidence, transparency, and collaboration. Allowing conspiratorial ideologies to guide decision-making risks dismantling decades of progress in health and exposes populations to preventable harm (Sallam, 2025).

18.4 Alternative and Critical Approaches to Leadership

Dominant leadership frameworks have been challenged by alternative and critical approaches. These approaches emphasise collective leadership, community accountability, and the redistribution of power.

Feminist and Matriarchal Leadership

Women's leadership in global health offers an alternative to dominant models. Women leaders often work in ways that are relational, collaborative, and community-centred. They challenge linear approaches to needs assessments and response designs, addressing inequities through a whole-life approach (Alonso et al., 2024).

The Critical Matriarchal Framework for Health Communication proposes a transformative alternative to hierarchical, extractive models of public health practice. This framework centres relational authority, collective responsibility, intergenerational knowledge, and care-based leadership to address persistent health inequities rooted in fractured systems of care and community relationships (Ponder et al., 2026).

The framework argues that without trusted communicators embedded in communities, without frameworks that centre reciprocity and care, and without addressing the trauma and structural violence that undermine trust, public health institutions cannot effectively communicate for behavioural changes during emergencies. This intervention transforms crisis communication from a technical problem (how to disseminate information) into a relational practice (how to build trust, share power, and co-create solutions with communities) (Ponder et al., 2026).

However, feminist leadership must be examined critically. Women's leadership can be framed as just another burden for women to carry, or what has been termed "empowerment lite" (Alonso et al., 2024). Women's perspectives have been largely relegated to the gender agenda or proposed as models on "how to lead better" based on preconceived, male-based notions of what constitutes effective leadership. Instead of creating hierarchies of priorities, we must understand the complexity of human experience and the power and inequality patterns it is embedded in (Alonso et al., 2024).

Decolonial Leadership

Decolonising global health leadership requires a serious analysis of intersectionality and power. A critical analysis of colonialism is intersectional and must locate its construction in the intersection of white supremacy, global anti-Blackness, patriarchy, capitalism, ableism, classism, and xenophobia (Nnodim Opara, in Pai, 2022).

Decolonial leadership involves recognising and addressing the power asymmetries that have shaped global health. Data show that two-thirds of global health agencies are headquartered in just three countries, and more than 80% of CEOs and board chairs of global health organisations are nationals of high-income countries (Pai, 2022). A typical CEO of a global health agency is three times more likely to be male, four times more likely to be from a high-income country, and 13 times more likely to have been educated in a high-income country (Pai, 2022).

Decolonial leadership requires the redistribution of power. Those with privilege must step back and centre the voices and leadership of those who are most burdened. This involves what has been termed "allyship" or "co-conspiratorship": an active, consistent practice of unlearning and re-evaluating, in which a person in a position of privilege and power seeks to operate in solidarity with a marginalised group (Pai, 2022).

However, allyship is not a panacea. It can be tokenistic and self-serving. It requires ceding space, voice, or power, which is often resisted. The goal is not to be an ally but to work towards collective liberation and the dismantling of oppressive systems (Pai, 2022).

Community-Centred Leadership

Community-centred leadership challenges the top-down models that dominate public health. It involves shifting power from institutions to communities, recognising that communities have knowledge and expertise that is essential for health. It involves co-creating solutions with communities rather than imposing them from above (Han, 2026).

La Colaborativa, a Latina-led community organisation in Chelsea, Massachusetts, provides an example of community-centred leadership during the COVID-19 pandemic. The women leaders of the organisation called upon culturally accepted codes to reverse power roles, questioned scientific definitions of needs, and led their community out of potentially irreversible consequences of the crisis in a holistic and sustainable way (Alonso et al., 2024). Their leadership serves as an example of how self-governed, women-led organisations rooted in the community may address the real needs of its members during a global catastrophic event (Alonso et al., 2024).

Community-centred leadership requires institutional change. It requires reorienting public health institutions toward community accountability rather than bureaucratic metrics. It requires examining power structures, redistributing leadership, and centring community voice in decision-making (Ponder et al., 2026).

18.5 Developing Leadership Capacity: Critical Perspectives

Developing leadership capacity is a major focus of public health education and training. However, approaches to leadership development have significant limitations that must be critically examined.

Competency-Based Leadership Training

Competency-based leadership training is widely used in public health. A study developing a leadership competency framework for public health trainers in Meghalaya, India, identified four core competency buckets: leadership behaviours, systems thinking, communication, and capacity building (Kundapur et al., 2025). The framework's high agreement levels underscored its contextual relevance and ability to inform curriculum development.

However, competency-based training has limitations. It can be decontextualised, assuming that competencies are universal and transferable. It can be individualistic, focusing on individual skills

rather than collective capacity. It can be insufficiently attentive to power, neglecting the structural barriers that limit who can develop leadership skills and what they can achieve (Rodríguez-Feria et al., 2024; Kundapur et al., 2025).

Challenges in Leadership Education

Teaching leadership in health professional education faces significant challenges. A scoping review of medical student leadership in the Americas identified eight themes: curriculum, intended learning outcomes, teaching methods, assessment, addressing barriers, supporting organisational change, building networks, and developing expertise (Rodríguez-Feria et al., 2024).

Barriers included an overcrowded curriculum, competition for teaching time, lack of clear national curricula or guidelines, and lack of expertise among educators. Facilitators included dedicated courses, clear curricular content, mentoring, small group learning, and interprofessional collaboration (Rodríguez-Feria et al., 2024).

The review proposed a critical route for leadership development with eight components: situational and normative frameworks, networking, thematic scope, interprofessional education, developing expertise, curriculum, constructive alignment, and monitoring and evaluation. The authors argued that a systemic approach is needed, addressing contextual, structural, process, and outcome factors (Rodríguez-Feria et al., 2024).

Decolonising Leadership Education

Decolonising leadership education requires challenging the coloniality underpinning its underlying assumptions. Education policy is at the centre of contemporary science diplomacy, and nation-states are called upon to equip their health workforce with leadership skills and competencies (Millar et al., 2025).

Successfully meeting such demands requires not only a high-quality education offering but also one that is aware of and engaged with the coloniality underpinning its assumptions. This involves engaging in a spirit of dialogue and reflexivity, questioning whose knowledge counts, and centring local and non-Western perspectives (Millar et al., 2025).

18.6 Key Takeaways

Leadership is not a neutral concept; different definitions reflect different assumptions about power, authority, and purpose

Dominant leadership frameworks are often decontextualised, individualistic, and insufficiently attentive to power

Power has visible, hidden, and invisible dimensions, and leaders must attend to all three to achieve transformative change (Han, 2026)

The relationship between politics and evidence-based leadership is fraught, with ideology often displacing evidence with catastrophic consequences (Sallam, 2025)

Feminist and matriarchal leadership models offer relational, community-centred alternatives to hierarchical approaches (Alonso et al., 2024; Ponder et al., 2026)

Decolonial leadership requires redistributing power and centring the voices and leadership of those most burdened (Pai, 2022)

Community-centred leadership shifts power to communities and recognises their knowledge and expertise (Han, 2026)

Leadership development faces significant challenges, including overcrowded curricula, lack of expertise, and coloniality in assumptions (Rodríguez-Feria et al., 2024)

Developing leadership capacity requires a systemic approach that addresses contextual, structural, process, and outcome factors (Rodríguez-Feria et al., 2024; Millar et al., 2025)

Chapter 19

Public Health Law and Ethics

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the relationship between law, ethics, and public health practice

Evaluate the tensions between individual rights and collective wellbeing in public health law

Assess the limitations of dominant ethical frameworks for addressing structural health inequities

Analyse the role of law as both a tool of oppression and a tool of liberation in public health

Apply critical legal and ethical perspectives to contemporary public health challenges

19.1 The Relationship Between Law, Ethics, and Public Health

Public health law and ethics are conventionally understood as frameworks for guiding public health practice. They establish the legal authority for public health action and the ethical principles that should govern it. This framing, while useful, obscures significant tensions and power dynamics that shape how law and ethics operate in practice.

The Purposes of Public Health Law

Public health law serves multiple purposes. It establishes the legal authority of public health agencies to act. It sets limits on that authority to protect individual rights. It creates mechanisms for accountability and oversight. It establishes the legal framework for health systems and health programmes (Gostin & Wiley, 2020).

These purposes are not always compatible. The tension between authority and limits is a central feature of public health law. Public health agencies need authority to act effectively, but that authority must be constrained to prevent abuse. The balance between authority and limits is shaped by political, social, and legal factors that vary across contexts (Gostin & Wiley, 2020).

The purposes of public health law are also contested. Some view public health law primarily as a tool for protecting individual rights against state overreach. Others view it primarily as a tool for protecting population health. These different views reflect different values and assumptions about the role of the state and the nature of public health (Gostin & Wiley, 2020).

The Foundations of Public Health Ethics

Public health ethics is conventionally grounded in several principles. These include respect for autonomy, beneficence (doing good), non-maleficence (avoiding harm), and justice. These principles, drawn from bioethics, have been adapted for public health (Kass, 2001).

However, the adaptation of bioethical principles for public health has been contested. Bioethics emerged from clinical medicine and research, contexts oriented toward individual patients and research subjects. The priority given to individual autonomy in bioethics is not always appropriate for public health, which focuses on populations (Kass, 2001).

Public health ethics frameworks have attempted to address this tension. The Kass framework, for example, asks whether a proposed intervention is effective, what burdens it imposes, whether burdens can be minimised, whether it is implemented fairly, and how benefits and burdens can be balanced (Kass, 2001). This framework has been influential, but it has also been subject to critique for being insufficiently attentive to power, justice, and the structural determinants of health.

Law and Ethics as Sites of Struggle

Law and ethics are not neutral frameworks. They are sites of struggle over values, power, and resources. Different groups seek to shape law and ethics to advance their interests. The outcomes of these struggles reflect the relative power of different groups (Gostin & Wiley, 2020).

The struggle over public health law is evident in debates about vaccine mandates, quarantine, and other liberty-restricting measures. Those who support such measures argue that they are necessary to protect population health. Those who oppose them argue that they violate individual rights. The outcome of these debates reflects not only the evidence but also the political and legal power of different groups (Gostin & Wiley, 2020).

The struggle over public health ethics is evident in debates about health equity. Some argue that health equity requires addressing the structural determinants of health, including economic inequality, racism, and colonialism. Others argue that health equity is primarily about access to healthcare. The outcome of these debates reflects different values and assumptions about the causes of health inequities and the appropriate responses to them.

Table 19.1. Public Health Law and Ethics: Questions to Ask

Concept or area	What it means	Why it matters in practice
Authority	What legal power permits or limits the action?	Prevents public health action from exceeding lawful authority.
Necessity	Is the intervention needed to protect health?	Tests whether coercive or restrictive measures have a defensible purpose.
Proportionality	Is the burden justified by the expected public health benefit?	Helps balance collective protection with individual rights.
Justice	Who benefits and who bears the burden?	Makes unequal effects visible.
Due process	Are decisions transparent, reviewable and accountable?	Protects fairness when people are affected by public decisions.
Human rights	Are dignity, equality, privacy and other rights respected?	Keeps legal authority connected to ethical responsibility.

19.2 Individual Rights and Collective Wellbeing: The Central Tension

The tension between individual rights and collective wellbeing is central to public health law and ethics. This tension is often framed as a conflict between liberty and security, or between autonomy and the common good. This framing, while common, is oversimplified and obscures important complexities.

The Liberal Framework

The liberal framework for public health law emphasises individual rights and limits on state power. It is grounded in the principles of autonomy, privacy, and liberty. It requires that restrictions on individual rights be justified by a compelling public health interest and that they be the least restrictive means of achieving that interest (Gostin & Wiley, 2020).

The liberal framework has been influential in shaping public health law, particularly in countries with strong individual rights traditions. It has been used to challenge vaccine mandates, quarantine, and other public health measures. It has also been used to protect the privacy of health information (Gostin & Wiley, 2020).

However, the liberal framework has significant limitations. It is insufficiently attentive to the social determinants of health and to the structural forces that shape health inequities. It assumes that individuals are autonomous actors making free choices, neglecting the social, economic, and political constraints that shape choices. It can be used to justify opposition to public health measures that are necessary to protect vulnerable populations (Gostin & Wiley, 2020).

The Communitarian Framework

The communitarian framework emphasises collective wellbeing and the common good. It recognises that individual rights are not absolute and that they must be balanced against the needs of the community. It requires that public health measures be justified by their contribution to the common good (Gostin & Wiley, 2020).

The communitarian framework has been influential in shaping public health law in countries with stronger collective traditions. It has been used to justify vaccine mandates, quarantine, and other public health measures. It has also been used to support health systems that are financed through taxation and that provide universal coverage (Gostin & Wiley, 2020).

However, the communitarian framework has significant limitations. It can be used to justify excessive state power and to marginalise minority voices. It can be used to impose the values of the majority on minority groups. It can be insufficiently attentive to the rights of individuals and the importance of dissent (Gostin & Wiley, 2020).

Beyond the Binary

The binary between individual rights and collective wellbeing is oversimplified. Individual rights and collective wellbeing are not always in conflict; they can be mutually reinforcing. Protecting individual rights can contribute to collective wellbeing by building trust and social cohesion. Promoting collective wellbeing can contribute to individual rights by creating the conditions for health and flourishing.

The binary also obscures the distributional dimensions of both rights and wellbeing. Individual rights are not equally enjoyed; they are shaped by social position and power. Collective wellbeing is not equally distributed; it benefits some groups more than others. The question is not simply whether to prioritise rights or wellbeing but whose rights and whose wellbeing are being prioritised (Gostin & Wiley, 2020).

19.3 Public Health Ethics Frameworks: Strengths and Limitations

Several frameworks have been developed to guide public health ethics. These frameworks are valuable tools for ethical analysis, but they also have significant limitations.

The Kass Framework

The Kass framework is one of the most widely used public health ethics frameworks. It asks: What are the public health goals? How effective is the program? What are the known or potential burdens? Can burdens be minimised? Is the program implemented fairly? How can benefits and burdens be fairly balanced? (Kass, 2001).

The Kass framework has several strengths. It is systematic, transparent, and practical. It can be applied to a wide range of public health interventions. It attends to both effectiveness and ethics (Kass, 2001).

However, the Kass framework has significant limitations. It is insufficiently attentive to power. It does not address who decides what counts as a public health goal or whose interests are served. It does not address the structural determinants of health or the historical injustices that shape health inequities. It treats ethics as a technical exercise rather than as a site of struggle (Kass, 2001).

The Childress Framework

The Childress framework proposes several general moral considerations for public health: producing benefits, avoiding harms, producing maximal balance of benefits over harms, distributing benefits and burdens fairly, respecting autonomous choices and actions, protecting privacy and confidentiality, keeping promises and commitments, and disclosing information and acting transparently (Childress et al., 2002).

The framework also proposes justificatory conditions for public health interventions: effectiveness, proportionality, necessity, least infringement, and public justification (Childress et al., 2002). These conditions provide guidance for when it is permissible to override other moral considerations.

The Childress framework has been influential, but it has also been subject to critique. One critique is that it is insufficiently attentive to justice, treating justice as one consideration among others rather than as a fundamental principle. Another critique is that it is insufficiently attentive to the social determinants of health and to the historical injustices that shape health inequities.

Critiques of Dominant Frameworks

Dominant public health ethics frameworks have been subject to several critiques. One critique is that they are individualistic. They focus on individual rights and individual interventions, neglecting the structural determinants of health. They treat health problems as individual problems requiring individual solutions (Kass, 2001; Childress et al., 2002).

Another critique is that they are insufficiently attentive to justice. They treat justice as a consideration to be balanced against other considerations rather than as a fundamental principle. They do not address the distributional dimensions of health or the structural forces that produce health inequities (Kass, 2001; Childress et al., 2002).

A third critique is that they are insufficiently attentive to power. They do not address who decides what counts as a public health goal, whose interests are served, or who bears the burdens. They treat ethics as a technical exercise rather than as a site of struggle (Kass, 2001; Childress et al., 2002).

19.4 Health as a Human Right: Promises and Limitations

The human rights framework has been influential in public health. It recognises health as a fundamental right and imposes obligations on states to respect, protect, and fulfil that right. The

human rights framework has been used to advocate for health equity and to challenge health inequities.

The Right to Health

The right to health is recognised in international human rights law. It includes the right to healthcare and the right to the underlying determinants of health, including food, water, housing, and a healthy environment. The right to health imposes obligations on states to take steps to realise the right, to the maximum of their available resources (Hunt, 2015).

The right to health has been influential in shaping global health policy and advocacy. It has been used to advocate for universal health coverage, for access to essential medicines, and for addressing the social determinants of health. It has also been used to challenge policies that undermine health, such as trade agreements that restrict access to medicines (Hunt, 2015).

Critiques of the Human Rights Framework

The human rights framework has been subject to critique. One critique is that it is insufficiently attentive to power. Human rights are often framed as individual rights against the state, neglecting the role of non-state actors, including corporations, in shaping health. The framework does not adequately address the power of corporations to shape health through their products, marketing, and political influence (Hunt, 2015).

Another critique is that the human rights framework is insufficiently attentive to structural determinants. It focuses on state obligations and individual rights, neglecting the social, economic, and political structures that shape health. It does not adequately address the historical injustices that shape health inequities (Hunt, 2015).

A third critique is that the human rights framework can be co-opted. States and corporations can use the language of human rights to legitimate policies and practices that undermine health. The framework can be used to justify individual responsibility and to neglect state obligations (Hunt, 2015).

Decolonising Human Rights

Decolonising human rights involves challenging the colonial legacy of the human rights framework. Human rights have been used to justify colonialism and to impose Western values on non-Western societies. The framework has been shaped by Western interests and perspectives (Pai, 2022).

Decolonising human rights requires centring the perspectives and priorities of those who have been marginalised. It requires recognising the role of colonialism, racism, and capitalism in shaping health inequities. It requires addressing the structural determinants of health and the power relations that produce them (Pai, 2022).

19.5 Public Health Law in Practice: Critical Perspectives

Public health law is often presented as a technical tool for achieving health goals. Yet public health law is shaped by power, politics, and interests that are rarely examined.

Surveillance and Privacy

Public health surveillance is essential for understanding disease patterns and responding to health threats. However, surveillance raises significant privacy concerns. The collection, storage, and use of health data can threaten individual privacy and can be used for purposes that are not health-related (Gostin & Wiley, 2020).

The balance between surveillance and privacy is shaped by power and interests. Those with power have greater ability to protect their privacy. Those without power are more likely to be subject to surveillance. Surveillance can reinforce existing inequalities by targeting marginalised communities (Gostin & Wiley, 2020).

The COVID-19 pandemic highlighted the tensions between surveillance and privacy. Digital contact tracing, location tracking, and health passes were used to control the pandemic. These measures raised concerns about privacy, discrimination, and the potential for abuse. The balance between surveillance and privacy is not fixed; it is shaped by political, legal, and social factors (Gostin & Wiley, 2020).

Liberty Restrictions

Public health has a long history of restricting liberty to prevent disease. Quarantine, isolation, mandatory vaccination, and closure of businesses and schools are all liberty-restricting measures. These measures are often justified by the need to protect population health (Gostin & Wiley, 2020).

However, liberty restrictions are not distributed equally. Marginalised communities are more likely to be subject to liberty restrictions and less likely to have the resources to avoid or mitigate them. Liberty restrictions can reinforce existing inequalities (Gostin & Wiley, 2020).

The COVID-19 pandemic highlighted the inequitable distribution of liberty restrictions. Lockdowns and curfews were more strictly enforced in poor communities and communities of colour. The impacts of these measures, including job loss, housing instability, and mental health impacts, were also unevenly distributed (Gostin & Wiley, 2020).

Vaccine Mandates and Vaccine Equity

Vaccine mandates have been a contentious issue in public health. Supporters argue that mandates are necessary to achieve herd immunity and to protect vulnerable populations. Opponents argue that mandates violate individual autonomy and are coercive (Gostin & Wiley, 2020).

The debate over vaccine mandates reflects deeper tensions between individual rights and collective wellbeing. It also reflects different assumptions about the role of the state and the nature of public health. The debate is shaped by power and interests, with some groups having more influence over the outcome (Gostin & Wiley, 2020).

The debate over vaccine mandates must also consider vaccine equity. In the context of global vaccine inequity, mandates in high-income countries raise ethical questions about the distribution of vaccines. Should vaccines be mandated in wealthy countries while people in poor countries wait for access? The distribution of vaccines is a matter of justice, not just of supply and demand (Gostin & Wiley, 2020).

19.6 Structural Inequity and Public Health Ethics

Health inequities are not simply a matter of individual behaviour or access to healthcare. They are produced by social, economic, and political structures that systematically disadvantage certain groups. Addressing health inequities requires attending to these structural forces.

Justice and the Social Determinants of Health

The social determinants of health framework has highlighted the role of social, economic, and political factors in shaping health. Health inequities are produced by the unequal distribution of power, money, and resources (WHO, 2008).

Addressing health inequities requires attending to justice. Justice is not just about distributing health outcomes; it is about distributing the conditions that produce health. It is about ensuring that everyone has the opportunity to be as healthy as possible, and that differences in health are not the result of social disadvantage (Marmot, 2015).

However, the social determinants framework has been critiqued for being insufficiently attentive to power. It describes the social determinants of health but does not explain why they are distributed unequally. It does not address the structural forces, including racism, capitalism, and colonialism, that produce health inequities (Marmot, 2015).

Structural Racism and Public Health Law

Structural racism is a fundamental determinant of health inequities. It is embedded in the laws, policies, and institutions that shape health. It operates through multiple pathways, including housing segregation, environmental injustice, and the criminal justice system (Bailey et al., 2017).

Public health law has been complicit in structural racism. Laws have been used to segregate communities, to deny access to healthcare, and to target marginalised communities for surveillance and punishment. Public health law has also been used to resist racism and to advance health equity. The law is a site of struggle over racism and health (Bailey et al., 2017).

Addressing structural racism requires attending to the laws and policies that produce it. It requires reforming or abolishing laws that are racist in their effects. It requires enacting laws that advance racial justice and health equity. It requires centring the voices and leadership of those who are most affected (Bailey et al., 2017).

Decolonising Public Health Law

Decolonising public health law involves challenging the colonial legacy of public health law. Colonial powers used law to control colonised populations, to extract resources, and to maintain order. Public health law was used to justify colonialism and to impose Western values on non-Western societies (Arnold, 1993).

The colonial legacy persists in public health law. Laws and policies continue to reflect colonial assumptions about what counts as health, what causes disease, and what interventions are appropriate. Addressing health inequities requires recognising and challenging this legacy (Arnold, 1993).

19.7 Key Takeaways

Public health law and ethics are not neutral frameworks; they are sites of struggle over values, power, and resources (Gostin & Wiley, 2020)

The tension between individual rights and collective wellbeing is central to public health law and ethics, but the binary is oversimplified (Gostin & Wiley, 2020)

Dominant public health ethics frameworks are valuable but are insufficiently attentive to power, justice, and structural determinants (Kass, 2001; Childress et al., 2002)

The human rights framework has been influential but is critiqued for being insufficiently attentive to power and structural determinants (Hunt, 2015)

Public health law, including surveillance, liberty restrictions, and vaccine mandates, is shaped by power and interests and is not distributed equally (Gostin & Wiley, 2020)

Health inequities are produced by structural forces, including racism, capitalism, and colonialism (Bailey et al., 2017; Marmot, 2015)

Addressing health inequities requires attending to justice, structural racism, and the colonial legacy of public health law (Bailey et al., 2017; Arnold, 1993)

Law can be both a tool of oppression and a tool of liberation; it is a site of struggle over health and justice (Gostin & Wiley, 2020)

Chapter 20

Monitoring, Evaluation, and Quality Improvement

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the purposes and politics of monitoring, evaluation, and quality improvement in public health

Evaluate the limitations of dominant evaluation frameworks and their assumptions about evidence and accountability

Assess the role of metrics, indicators, and data in shaping public health priorities and practice

Analyse alternative and critical approaches to evaluation, including participatory and decolonial methods

Apply critical evaluation perspectives to public health challenges

20.1 The Purposes and Politics of Evaluation

Monitoring, evaluation, and quality improvement are conventionally presented as technical tools for improving public health programmes. They involve collecting data, assessing performance, and making improvements. This framing, while widely accepted, obscures the political purposes that evaluation serves and the power relations it reinforces.

Evaluation as Discipline

Evaluation is not simply about learning and improvement. It is also about discipline and control. Evaluation systems are used to hold programmes and practitioners accountable to funders, policymakers, and other external actors. The metrics used in evaluation reflect the priorities of those who design them, not necessarily the priorities of communities or practitioners (Patton, 2008).

The disciplinary function of evaluation is evident in the use of performance indicators. Programmes that meet their targets are rewarded; programmes that do not are penalised. This creates incentives to focus on what is measured, which may not be what is most important. It can also create perverse incentives, such as gaming the system or neglecting unmeasured but important outcomes (Patton, 2008).

The disciplinary function of evaluation also reflects power relations. Those who control evaluation systems have power over what is measured, how it is measured, and how findings are used. This power is often held by funders and policymakers, who are located far from the communities and programmes being evaluated (Patton, 2008).

Evaluation as Legitimation

Evaluation also serves a legitimation function. It can be used to justify existing programmes and policies, to demonstrate that they are effective and efficient. It can also be used to justify funding decisions, to show that resources are being used wisely (Patton, 2008).

The legitimation function of evaluation is evident in the use of evaluation findings in advocacy and policy debates. Programmes that can demonstrate positive outcomes are more likely to be funded and sustained. Programmes that cannot demonstrate outcomes are more likely to be cut. This creates pressure to produce positive findings, which can compromise the integrity of evaluation (Patton, 2008).

The legitimation function of evaluation also reflects power relations. Those with resources can commission evaluations that support their positions. Those without resources are less able to produce evidence to support their claims. The production and use of evaluation evidence is shaped by the distribution of resources and power (Patton, 2008).

Evaluation as Learning

Evaluation also serves a learning function. It can generate knowledge about what works, for whom, and under what conditions. It can identify areas for improvement and guide programme development. It can build the capacity of practitioners and communities to reflect on and improve their practice (Patton, 2008).

The learning function of evaluation is often subordinate to the disciplinary and legitimation functions. Funders and policymakers are more interested in accountability and justification than in learning. Practitioners and communities are often more interested in learning than in accountability. The tension between these different purposes is a central challenge of evaluation practice (Patton, 2008).

Table 20.1. Evaluation Questions Across the Programme Cycle

Concept or area	What it means	Why it matters in practice
Needs	What problem exists and for whom?	Establishes the starting point and identifies whose needs are being prioritised.
Implementation	Was the programme delivered as intended and adapted appropriately?	Shows what happened between design and actual delivery.
Reach	Who participated and who was missed?	Tests whether benefits are distributed fairly.
Outcomes	What changed?	Assesses intended and unintended effects.
Context	What conditions helped or hindered the programme?	Explains why results may differ between settings.
Learning	What should change next?	Turns evaluation into practical improvement rather than a final report.

20.2 Dominant Evaluation Frameworks: A Critical Analysis

Several evaluation frameworks have been developed for public health. These frameworks are often presented as evidence-based tools for assessing programmes. Yet they embody assumptions, values, and power relations that are rarely examined.

Experimental and Quasi-Experimental Designs

Randomized controlled trials are considered the gold standard for evaluation. They involve randomly assigning participants to intervention and control groups and comparing outcomes. Quasi-experimental designs, such as interrupted time series and difference-in-differences, are used when randomisation is not possible (Rossi et al., 2004).

Experimental and quasi-experimental designs have been subject to critique. One critique is that they are decontextualised. They focus on whether an intervention works, not on how or why it works. They neglect the role of context in shaping outcomes. Interventions that work in one context may not work in another (Rossi et al., 2004).

Another critique is that experimental designs are often infeasible or unethical. Randomisation may not be possible for ethical reasons, such as when withholding an intervention would be harmful. Randomisation may also be infeasible for practical reasons, such as when the intervention is already being implemented (Rossi et al., 2004).

A third critique is that experimental designs are insufficiently attentive to equity. They focus on average effects, which may conceal important differences across subgroups. An intervention that is effective on average may be ineffective or harmful for some groups. Experimental designs often lack the statistical power to detect subgroup effects (Rossi et al., 2004).

Theory-Based Evaluation

Theory-based evaluation involves developing a theory of change that explains how an intervention is expected to produce its outcomes. The theory is then tested through evaluation. Theory-based evaluation has been influential in public health evaluation (Weiss, 1997).

Theory-based evaluation has several strengths. It makes the assumptions underlying interventions explicit. It helps identify the mechanisms through which interventions produce effects. It can guide the design of evaluation and the interpretation of findings (Weiss, 1997).

However, theory-based evaluation has limitations. Theories of change are often simplistic, assuming linear causal relationships that do not reflect the complexity of reality. They are often developed by outsiders, neglecting the perspectives of practitioners and communities. They can be used to justify interventions that are ineffective or harmful (Weiss, 1997).

The RE-AIM Framework

RE-AIM is a widely used framework for planning and evaluating implementation. It includes five dimensions: Reach, Effectiveness, Adoption, Implementation, and Maintenance. RE-AIM has been used extensively in public health (Glasgow et al., 1999).

RE-AIM has several strengths. It attends to both individual and organizational outcomes. It attends to both internal and external validity. It provides a framework for translating research into practice (Glasgow et al., 1999).

However, RE-AIM has limitations. It is descriptive rather than analytical. It describes what should be measured but does not explain how or why outcomes are achieved. It is insufficiently attentive to context, power, and equity. It does not address the structural determinants of health or the historical injustices that shape health inequities (Glasgow et al., 1999).

Critiques of Dominant Frameworks

Dominant evaluation frameworks have been subject to several critiques. One critique is that they are insufficiently attentive to context. They focus on whether interventions work, not on how or why they work. They neglect the role of context in shaping outcomes (Patton, 2008).

Another critique is that they are insufficiently attentive to power. They do not address who decides what is evaluated, how it is evaluated, and how findings are used. They treat evaluation as a technical exercise rather than as a political process (Patton, 2008).

A third critique is that they are insufficiently attentive to equity. They focus on average effects, which may conceal important differences across subgroups. They do not address the structural determinants of health or the historical injustices that shape health inequities (Patton, 2008).

20.3 Metrics, Indicators, and Data: The Politics of Measurement

Metrics and indicators are central to monitoring and evaluation. They are used to track progress, assess performance, and guide decision-making. Yet metrics and indicators are not neutral; they reflect assumptions, values, and power relations.

What Gets Measured Matters

What gets measured shapes what gets attention and resources. Metrics and indicators reflect the priorities of those who design them. They can reinforce dominant narratives and marginalise alternative perspectives. The choice of indicators is a political decision, not just a technical one (Merry, 2016).

The power of metrics is evident in the use of performance indicators. Programmes that perform well on indicators are rewarded; programmes that perform poorly are penalised. This creates incentives to focus on what is measured, which may not be what is most important. It can also create perverse incentives, such as gaming the system or neglecting unmeasured but important outcomes (Merry, 2016).

The power of metrics is also evident in the use of global health indicators. The Millennium Development Goals and Sustainable Development Goals have shaped global health priorities and resource allocation. The indicators used in these frameworks reflect the priorities of their designers, not necessarily the priorities of communities in low and middle-income countries (Merry, 2016).

The Problem of Proxy Indicators

Many health indicators are proxies for what we really want to measure. For example, vaccine coverage is a proxy for immunity and disease prevention. Healthcare utilisation is a proxy for access and quality. Proxy indicators are useful, but they can be misleading (Merry, 2016).

Proxy indicators can be misleading in several ways. They may not capture what they are intended to measure. They may capture something else entirely. They may be subject to manipulation or gaming. They may reflect factors other than the outcome of interest (Merry, 2016).

The use of proxy indicators reflects the difficulty of measuring health and health outcomes. Health is complex and multifaceted. Measuring health requires multiple indicators, not just one. The choice of indicators is a matter of judgment, not just of measurement (Merry, 2016).

Data and Power

Data are not neutral. They are produced, collected, and used in contexts shaped by power relations. Those who control data production and use have power over what is known and what is done (Merry, 2016).

The power dynamics of data are evident in the global distribution of health data. Low and middle-income countries have less capacity for data collection and analysis than high-income countries. They are often data-poor, even though they bear the greatest burden of disease. The data that are collected are often controlled by external actors, not by local communities or governments (Merry, 2016).

The power dynamics of data are also evident in the use of data for advocacy and accountability. Data can be used to expose inequities and to hold governments and corporations accountable. But data can also be used to obscure inequities and to legitimate unjust policies. The use of data depends on who controls it and for what purposes (Merry, 2016).

20.4 Quality Improvement: A Critical Examination

Quality improvement is a systematic approach to improving the quality of healthcare and public health services. It involves identifying problems, developing solutions, implementing changes, and assessing outcomes. Quality improvement has been widely adopted in health systems.

The Quality Improvement Paradigm

The quality improvement paradigm is based on several assumptions. It assumes that quality can be measured and improved. It assumes that problems are due to system failures, not individual failures. It assumes that improvement requires data, analysis, and continuous learning. It assumes that improvement is best achieved through local, incremental change (Berwick, 1996).

The quality improvement paradigm has been influential in shaping healthcare and public health. It has led to improvements in patient safety, quality of care, and population health. It has shifted attention from blaming individuals to improving systems (Berwick, 1996).

Critiques of Quality Improvement

Quality improvement has been subject to critique. One critique is that it is insufficiently attentive to power. It focuses on technical problems and solutions, neglecting the political and structural determinants of quality. It does not address who decides what quality means or whose interests are served (Berwick, 1996).

Another critique is that quality improvement is insufficiently attentive to equity. It focuses on average quality, which may conceal inequities. An intervention that improves quality on average may widen disparities if it benefits some groups more than others. Quality improvement must attend to equity, not just average quality (Berwick, 1996).

A third critique is that quality improvement can be co-opted. The language of quality improvement can be used to justify cost-cutting, workforce reductions, and other measures that undermine quality. Quality improvement can be used to shift responsibility from organisations to frontline workers (Berwick, 1996).

Quality Improvement and Structural Inequity

Structural inequities shape the quality of healthcare and public health services. Marginalised communities receive lower quality care and have poorer outcomes. Quality improvement that does not address structural inequities will not eliminate disparities (Bailey et al., 2017).

Addressing structural inequities requires attending to the social determinants of health. It requires addressing the systemic racism, poverty, and other forms of oppression that shape health. It requires engaging communities in identifying problems and developing solutions. Quality improvement must be grounded in a commitment to equity and justice (Bailey et al., 2017).

20.5 Alternative and Critical Approaches to Evaluation

Dominant evaluation frameworks have been challenged by alternative and critical approaches. These approaches emphasise participation, equity, and the redistribution of power.

Participatory Evaluation

Participatory evaluation involves stakeholders, including community members, in the evaluation process. It is based on the principle that those affected by programmes should have a voice in evaluating them. Participatory evaluation has been influential in community-based and community-led programmes (Cousins & Whitmore, 1998).

Participatory evaluation has several strengths. It builds community capacity and ownership. It ensures that evaluation is relevant to community needs. It challenges the power relations of traditional evaluation. It can produce more valid and actionable findings (Cousins & Whitmore, 1998).

However, participatory evaluation has limitations. It can be time-consuming and resource-intensive. It can be co-opted by dominant institutions. It can be undermined by power imbalances between communities and evaluators. It can be tokenistic, with communities consulted but not empowered (Cousins & Whitmore, 1998).

Empowerment Evaluation

Empowerment evaluation is a specific approach to participatory evaluation. It emphasises building the capacity of communities to evaluate their own programmes. It is based on the principle that communities have the knowledge and expertise to evaluate their own work (Fetterman, 2001).

Empowerment evaluation has several strengths. It builds community capacity and self-determination. It shifts power from external evaluators to communities. It produces findings that are relevant and actionable. It can contribute to social change (Fetterman, 2001).

However, empowerment evaluation has limitations. It requires significant investment in capacity building. It can be difficult to sustain. It can be undermined by external pressures, such as funder requirements. It must be attentive to power dynamics within communities (Fetterman, 2001).

Equity-Focused Evaluation

Equity-focused evaluation centres equity in the evaluation process. It asks not just whether an intervention works but whether it works equitably. It attends to the distribution of benefits and burdens across groups. It addresses the structural determinants of health and health inequities (Braveman & Gottlieb, 2014).

Equity-focused evaluation requires several strategies. It requires disaggregating data by subgroup. It requires engaging communities in defining outcomes and indicators. It requires addressing the structural determinants of health. It requires using evaluation findings to advocate for equity (Braveman & Gottlieb, 2014).

Decolonising Evaluation

Decolonising evaluation involves challenging the colonial legacy of evaluation. Evaluation has been used to impose Western values on non-Western societies. It has been used to extract knowledge from communities without sharing benefits. It has been used to legitimate colonial and neocolonial power relations (Chilisa, 2012).

Decolonising evaluation requires several strategies. It requires centring Indigenous and non-Western knowledge systems. It requires shifting power from external evaluators to communities. It requires ensuring that evaluation benefits communities, not just researchers. It requires challenging the institutional structures that shape evaluation (Chilisa, 2012).

20.6 Monitoring, Evaluation, and the Public Health Workforce

Monitoring and evaluation are essential functions of public health practice. Yet the public health workforce often lacks the capacity and resources to conduct effective monitoring and evaluation.

Capacity Building

Building monitoring and evaluation capacity is essential for effective public health practice. This requires training in evaluation methods, data analysis, and data use. It also requires resources, including personnel, technology, and funding (Center for Public Health, 2026).

The Meghalaya Public Health Leadership Development Programme provides an example of capacity building. The programme developed competency-based modules covering leadership behaviours, systems thinking, and communication. It used pre- and post-assessments to evaluate the programme's impact. The programme contributed to improving the competencies of public health managers in Meghalaya, India (Center for Public Health, 2026).

Challenges in Monitoring and Evaluation

Monitoring and evaluation face significant challenges. These include limited resources, weak data systems, and competing priorities. They also include political pressures, which can compromise the integrity of evaluation. They include the difficulty of evaluating complex interventions and the challenge of measuring equity (Center for Public Health, 2026).

The challenges of monitoring and evaluation are greater in low and middle-income countries, where resources and capacity are more limited. They are also greater in community-based and community-led programmes, which may lack formal evaluation structures (Center for Public Health, 2026).

The Future of Monitoring and Evaluation

The future of monitoring and evaluation will require several changes. It will require moving beyond experimental designs to include participatory and equity-focused approaches. It will require building the capacity of practitioners and communities to conduct evaluation. It will require attending to the political context of evaluation and the power relations it reinforces (Center for Public Health, 2026).

The future of monitoring and evaluation will also require new methods and technologies. Digital technologies offer new opportunities for data collection and analysis. However, they also raise concerns about privacy, equity, and the digital divide. The use of technology in evaluation must be attentive to these concerns (Center for Public Health, 2026).

20.7 Key Takeaways

Evaluation serves multiple purposes: discipline and control, legitimation, and learning. These purposes are often in tension (Patton, 2008)

Dominant evaluation frameworks are decontextualised, insufficiently attentive to power, and insufficiently attentive to equity (Rossi et al., 2004; Glasgow et al., 1999)

Metrics and indicators are not neutral; they reflect assumptions, values, and power relations (Merry, 2016)

Quality improvement is valuable but is often insufficiently attentive to power, equity, and structural determinants (Berwick, 1996)

Alternative approaches, including participatory evaluation, empowerment evaluation, equity-focused evaluation, and decolonising evaluation, challenge dominant frameworks (Cousins & Whitmore, 1998; Fetterman, 2001; Chilisa, 2012)

Building monitoring and evaluation capacity is essential but faces significant challenges (Center for Public Health, 2026)

The future of monitoring and evaluation requires moving beyond experimental designs, building capacity, attending to power, and using new technologies thoughtfully

Chapter 21

Emergency Preparedness and Response

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concepts and frameworks that underpin emergency preparedness and response in public health

Evaluate the limitations of dominant preparedness paradigms and their assumptions about risk, vulnerability, and resilience

Assess the role of power, politics, and inequality in shaping emergency preparedness and response

Analyse alternative and critical approaches to emergency management, including community-centred and decolonial models

Apply critical emergency preparedness perspectives to contemporary public health challenges

21.1 The Politics of Emergency Preparedness

Emergency preparedness and response are conventionally presented as technical, apolitical activities: identifying risks, planning responses, and building capacity. This framing obscures the political dimensions of emergencies and the power relations that shape who is prepared, who is protected, and who is left behind.

Emergencies as Political Events

Emergencies are not natural events that happen to passive populations. They are political events that expose and amplify existing inequalities. The impacts of emergencies are shaped by social, economic, and political structures that systematically disadvantage certain groups. Those who are already marginalised are more likely to be exposed to emergencies, less likely to have the resources to prepare, and less likely to receive adequate response and recovery support (Wisner et al., 2004).

The political nature of emergencies is evident in the distribution of impacts. During the COVID-19 pandemic, marginalised populations, including racial and ethnic minorities, people in poverty, and those in congregate settings, experienced disproportionately high infection and mortality rates (Karmakar et al., 2021). The global vaccine rollout was marked by vaccine apartheid, with high-income countries securing the vast majority of early doses while low-income countries waited (WHO, 2022). These patterns were not accidental; they reflected existing inequalities and the political choices that perpetuated them.

The Construction of Risk

Risk is not simply an objective feature of the environment. It is socially constructed. What is identified as a risk, who is identified as at risk, and how risks are prioritised reflect social, political, and economic factors (Beck, 1992). The construction of risk is shaped by power relations, with those in positions of power having greater influence over what risks are recognised and how they are addressed.

The construction of risk is evident in the allocation of resources for preparedness. Resources are often directed to risks that are politically salient, such as terrorism, rather than to risks that are more common, such as extreme weather events. They are also directed to populations that are politically powerful, rather than to those that are most vulnerable. The allocation of resources reflects political priorities, not just epidemiological evidence.

Preparedness as a Site of Struggle

Preparedness is not simply a technical exercise. It is a site of struggle over values, power, and resources. Different groups seek to shape preparedness to advance their interests. Communities seek to ensure that their needs are recognised and addressed. Governments seek to maintain control and legitimacy. Corporations seek to protect their profits (Wisner et al., 2004).

The struggle over preparedness is evident in debates about who should bear the costs of preparedness. Should governments invest in public health infrastructure? Should individuals be responsible for their own preparedness? Should corporations be held accountable for the risks they create? The answers to these questions reflect political choices, not just technical considerations.

Table 21.1. Emergency Preparedness and Response: Core Questions

Concept or area	What it means	Why it matters in practice
Risk	What hazards could cause serious harm?	Provides the basis for preparedness and prioritisation.
Capacity	What people, supplies, infrastructure and information are available?	Shows what the system can realistically do.
Vulnerability	Who is most exposed or least able to recover?	Directs attention to unequal risk.
Coordination	Who makes decisions and how do agencies work together?	Reduces duplication, gaps and conflicting instructions.
Community role	How will affected people participate in preparedness and response?	Uses local knowledge and supports trust.
Recovery	What must be restored, changed or rebuilt after the emergency?	Connects response to longer-term resilience and risk reduction.

21.2 Dominant Preparedness Paradigms: A Critical Analysis

Several paradigms have shaped emergency preparedness and response. These paradigms are often presented as evidence-based frameworks for effective action. Yet they embody assumptions, values, and power relations that are rarely examined.

The All-Hazards Approach

The all-hazards approach acknowledges that while hazards vary in source (natural, technological, societal), they often challenge health systems in similar ways and demand a multisectoral response. The approach assumes that risk reduction, emergency preparedness, response actions and community recovery activities can be implemented using the same model, regardless of cause (WHO, 2024).

The all-hazards approach has been influential in shaping emergency preparedness. It has promoted integrated planning, standardised procedures, and cross-sectoral coordination. It has been adopted by the WHO and by many national governments (WHO, 2024).

However, the all-hazards approach has significant limitations. One limitation is that it can obscure the specific characteristics of different hazards. A pandemic requires different responses than a natural disaster or a terrorist attack. The all-hazards approach can lead to generic plans that do not address the specific challenges of different hazards.

Another limitation is that the all-hazards approach is insufficiently attentive to equity. It focuses on system-level preparedness, neglecting the distributional dimensions of risk and response. It does not address the structural inequalities that make some populations more vulnerable to emergencies and less able to access response and recovery support.

A third limitation is that the all-hazards approach is insufficiently attentive to context. It assumes that preparedness models can be applied uniformly across different settings. This assumption neglects the role of local social, cultural, and political factors in shaping preparedness and response. Approaches that work in one context may not work in another.

The Whole-of-Government and Whole-of-Society Approach

The whole-of-government and whole-of-society approach recognises that emergencies have widespread effects on many parts of society, and that the health sector has an important role to play in all of them. The approach advocates for integrated support for emergency preparedness across all sectors of government and society, with engagement of communities and involvement of nongovernmental and private sector organisations (WHO, 2024).

The whole-of-society approach has been influential in shaping emergency preparedness. It has promoted cross-sectoral coordination, community engagement, and the involvement of diverse stakeholders. It has been adopted by the WHO and by many national governments (WHO, 2024).

However, the whole-of-society approach has significant limitations. One limitation is that it can be co-opted by dominant interests. The language of whole-of-society can be used to legitimate policies that serve the interests of powerful actors, such as corporations, rather than the needs of communities. Community engagement can be tokenistic, with communities consulted but not empowered.

Another limitation is that the whole-of-society approach is insufficiently attentive to power. It describes the actors that should be involved but does not address the power relations that shape their involvement. It does not address the structural barriers that prevent some actors, particularly marginalised communities, from participating effectively.

A third limitation is that the whole-of-society approach is insufficiently attentive to equity. It focuses on system-level coordination, neglecting the distributional dimensions of risk and response. It does not address the structural inequalities that make some populations more vulnerable to emergencies and less able to access response and recovery support.

The One Health Approach

The One Health approach is based on the recognised link between human health and the health of animals and the environment. The approach promotes cross-sectoral cooperation in reducing and addressing risks posed by zoonoses and other existing and emerging threats to public health at the human-animal-ecosystems interface (WHO, 2024).

The One Health approach has been influential in shaping emergency preparedness, particularly for zoonotic diseases and antimicrobial resistance. It has promoted collaboration across human, animal, and environmental health sectors. It has been adopted by the WHO and by many national governments (WHO, 2024).

However, the One Health approach has significant limitations. One limitation is that it is insufficiently critical of the systems that produce emergencies. The One Health approach focuses on managing risks at the human-animal-environment interface but does not address the systemic drivers of emergency emergence, including habitat destruction, agricultural intensification, and climate change (Hinchliffe, 2015).

Another limitation is that One Health remains anthropocentric. While it recognises the importance of animal and environmental health, it ultimately prioritises human health. This anthropocentrism is reflected in the focus on zoonotic diseases that threaten humans and in the instrumentalisation of animal and environmental health for human ends (Hinchliffe, 2015).

21.3 Power, Inequality, and Vulnerability

Vulnerability to emergencies is not simply a matter of exposure to hazards. It is shaped by social, economic, and political structures that systematically disadvantage certain groups. Understanding vulnerability requires attending to power and inequality.

The Social Production of Vulnerability

Vulnerability is socially produced. It is not an inherent characteristic of individuals or communities but is created by social, economic, and political structures. Poverty, inequality, discrimination, and marginalisation all contribute to vulnerability (Wisner et al., 2004).

The social production of vulnerability is evident in the distribution of emergency impacts. Those who are poor, marginalised, or discriminated against are more likely to be exposed to emergencies, less likely to have the resources to prepare, and less likely to receive adequate response and recovery support. The patterns of vulnerability are not random; they reflect systemic inequalities.

Structural Racism and Emergency Vulnerability

Structural racism is a fundamental determinant of vulnerability to emergencies. It is embedded in the laws, policies, and institutions that shape exposure to hazards, access to resources, and access to response and recovery support. Structural racism operates through multiple pathways, including housing segregation, environmental injustice, and the criminal justice system (Bailey et al., 2017).

The COVID-19 pandemic highlighted the role of structural racism in shaping vulnerability. Racial and ethnic minorities experienced disproportionately high infection and mortality rates. These disparities reflected structural inequalities in housing, employment, healthcare, and the criminal justice system. They were not accidental; they were produced by systemic racism (Bailey et al., 2017).

Colonial Legacies and Vulnerability

Colonial legacies shape vulnerability to emergencies. Colonial powers created systems of extraction, dispossession, and discrimination that continue to shape the distribution of risk and resources. Colonial legacies are evident in the vulnerability of Indigenous populations to emergencies (The Lancet Planetary Health, 2024).

Indigenous Elders have articulated how colonial structures remain embedded in health systems, maintaining separation from land-based healing and perpetuating control over Indigenous health.

One Elder noted that colonisation created the Indian Act, which was the legal foundation for residential schools and the creation of hospitals entirely disconnected from land. The Elder stated that "they have total control" over medicines, prescriptions, hospitals, treatment, and even education. Despite increasing recognition of Indigenous Peoples and their knowledges, this recognition was noted to come only with explicit legal agreements, which usually come only through the courts. Even when agreements are made, they do not come with complete Indigenous control of their own healthcare, meaning Indigenous Peoples continue to receive clinical care that is divorced from the health of Mother Earth (The Lancet Planetary Health, 2024).

The Elders noted that climate change is affecting them now, with changing weather affecting caribou and hunting, and ice coming in late, delaying fishing times. One Elder noted that "climate change is going to affect our Indigenous rights" and that everything happening with climate change is relevant to Indigenous Peoples' lifestyles. However, the Elders emphasised that Indigenous Peoples are affected more by other people's actions that cause climate change than Indigenous Peoples affect the environment themselves, given the small population and close connectivity to the land (The Lancet Planetary Health, 2024).

21.4 Community-Centred Emergency Preparedness

Community-centred approaches to emergency preparedness challenge top-down models. They involve shifting power from institutions to communities, recognising that communities have knowledge and expertise that is essential for preparedness and response. They involve co-creating solutions with communities rather than imposing them from above.

The Limits of Top-Down Approaches

Top-down approaches to emergency preparedness have significant limitations. They can be unresponsive to community needs. They can neglect local knowledge and expertise. They can undermine community trust and cooperation. They can be inequitable, serving the interests of dominant groups rather than the needs of vulnerable populations (Wisner et al., 2004).

The limitations of top-down approaches were evident during the COVID-19 pandemic. Government directives were often poorly communicated, inadequately resourced, and inequitably enforced. Communities that were distrustful of government were less likely to comply. The failure to engage communities undermined the effectiveness of public health measures (Wisner et al., 2004).

Community Engagement in Preparedness

Community engagement is essential for effective emergency preparedness. It builds trust, ensures that preparedness is relevant to community needs, and mobilises community resources. It is particularly important for reaching vulnerable populations that are distrustful of government and for addressing the root causes of vulnerability (Wisner et al., 2004).

Community engagement requires genuine partnership, not tokenistic consultation. It requires sharing power and resources with communities. It requires recognising and respecting community knowledge and expertise. It requires addressing the historical grievances that shape community trust.

The Whole-of-Society Approach and Community Engagement

The whole-of-society approach recognises the importance of community engagement in emergency preparedness. It advocates for the involvement of communities, nongovernmental organisations, and private sector organisations in preparedness and response (WHO, 2024).

However, as noted above, community engagement can be tokenistic. Communities may be consulted but not empowered. Power imbalances between communities and institutions can undermine genuine engagement. The interests of funders and institutions may shape preparedness in ways that undermine community priorities.

21.5 Emergency Response: Critical Perspectives

Emergency response is the phase of emergency management that involves action during and immediately after an emergency. It is often presented as a technical, operational activity. Yet response is shaped by power, politics, and inequality.

The Politics of Response

Emergency response is not simply a technical activity. It is shaped by political considerations. Decisions about who receives assistance, how much they receive, and when they receive it reflect political priorities, not just needs (Wisner et al., 2004).

The politics of response are evident in the distribution of assistance. Those who are politically powerful are more likely to receive assistance quickly and adequately. Those who are politically marginalised are more likely to be neglected. The distribution of assistance reflects power relations, not just need.

The Role of the National Disaster Medical System

The National Disaster Medical System is a federal program in the United States that provides medical response to disasters. The system includes disaster medical assistance teams, which are deployed to provide medical care in emergencies. The system has been used in response to natural disasters, terrorist attacks, and disease outbreaks (Congress.gov, 2019).

Legislation has sought to strengthen the NDMS, including through reviews of medical surge capacity, workforce assessment, and recruitment and retention efforts. The Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019 authorised funding for the system and required reviews of its capacity (Congress.gov, 2019).

However, the NDMS has limitations. It is designed to supplement, not replace, local healthcare systems. It can be slow to deploy. It may not have the capacity to respond to large-scale emergencies. It may not be able to reach vulnerable populations.

Surge Capacity and Healthcare Systems

Surge capacity is the ability of healthcare systems to respond to a sudden increase in demand for services. Surge capacity is essential for emergency response. It includes the ability to increase bed capacity, staff, and supplies (Congress.gov, 2019).

However, surge capacity is often limited. Healthcare systems are already strained by routine demands. They lack the resources to expand rapidly. The COVID-19 pandemic highlighted the limitations of surge capacity, with hospitals overwhelmed by patients and staff exhausted and burned out.

The limitations of surge capacity reflect systemic underinvestment in public health and healthcare. Decades of divestment have left health systems fragile and unable to respond to emergencies.

Strengthening surge capacity requires investment in health systems, not just emergency preparedness.

21.6 Decolonising Emergency Preparedness and Response

Decolonising emergency preparedness and response involves challenging the colonial legacies that shape vulnerability and response. It involves centring Indigenous and non-Western knowledge systems and shifting power to communities.

Indigenous Knowledge and Emergency Preparedness

Indigenous knowledge is essential for emergency preparedness. Indigenous communities have knowledge of their environments, their risks, and their capacities that is often overlooked by external actors. They have knowledge of how to prepare for and respond to emergencies that is grounded in generations of experience (The Lancet Planetary Health, 2024).

Elders have noted that the focus of even being able to engage with healthcare is enabled through Western-defined certifications and authorities that ultimately are situated in Earth-destructive economic systems. One Elder stated that "the prescription is really tied to the economics of the system that has been developed and is very Western. If a prescription is going to be made, it's got to be somebody that's authorised with some certificate or a business license, or, have a link to the system to say that those are the service providers" (The Lancet Planetary Health, 2024).

Many Elders emphasised that thinking about planetary health within the health system was difficult when Indigenous Peoples are not even being treated well by the system. A question was raised: if Indigenous Peoples themselves are not being treated properly within the health system, how can the planet be treated properly, as Indigenous Peoples are seen as an extension of the Lands around them? "It comes to the point where we feel like we're being ignored as a people, although in the medical system, we are the patients with rights" (The Lancet Planetary Health, 2024).

Epistemic Justice in Emergency Response

Epistemic justice is the recognition of different ways of knowing and the inclusion of diverse knowledges in decision-making. It is essential for decolonising emergency response. It requires recognising that communities have knowledge and expertise that is essential for effective response (Fricker, 2007).

Epistemic justice requires challenging the hierarchy of knowledge that privileges Western, scientific knowledge over Indigenous and local knowledge. It requires creating space for Indigenous and local knowledge in emergency planning and response. It requires ensuring that communities have a voice in decisions that affect them.

Indigenous-Led Emergency Preparedness

Tribal nations and Indigenous communities in the United States are developing their own frameworks for Indigenous healing, health, and wellness. Seven Directions, an Indigenous public health institute, has proposed shared constructs for Indigenous frameworks that include sovereignty and governance, language and identity, land and kinship, and Indigenous knowledge and practices. All four constructs are understood to be relational and interconnected to create conditions for Indigenous community healing, health, and wellness (Seven Directions, 2025).

During the COVID-19 pandemic, tribal nations required masking on their lands and provided vaccines for everyone, which increased access for both enrolled members of the tribes and their neighboring communities. In some very rural areas, tribal health centers were the most accessible option for non-natives. Through public health governance, tribal nations develop and provide public health and health services with Indigenous worldviews and knowledge embedded in the care, programs, and policies (Seven Directions, 2025).

21.7 Key Takeaways

Emergencies are not natural events; they are political events that expose and amplify existing inequalities (Wisner et al., 2004)

Risk is socially constructed; what is identified as a risk and who is identified as at risk reflect political priorities

Dominant preparedness paradigms have significant limitations, including insufficient attention to power, equity, and structural determinants (WHO, 2024)

Vulnerability is socially produced by poverty, inequality, discrimination, and marginalisation (Wisner et al., 2004)

Colonial legacies shape vulnerability to emergencies and must be addressed (The Lancet Planetary Health, 2024)

Community-centred approaches are essential but must attend to power dynamics and avoid tokenism (Wisner et al., 2004)

Emergency response is shaped by politics, not just technical considerations

Decolonising emergency preparedness requires centring Indigenous knowledge and shifting power to communities (Seven Directions, 2025; The Lancet Planetary Health, 2024)

Strengthening surge capacity requires investment in health systems, not just emergency preparedness

Chapter 22

Indigenous Health and Decolonising Public Health

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the historical and ongoing impacts of colonialism on Indigenous health

Evaluate the limitations of dominant public health approaches in addressing Indigenous health inequities

Assess the role of Indigenous knowledge systems, sovereignty, and self-determination in promoting health

Analyse the concept of decolonising public health and its implications for practice

Apply Indigenous and decolonial perspectives to public health challenges

22.1 Colonialism and Indigenous Health: A Critical Analysis

The health of Indigenous peoples is inextricably linked to the history of colonialism. Colonialism has systematically dispossessed Indigenous peoples of their lands, disrupted their cultures, and undermined their health and wellbeing. Understanding Indigenous health requires attending to this history and its ongoing effects.

The Historical Legacy of Colonialism

Colonialism has had profound and lasting impacts on Indigenous health. Colonial powers used violence, disease, and dispossession to subjugate Indigenous peoples. They imposed foreign political, economic, and social systems that disrupted Indigenous ways of life. They undermined Indigenous governance, knowledge systems, and cultural practices (Smith, 2021).

The legacy of colonialism is evident in the health inequities that Indigenous peoples experience today. Indigenous populations have higher rates of chronic disease, infectious disease, and mental health problems than non-Indigenous populations. They have lower life expectancies and higher rates of infant mortality. These inequities are not simply a matter of individual behaviour or access to healthcare; they are the result of historical and ongoing colonialism (Reading & Wien, 2009).

The Residential School System

The residential school system, which operated in Canada, the United States, and other countries, was a particularly brutal instrument of colonialism. Indigenous children were forcibly removed from their families and communities and placed in institutions that were designed to assimilate them into dominant society. They were forbidden from speaking their languages or practising their cultures. Many experienced physical, sexual, and psychological abuse. Thousands died (Truth and Reconciliation Commission of Canada, 2015).

The residential school system had profound and lasting impacts on Indigenous health. Survivors experienced high rates of mental health problems, including depression, anxiety, post-traumatic stress disorder, and suicide. They also experienced physical health problems related to abuse and

neglect. The intergenerational trauma of residential schools continues to affect Indigenous communities today (Truth and Reconciliation Commission of Canada, 2015).

The Indian Act and Health Governance

The Indian Act in Canada is a foundational piece of colonial legislation that continues to shape Indigenous health governance. One Elder noted that colonisation created the Indian Act, which was the legal foundation for residential schools and the creation of hospitals entirely disconnected from land. The Elder stated that "they have total control" over medicines, prescriptions, hospitals, treatment, and even education (The Lancet Planetary Health, 2024).

The Indian Act and similar legislation in other countries have systematically undermined Indigenous governance and self-determination. They have imposed Western systems of health and social services that are divorced from Indigenous knowledge and practices. They have maintained control over Indigenous health, making Indigenous Peoples recipients of services rather than decision-makers (The Lancet Planetary Health, 2024).

The Doctrine of Discovery

The Doctrine of Discovery is a legal and religious concept that was used to justify European colonisation. The doctrine asserted that European nations had the right to claim lands that were not inhabited by Christians. The doctrine has been used to justify the dispossession of Indigenous peoples and the denial of their rights (Smith, 2021).

The Doctrine of Discovery continues to shape health inequities. Indigenous land dispossession has disrupted Indigenous food systems, traditional healing practices, and spiritual connections to land. The ongoing denial of Indigenous sovereignty and self-determination undermines Indigenous health and wellbeing (Smith, 2021).

Table 22.1. Decolonising Public Health: Areas for Reconsideration

Concept or area	What it means	Why it matters in practice
Knowledge	Whose knowledge is treated as authoritative?	Recognises Indigenous knowledge and challenges narrow definitions of evidence.
Research	Who defines questions and controls data?	Addresses extraction and unequal research relationships.
Governance	Who has decision-making power?	Supports self-determination and Indigenous leadership.
Services	Are programmes designed with communities or for them?	Moves practice toward culturally grounded and accountable services.
History	How have colonial policies shaped current conditions?	Links present health inequities to historical structures.

22.2 The Health Status of Indigenous Peoples: Critical Perspectives

Indigenous peoples experience significant health inequities compared to non-Indigenous populations. These inequities are not simply a matter of individual behaviour or access to healthcare; they are the result of historical and ongoing colonialism and the structural determinants of health.

Global Patterns of Indigenous Health

Indigenous peoples around the world experience similar patterns of health inequity. They have higher rates of chronic disease, including diabetes, cardiovascular disease, and respiratory disease. They have higher rates of infectious disease, including tuberculosis and HIV/AIDS. They have higher rates of mental health problems, including depression, anxiety, and suicide. They have lower life expectancies and higher rates of infant mortality (Reading & Wien, 2009).

The similarities in Indigenous health inequities across different countries suggest that colonialism, not individual behaviour or genetic factors, is the primary cause. Colonialism has disrupted Indigenous ways of life, undermined Indigenous knowledge systems, and imposed foreign political, economic, and social systems that are harmful to Indigenous health (Reading & Wien, 2009).

The Social Determinants of Indigenous Health

The social determinants of health framework highlights the role of social, economic, and political factors in shaping health. For Indigenous peoples, the social determinants of health include historical trauma, loss of land and culture, discrimination, and lack of access to resources (Reading & Wien, 2009).

The social determinants of Indigenous health are shaped by colonialism. Colonialism has disrupted Indigenous economies, creating poverty and unemployment. It has disrupted Indigenous education, creating gaps in educational attainment. It has disrupted Indigenous housing, creating overcrowding and inadequate living conditions. It has disrupted Indigenous justice systems, creating overrepresentation in the criminal justice system. All of these factors contribute to Indigenous health inequities (Reading & Wien, 2009).

Data and Indigenous Health

Data on Indigenous health are often incomplete and inaccurate. Indigenous peoples are often not counted or are misclassified in health data systems. This data gap reflects the marginalisation of Indigenous peoples in research and policy. It also undermines efforts to address Indigenous health inequities (Smith, 2021).

The data gap is not simply a technical problem. It reflects the power relations that shape data production and use. Indigenous peoples have often been excluded from the production of data about their own health. They have often been the subjects of research, not the partners. The data that are collected often reflect the priorities and perspectives of researchers, not of Indigenous communities (Smith, 2021).

22.3 Indigenous Knowledge Systems and Health

Indigenous knowledge systems offer alternative ways of understanding health and healing. They are grounded in relationships with land, community, and culture. They challenge the assumptions of dominant public health approaches and offer new possibilities for promoting health.

What Is Indigenous Knowledge?

Indigenous knowledge is a holistic way of understanding the world that is grounded in the relationships between people, land, and all living things. It is experiential, oral, and relational. It is passed down through generations and is constantly evolving (Smith, 2021).

Indigenous knowledge is often contrasted with Western knowledge, which is analytical, written, and individualistic. The contrast is not absolute; Indigenous knowledge also includes analysis and

Western knowledge also includes relationships. However, the different emphases reflect different worldviews and ways of knowing (Smith, 2021).

Land, Culture, and Health

For Indigenous peoples, health is inseparable from land and culture. Health is not just the absence of disease; it is a state of balance and harmony that includes relationships with land, community, and ancestors. Disruption of land and culture leads to disruption of health (Reading & Wien, 2009).

Elders have articulated how colonial structures remain embedded in health systems, maintaining separation from land-based healing and perpetuating control over Indigenous health. One Elder noted that the focus of even being able to engage with healthcare is enabled through Western-defined certifications and authorities that ultimately are situated in Earth-destructive economic systems. The Elder stated that "the prescription is really tied to the economics of the system that has been developed and is very Western" (The Lancet Planetary Health, 2024).

Many Elders emphasised that thinking about planetary health within the health system was difficult when Indigenous Peoples are not even being treated well by the system. A question was raised: if Indigenous Peoples themselves are not being treated properly within the health system, how can the planet be treated properly, as Indigenous Peoples are seen as an extension of the Lands around them? "It comes to the point where we feel like we're being ignored as a people, although in the medical system, we are the patients with rights" (The Lancet Planetary Health, 2024).

Traditional Healing

Traditional healing is an important part of Indigenous health systems. It includes a range of practices, including herbal medicine, spiritual healing, and ceremony. Traditional healing is holistic, addressing the physical, mental, emotional, and spiritual dimensions of health.

Traditional healing has been marginalised by dominant health systems. It has been dismissed as superstition or as inferior to Western medicine. This marginalisation reflects the power relations that shape health systems and the dominance of Western knowledge (Smith, 2021).

However, traditional healing is increasingly being recognised as valuable. Research has shown that traditional healing can be effective for a range of health problems, including mental health, chronic disease, and substance use. Integrating traditional healing into health systems can improve access, acceptability, and outcomes for Indigenous peoples (Smith, 2021).

22.4 Indigenous Sovereignty and Self-Determination

Indigenous sovereignty and self-determination are essential for Indigenous health. Sovereignty is the inherent right of Indigenous peoples to govern themselves and their lands. Self-determination is the right to make decisions about their own health and wellbeing.

Sovereignty as a Health Determinant

Sovereignty is a fundamental determinant of Indigenous health. When Indigenous peoples have control over their lands, their resources, and their institutions, they have better health outcomes. When sovereignty is denied, health outcomes are worse (Reading & Wien, 2009).

The relationship between sovereignty and health is evident in the experience of Indigenous communities that have achieved greater self-determination. Communities that have control over their health services, their education, and their justice systems have better health outcomes. They

are able to design services that are culturally appropriate and responsive to community needs (Reading & Wien, 2009).

Self-Determination in Health Governance

Self-determination in health governance involves Indigenous peoples having control over their health services and health policy. This includes the right to design, deliver, and evaluate health services. It includes the right to determine health priorities and allocate resources.

Self-determination in health governance is recognised in international law. The United Nations Declaration on the Rights of Indigenous Peoples affirms the right of Indigenous peoples to their traditional medicines and health practices and to the highest attainable standard of health (UN General Assembly, 2007). However, the implementation of these rights has been uneven.

Many Indigenous communities and organisations are working to achieve self-determination in health governance. They are developing their own health services, training their own health workers, and conducting their own research. They are asserting their right to make decisions about their own health and wellbeing.

Indigenous-Led Health Systems

Tribal nations and Indigenous communities in the United States are developing their own frameworks for Indigenous healing, health, and wellness. Seven Directions, an Indigenous public health institute, has proposed shared constructs for Indigenous frameworks that include sovereignty and governance, language and identity, land and kinship, and Indigenous knowledge and practices. All four constructs are understood to be relational and interconnected to create conditions for Indigenous community healing, health, and wellness (Seven Directions, 2025).

During the COVID-19 pandemic, tribal nations required masking on their lands and provided vaccines for everyone, which increased access for both enrolled members of the tribes and their neighboring communities. In some very rural areas, tribal health centers were the most accessible option for non-natives. Through public health governance, tribal nations develop and provide public health and health services with Indigenous worldviews and knowledge embedded in the care, programs, and policies (Seven Directions, 2025).

22.5 Decolonising Public Health: Theory and Practice

Decolonising public health involves challenging the colonial legacies that shape public health theory, research, and practice. It involves centring Indigenous and non-Western knowledge systems and shifting power to communities.

What Does Decolonising Public Health Mean?

Decolonising public health means recognising that public health has been shaped by colonialism. It involves challenging the assumptions, methods, and structures that reflect colonial values and interests. It involves centring the perspectives and priorities of those who have been marginalised and colonised (Smith, 2021).

Decolonising public health is not simply about adding Indigenous content to existing public health curricula or including Indigenous peoples in existing research. It requires a fundamental rethinking of what public health is, who it serves, and how it is practised. It requires challenging the power relations that shape public health and shifting power to communities (Smith, 2021).

Coloniality in Public Health

Coloniality is the persistence of colonial power relations and ways of thinking after the formal end of colonialism. Coloniality is evident in public health in several ways. It is evident in the dominance of Western knowledge systems. It is evident in the power relations between researchers and communities. It is evident in the structures and institutions of public health (Smith, 2021).

Coloniality in public health is often invisible to those who benefit from it. It is taken for granted as the way things are. The challenge of decolonising public health is to make coloniality visible and to challenge it.

Critical and Decolonial Approaches to Public Health

A critical and decolonial approach to public health involves several commitments. It involves recognising that health is shaped by historical and ongoing colonialism. It involves centring Indigenous and non-Western knowledge systems. It involves shifting power to communities. It involves challenging the structures and institutions that perpetuate coloniality (Smith, 2021).

Critical and decolonial approaches require changes at multiple levels. At the level of theory, they require challenging dominant paradigms and developing alternative frameworks. At the level of research, they require shifting power to communities and using methods that are grounded in Indigenous and non-Western knowledge systems. At the level of practice, they require building relationships with communities and supporting self-determination (Smith, 2021).

Decolonising Research Methods

Decolonising research methods involves challenging the colonial legacies of research. Research has been used as a tool of colonialism, extracting knowledge from colonised peoples while marginalising their knowledge systems. Decolonising research methods involves centring Indigenous and non-Western knowledge systems and shifting power to communities (Smith, 2021).

Community-based participatory research is one approach that aligns with decolonising research. It involves collaboration between researchers and communities throughout the research process. It is based on the principle that communities have knowledge and expertise that is essential for understanding health and developing interventions (Wallerstein et al., 2018).

However, CBPR is not inherently decolonising. It can be tokenistic, with communities consulted but not empowered. It can be co-opted by dominant institutions. It can be used to legitimate research that serves institutional interests rather than community needs. Decolonising research requires more than CBPR; it requires a fundamental shift in power relations (Smith, 2021).

22.6 Key Takeaways

Colonialism has had profound and lasting impacts on Indigenous health, including through dispossession, cultural disruption, and systemic discrimination (Smith, 2021; Truth and Reconciliation Commission of Canada, 2015)

Indigenous peoples experience significant health inequities that are the result of historical and ongoing colonialism (Reading & Wien, 2009)

Indigenous knowledge systems offer alternative ways of understanding health and healing that challenge dominant public health assumptions (Smith, 2021)

Land, culture, and health are inseparable for Indigenous peoples; disruption of land and culture leads to disruption of health (Reading & Wien, 2009; The Lancet Planetary Health, 2024)

Indigenous sovereignty and self-determination are essential for Indigenous health (Reading & Wien, 2009; UN General Assembly, 2007)

Self-determination in health governance involves Indigenous peoples having control over their health services and health policy (Seven Directions, 2025)

Decolonising public health involves challenging colonial legacies, centring Indigenous and non-Western knowledge systems, and shifting power to communities (Smith, 2021)

Critical and decolonial approaches require changes at the level of theory, research, and practice (Smith, 2021; Kwete et al., 2022)

Decolonising research methods involves challenging the colonial legacies of research and shifting power to communities (Smith, 2021; Wallerstein et al., 2018)

Chapter 23

Urban Health and the Built Environment

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the relationship between urbanisation, the built environment, and health outcomes

Evaluate the limitations of dominant urban health frameworks and their assumptions about cities and health

Assess the role of power, inequality, and politics in shaping urban health and the built environment

Analyse alternative and critical approaches to urban health, including participatory and justice-centred models

Apply critical urban health perspectives to contemporary public health challenges

23.1 Urbanisation and Health: A Critical Examination

The world is rapidly urbanising. More than half of the global population now lives in urban areas, and this proportion is expected to increase. Urbanisation has profound implications for health, both positive and negative. Yet the relationship between urbanisation and health is not straightforward; it is shaped by power, inequality, and politics.

The Urban Health Advantage

Cities have historically been associated with better health outcomes. Urban populations have better access to healthcare, education, and economic opportunities. They have lower rates of infectious disease and higher life expectancies. This urban health advantage has been a key driver of urbanisation (Vlahov et al., 2007).

However, the urban health advantage is not universal. It is distributed unequally within cities. Wealthier urban populations have better health outcomes than poorer urban populations. The urban health advantage is also diminishing in some contexts, as urbanisation has led to new health challenges, including noncommunicable diseases, mental health problems, and environmental hazards (Vlahov et al., 2007).

The Urban Health Penalty

The urban health penalty refers to the negative health outcomes associated with urbanisation, particularly for poor and marginalised populations. Urban populations face higher rates of noncommunicable diseases, including cardiovascular disease, diabetes, and cancer. They face higher rates of mental health problems, including depression and anxiety. They face higher rates of violence and injury. They face higher rates of environmental hazards, including air pollution, water contamination, and heat stress (Vlahov et al., 2007).

The urban health penalty is not inevitable. It is produced by the social, economic, and political structures that shape urban life. It reflects the unequal distribution of resources, the segregation of

populations, and the neglect of public health infrastructure. The urban health penalty can be addressed through policy and practice (Vlahov et al., 2007).

The Political Economy of Urban Health

Urban health is shaped by the political economy of cities. The distribution of resources, the allocation of land, and the provision of services reflect political choices, not just technical considerations. The political economy of cities is shaped by power relations, with powerful actors having greater influence over urban development and governance (Galea & Vlahov, 2005).

The political economy of urban health is evident in the distribution of green space, the location of polluting facilities, and the quality of housing. Wealthier neighbourhoods have more green space, fewer polluting facilities, and better housing. Poorer neighbourhoods have less green space, more polluting facilities, and worse housing. These patterns reflect political choices about land use, zoning, and investment (Galea & Vlahov, 2005).

Table 23.1. Urban Health: Built Environment and Social Conditions

Concept or area	What it means	Why it matters in practice
Housing	Quality, affordability, crowding and security	Influences respiratory health, mental health, injury and exposure to heat and pollution.
Transport	Walking, cycling, public transport and road safety	Shapes mobility, physical activity, access and exposure to injury and air pollution.
Food environment	Availability, affordability and marketing of food	Influences diet and nutrition across neighbourhoods.
Green and public space	Parks, shade, recreation and social space	Supports physical activity, social connection and climate adaptation.
Environmental exposure	Air pollution, heat, noise, waste and other hazards	Often follows patterns of social and economic inequality.

23.2 The Built Environment and Health

The built environment encompasses the physical structures and spaces in which people live, work, and play. It includes housing, transportation, parks, and public spaces. The built environment has profound implications for health, shaping physical activity, social interaction, and exposure to hazards.

Housing and Health

Housing is a fundamental determinant of health. The quality, affordability, and location of housing affect health in multiple ways. Poor-quality housing is associated with respiratory diseases, injuries, and mental health problems. Unaffordable housing is associated with financial stress, food insecurity, and housing instability. The location of housing affects access to services, exposure to hazards, and opportunities for physical activity (World Health Organization, 2018).

Housing inequities are a major driver of health inequities. Marginalised populations are more likely to live in poor-quality housing, in unaffordable housing, and in locations that are hazardous to health. Housing inequities reflect systemic racism, economic inequality, and political neglect (World Health Organization, 2018).

Transportation and Health

Transportation systems have profound implications for health. They shape physical activity, air quality, and access to services. Active transportation, such as walking and cycling, promotes physical activity and reduces air pollution. However, many cities are designed around cars, which discourages physical activity and increases air pollution (World Health Organization, 2018).

Transportation inequities are a major driver of health inequities. Marginalised populations are more likely to live in areas with poor public transportation, to rely on walking and cycling in unsafe conditions, and to be exposed to traffic-related air pollution. Transportation inequities reflect political choices about investment, planning, and regulation (World Health Organization, 2018).

Green Space and Health

Green space, including parks, gardens, and natural areas, has multiple health benefits. It promotes physical activity, reduces stress, and provides opportunities for social interaction. It also mitigates the urban heat island effect and improves air quality (World Health Organization, 2018).

Green space inequities are a major driver of health inequities. Marginalised populations are more likely to live in areas with limited green space. They have less access to the health benefits of green space and are more exposed to the health hazards of the urban environment. Green space inequities reflect political choices about land use, investment, and planning (World Health Organization, 2018).

The Political Economy of the Built Environment

The built environment is shaped by political and economic forces. Decisions about land use, zoning, and investment reflect the interests of powerful actors, including developers, corporations, and wealthy property owners. These decisions shape the distribution of health-promoting and health-damaging features of the built environment (Galea & Vlahov, 2005).

The political economy of the built environment is evident in the pattern of urban development. Wealthy neighbourhoods have more amenities, better infrastructure, and lower exposure to hazards. Poorer neighbourhoods have fewer amenities, worse infrastructure, and higher exposure to hazards. These patterns reflect political choices about where to invest and where to neglect (Galea & Vlahov, 2005).

23.3 Urban Inequality and Health

Urban inequality is a fundamental determinant of urban health. The distribution of resources, opportunities, and hazards within cities shapes health outcomes. Addressing urban health inequities requires attending to urban inequality.

Segregation and Health

Residential segregation is a major driver of urban health inequities. Segregation concentrates poverty, limits access to resources, and exposes populations to hazards. It is produced by systemic racism, economic inequality, and discriminatory policies (Williams & Collins, 2001).

Segregation has profound implications for health. Segregated communities have worse health outcomes, including higher rates of chronic disease, infectious disease, and mental health problems. They have less access to healthcare, education, and economic opportunities. They are more exposed to environmental hazards, including air pollution and heat stress. Addressing segregation is essential for addressing urban health inequities (Williams & Collins, 2001).

Gentrification and Health

Gentrification is the process by which wealthier populations move into lower-income neighbourhoods, displacing existing residents. Gentrification has mixed health effects. It can bring investment, amenities, and services to neighbourhoods. It can also displace residents, disrupt social networks, and increase stress (Cole & Flowers, 2017).

The health effects of gentrification are distributed unequally. Wealthier newcomers benefit from the investment and amenities. Poorer existing residents are harmed by displacement and disruption. The distribution of health effects reflects the power relations that shape gentrification (Cole & Flowers, 2017).

Homelessness and Health

Homelessness is a profound health crisis. People experiencing homelessness have higher rates of chronic disease, infectious disease, mental health problems, and substance use disorders. They have higher rates of mortality and lower life expectancies. Homelessness is produced by economic inequality, housing unaffordability, and inadequate social services (Hwang et al., 2015).

Addressing homelessness requires addressing its root causes. It requires increasing the supply of affordable housing, providing social services, and addressing the structural determinants of homelessness. It also requires providing healthcare and social services to people experiencing homelessness (Hwang et al., 2015).

23.4 Health Impact Assessment of Urban Development

Health Impact Assessment is a systematic process for assessing the health impacts of policies, programmes, and projects. It has been applied to urban development, including transportation, housing, and land-use planning. HIA provides a framework for integrating health into urban planning (World Health Organization, 2018).

The Value of Health Impact Assessment

HIA is valuable for several reasons. It makes the health impacts of urban development visible. It provides a framework for identifying and mitigating negative health impacts. It promotes intersectoral collaboration between health and planning sectors. It engages communities in decision-making (World Health Organization, 2018).

HIA has been used in multiple contexts to shape urban development. It has been used to assess the health impacts of transportation projects, housing developments, and land-use plans. It has been used to advocate for health-promoting features, such as green space, active transportation, and affordable housing (World Health Organization, 2018).

Critiques of Health Impact Assessment

HIA has been subject to critique. One critique is that it is often conducted after decisions have already been made. It is used to justify decisions rather than to inform them. This limits its influence on urban development (World Health Organization, 2018).

Another critique is that HIA is insufficiently attentive to power. It describes the health impacts of decisions but does not address the political and economic forces that shape those decisions. It does not address who benefits and who is harmed by urban development. It treats health as a technical issue rather than as a political one (World Health Organization, 2018).

A third critique is that HIA is insufficiently attentive to equity. It focuses on aggregate health impacts, neglecting the distributional dimensions of those impacts. It does not address the structural inequalities that shape urban development and urban health (World Health Organization, 2018).

23.5 Community-Centred Approaches to Urban Health

Community-centred approaches to urban health challenge top-down models. They involve shifting power from institutions to communities, recognising that communities have knowledge and expertise that is essential for urban health. They involve co-creating solutions with communities rather than imposing them from above.

Participatory Urban Planning

Participatory urban planning involves communities in the planning and design of urban environments. It is based on the principle that those who live in cities should have a voice in how cities are developed. Participatory planning has been influential in community development and urban regeneration (World Health Organization, 2018).

Participatory planning has several strengths. It ensures that urban development is responsive to community needs. It builds community capacity and ownership. It challenges the power relations of traditional planning. It can produce more equitable and sustainable outcomes (World Health Organization, 2018).

However, participatory planning has limitations. It can be time-consuming and resource-intensive. It can be co-opted by dominant institutions. It can be undermined by power imbalances between communities and planners. It can be tokenistic, with communities consulted but not empowered (World Health Organization, 2018).

Community-Led Urban Development

Community-led urban development involves communities taking the lead in planning and developing their neighbourhoods. It is based on the principle that communities should have control over their own development. Community-led development has been influential in community land trusts, housing cooperatives, and community development corporations (World Health Organization, 2018).

Community-led development has several strengths. It builds community capacity and self-determination. It ensures that development is responsive to community needs. It can produce more equitable and sustainable outcomes. It challenges the power relations of traditional development (World Health Organization, 2018).

However, community-led development has limitations. It requires significant resources and capacity. It can be undermined by external pressures, such as market forces and government policies. It must attend to power dynamics within communities, ensuring that all voices are heard (World Health Organization, 2018).

23.6 Climate Change and Urban Health

Climate change poses significant threats to urban health. Cities are particularly vulnerable to the health impacts of climate change, including heat waves, flooding, and air pollution. Addressing climate change requires action at multiple levels, from individual behaviour to international policy.

Heat Waves and Urban Health

Heat waves are a significant threat to urban health. Urban areas are particularly vulnerable to heat waves due to the urban heat island effect, where built surfaces absorb and retain heat. The urban heat island effect can increase temperatures by several degrees, exacerbating the health impacts of heat waves (Watts et al., 2021).

The health impacts of heat waves include heat exhaustion, heat stroke, and exacerbation of chronic diseases. Heat waves are particularly dangerous for older adults, children, and people with chronic conditions. The impacts of heat waves are distributed unequally, with marginalised populations being more vulnerable (Watts et al., 2021).

Flooding and Urban Health

Flooding is a significant threat to urban health. Urban areas are particularly vulnerable to flooding due to impervious surfaces, inadequate drainage, and the concentration of infrastructure. Flooding can cause injury, death, and displacement. It can also cause water contamination, mould growth, and mental health problems (Watts et al., 2021).

The health impacts of flooding are distributed unequally. Marginalised populations are more likely to live in flood-prone areas and less likely to have the resources to prepare for, respond to, and recover from flooding. Addressing flooding requires investment in infrastructure, planning, and community preparedness (Watts et al., 2021).

Air Pollution and Urban Health

Air pollution is a significant threat to urban health. Urban areas are major sources of air pollution, including particulate matter, nitrogen dioxide, and ozone. Air pollution is associated with respiratory diseases, cardiovascular diseases, lung cancer, and adverse pregnancy outcomes (Watts et al., 2021).

The health impacts of air pollution are distributed unequally. Marginalised populations are more likely to live near sources of air pollution and less likely to have access to healthcare. Addressing air pollution requires regulation of emissions, investment in clean energy, and planning for sustainable transport (Watts et al., 2021).

23.7 Key Takeaways

The relationship between urbanisation and health is shaped by power, inequality, and politics; cities are not inherently healthy or unhealthy (Vlahov et al., 2007)

The built environment, including housing, transportation, and green space, has profound implications for health; its distribution reflects political choices (World Health Organization, 2018)

Urban inequality, including segregation, gentrification, and homelessness, is a fundamental driver of urban health inequities (Williams & Collins, 2001; Cole & Flowers, 2017; Hwang et al., 2015)

Health Impact Assessment provides a framework for integrating health into urban planning but has limitations, including insufficient attention to power and equity (World Health Organization, 2018)

Community-centred approaches, including participatory planning and community-led development, challenge top-down models and shift power to communities (World Health Organization, 2018)

Climate change poses significant threats to urban health, including heat waves, flooding, and air pollution, with inequitable impacts (Watts et al., 2021)

Addressing urban health requires action on the structural determinants of health, including segregation, inequality, and inadequate infrastructure

Chapter 24

Nutrition and Food Systems

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the relationship between food systems, nutrition, and health outcomes

Evaluate the limitations of dominant nutrition frameworks and their assumptions about individual choice and responsibility

Assess the role of power, corporate influence, and political economy in shaping food systems and nutrition

Analyse alternative and critical approaches to food systems, including food sovereignty and food justice

Apply critical nutrition and food systems perspectives to contemporary public health challenges

24.1 The Political Economy of Food Systems

Food systems encompass the entire range of activities involved in the production, processing, distribution, consumption, and disposal of food. They are not neutral technical systems; they are shaped by power, politics, and economic interests. Understanding nutrition requires attending to the political economy of food systems.

The Corporate Food System

The global food system is dominated by a small number of transnational corporations. These corporations control seed production, agricultural inputs, food processing, and food retail. They have enormous influence over what food is produced, how it is produced, and how it is marketed (Clapp, 2021).

The corporate food system is oriented toward profit maximisation, not public health. Corporations have financial incentives to produce and market ultra-processed foods, which are high in sugar, fat, and salt and low in nutritional value. They have incentives to externalise costs, including environmental degradation and health harms. The corporate food system is a major driver of the global nutrition crisis (Clapp, 2021).

The Nutrition Transition

The nutrition transition refers to the shift from traditional diets to modern diets characterised by high consumption of ultra-processed foods, animal products, and sugary beverages. The nutrition transition is occurring globally, with significant implications for health. It is driven by economic development, urbanisation, and the expansion of global food corporations (Popkin, 2006).

The nutrition transition is associated with rising rates of obesity, diabetes, cardiovascular disease, and other noncommunicable diseases. It is also associated with environmental degradation, including greenhouse gas emissions, water use, and biodiversity loss. The nutrition transition is not inevitable; it is shaped by policy choices and corporate power (Popkin, 2006).

Food Systems and Inequality

Food systems are characterised by profound inequality. At the global level, some populations have access to abundant, diverse, and nutritious food, while others face food insecurity and malnutrition.

These inequalities are produced by the distribution of resources, power, and opportunities (Clapp, 2021).

Within countries, food systems are also characterised by inequality. Marginalised populations have less access to nutritious food and more exposure to unhealthy food. They are more likely to live in food deserts, areas with limited access to fresh, affordable food. They are more likely to be targeted by marketing for unhealthy food. Food inequality reflects systemic racism, economic inequality, and political neglect (Clapp, 2021).

Table 24.1. Food Systems and Nutrition: Points of Intervention

Concept or area	What it means	Why it matters in practice
Production	Agriculture, livestock, fisheries and inputs	Affects food availability, livelihoods and environmental pressures.
Processing and marketing	Food processing, pricing, advertising and distribution	Shapes what foods are affordable, visible and convenient.
Access	Income, markets, retail and physical availability	Determines whether people can obtain nutritious food.
Consumption	Dietary practices and social norms	Influences nutritional status and chronic disease risk.
Policy	Agricultural, trade, fiscal, nutrition and social policies	Can shift incentives across the food system.
Sustainability	Climate, biodiversity, soil, water and resource use	Connects nutrition policy with long-term environmental health.

24.2 The Global Nutrition Crisis: Critical Perspectives

The world is facing a global nutrition crisis characterised by the coexistence of undernutrition, micronutrient deficiencies, and overnutrition. This triple burden of malnutrition reflects the failures of the global food system and the political choices that shape it.

Undernutrition

Undernutrition remains a significant problem in many parts of the world. It is estimated that more than 800 million people are undernourished, and more than 150 million children under five are stunted. Undernutrition is associated with increased risk of infectious disease, impaired cognitive development, and reduced economic productivity (Development Initiatives, 2022).

Undernutrition is not simply a matter of insufficient food production. It is produced by poverty, inequality, and the lack of access to food. The distribution of food is shaped by power and politics, with some populations having more access than others. Addressing undernutrition requires addressing the root causes of food insecurity, including poverty, inequality, and political exclusion (Development Initiatives, 2022).

Micronutrient Deficiencies

Micronutrient deficiencies, including deficiencies of iron, vitamin A, and iodine, affect billions of people worldwide. They are associated with a range of health problems, including anaemia, blindness, and impaired cognitive development. Micronutrient deficiencies are often called "hidden hunger" because they are not as visible as undernutrition (Development Initiatives, 2022).

Micronutrient deficiencies are produced by the lack of dietary diversity and the lack of access to nutritious food. They are also produced by the food system, which prioritises the production of staple crops over the production of nutrient-dense foods. Addressing micronutrient deficiencies requires improving dietary diversity and addressing the structural determinants of food access (Development Initiatives, 2022).

Overnutrition and Obesity

Overnutrition and obesity are growing problems worldwide. It is estimated that more than 2 billion people are overweight or obese. Obesity is associated with increased risk of chronic disease, including diabetes, cardiovascular disease, and cancer. The economic costs of obesity are substantial (Development Initiatives, 2022).

Overnutrition and obesity are produced by the corporate food system, which promotes the consumption of ultra-processed foods. They are also produced by the built environment, which discourages physical activity. The burden of obesity is shifting toward low and middle-income countries, reflecting the expansion of the corporate food system and the nutrition transition (Development Initiatives, 2022).

24.3 Corporate Power and Food Politics

Corporate power is a fundamental driver of the global nutrition crisis. The corporate food system shapes what food is produced, how it is marketed, and what policies are adopted. Addressing the nutrition crisis requires challenging corporate power.

Corporate Influence on Policy

Transnational food corporations have enormous influence over food and nutrition policy. They lobby governments to resist regulation. They fund research and advocacy that supports their interests. They shape public discourse about food and nutrition. Their influence undermines public health policy and contributes to the nutrition crisis (Moodie et al., 2013).

The corporate influence on policy is evident in the resistance to soda taxes, front-of-pack labelling, and restrictions on marketing to children. Food corporations have successfully blocked or weakened these policies in many countries. They have also successfully shifted the narrative about nutrition from corporate responsibility to individual choice (Moodie et al., 2013).

Corporate Marketing to Children

Food corporations spend billions of dollars marketing to children. Marketing influences children's food preferences, consumption patterns, and health outcomes. It promotes ultra-processed foods that are high in sugar, fat, and salt and low in nutritional value. The marketing of unhealthy food to children is a significant contributor to childhood obesity and chronic disease (Moodie et al., 2013).

Marketing to children is particularly harmful in low and middle-income countries, where children are more vulnerable to marketing and less protected by regulation. The expansion of food corporations into these countries has led to increases in obesity and chronic disease. Addressing this requires regulation of marketing to children and support for healthy food environments (Moodie et al., 2013).

The Commercial Determinants of Nutrition

The commercial determinants of nutrition framework recognises that nutrition is shaped by commercial actors, including food corporations. These actors have substantial influence over

nutrition through their products, marketing, and political influence. The commercial determinants framework challenges the idea that nutrition is simply about individual choice and personal responsibility (Moodie et al., 2013).

The commercial determinants of nutrition are evident in the global expansion of ultra-processed foods. These foods are aggressively marketed, widely available, and often cheaper than nutritious alternatives. They are a major driver of the global nutrition crisis. Addressing the commercial determinants of nutrition requires regulation of food corporations and support for healthy food environments (Moodie et al., 2013).

24.4 Food Sovereignty and Food Justice

Alternative approaches to food systems challenge the corporate food system and its assumptions. Food sovereignty and food justice are frameworks that centre the rights of communities to control their own food systems.

Food Sovereignty

Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It challenges the corporate food system and its emphasis on production, trade, and profit (Patel, 2012).

Food sovereignty has several principles. It prioritises local food production and consumption. It supports small-scale farmers and producers. It promotes agroecology and sustainable agriculture. It centres the rights of communities to control their own food systems. Food sovereignty is a framework for resistance against the corporate food system (Patel, 2012).

Food Justice

Food justice is a framework that addresses the structural inequalities in the food system. It recognises that food systems are shaped by systemic racism, economic inequality, and political exclusion. It centres the voices and experiences of those who are most affected by food injustice (Alkon & Agyeman, 2011).

Food justice involves several principles. It requires that all people have access to healthy, affordable, and culturally appropriate food. It requires that food workers and producers are treated fairly. It requires that communities have control over their own food systems. It requires addressing the root causes of food injustice, including systemic racism and economic inequality (Alkon & Agyeman, 2011).

Critiques and Limitations

Food sovereignty and food justice have been subject to critique. One critique is that they are idealistic and difficult to implement. The corporate food system is deeply entrenched, and challenging it requires significant political and economic power. Food sovereignty and food justice movements have struggled to achieve scale and influence (Patel, 2012).

Another critique is that food sovereignty and food justice can be exclusionary. They can centre the interests of some groups while marginalising others. They can be co-opted by dominant actors, such as corporations and governments, to legitimate policies that do not advance their goals (Patel, 2012).

A third critique is that food sovereignty and food justice are insufficiently attentive to power dynamics within communities. Communities are not homogeneous; they are characterised by power dynamics, competing interests, and internal divisions. Food sovereignty and food justice must attend to these dynamics and ensure that all voices are heard (Patel, 2012).

24.5 Nutrition Policy and Programs: Critical Perspectives

Nutrition policy and programmes are widely used to address malnutrition. Yet they are often limited by their assumptions, their implementation, and the political context in which they operate.

The Individual Responsibility Frame

Many nutrition policies and programmes focus on individual behaviour and responsibility. They assume that malnutrition is caused by poor choices and that individuals can improve their nutrition through education and willpower. This individual responsibility frame has been subject to significant critique (Guthman & DuPuis, 2006).

The individual responsibility frame has several limitations. It neglects the structural determinants of malnutrition, including the corporate food system, inequality, and poverty. It blames individuals for their health outcomes, ignoring the constraints they face. It places the burden of change on individuals rather than on the systems that produce malnutrition. It can be used to justify policies that do not address the root causes of malnutrition (Guthman & DuPuis, 2006).

The Medicalisation of Nutrition

Nutrition has become increasingly medicalised. Nutrition is framed as a clinical issue, with interventions focused on individual patients rather than populations. This medicalisation has been subject to critique (Guthman & DuPuis, 2006).

The medicalisation of nutrition has several limitations. It focuses on treatment rather than prevention. It addresses individual cases of malnutrition rather than the systemic drivers. It can create dependence on healthcare systems rather than supporting community empowerment. It can be co-opted by corporate interests, such as the pharmaceutical and food industries (Guthman & DuPuis, 2006).

Structural Approaches to Nutrition

Structural approaches to nutrition address the root causes of malnutrition. They focus on the food system, the built environment, and the political context. They seek to create conditions that make healthy eating easier and more accessible. They challenge the individual responsibility frame and the medicalisation of nutrition (Guthman & DuPuis, 2006).

Structural approaches to nutrition include several strategies. They include regulation of food marketing, especially to children. They include taxes on unhealthy foods and subsidies for healthy foods. They include changes to the built environment, such as improving access to fresh food and promoting active transport. They include support for local food production and food sovereignty. These strategies have the potential to address the root causes of malnutrition (Guthman & DuPuis, 2006).

24.6 Climate Change, Food Systems, and Nutrition

Climate change poses significant threats to food systems and nutrition. It affects food production, distribution, and access. It exacerbates existing food system inequities. Addressing climate change is essential for addressing the nutrition crisis.

Climate Change and Food Production

Climate change is affecting food production in multiple ways. It is changing growing conditions, including temperature, rainfall, and growing seasons. It is increasing the frequency and intensity of extreme weather events, including droughts, floods, and heatwaves. It is reducing yields of staple crops in many regions (IPCC, 2022).

The effects of climate change on food production are distributed unequally. Low and middle-income countries are more affected, despite contributing less to greenhouse gas emissions. Farmers in these countries have fewer resources to adapt to climate change. The impacts on food production exacerbate existing food system inequities (IPCC, 2022).

Climate Change and Food Access

Climate change affects food access in multiple ways. It increases food prices, making food less affordable. It reduces food availability, making food less accessible. It disrupts food supply chains, making food less reliable. The effects are greatest for marginalised populations, who have fewer resources to cope with higher prices and reduced availability (IPCC, 2022).

Climate change also affects food quality. Higher temperatures can reduce the nutritional content of crops. More extreme weather can increase food contamination. The effects on food quality exacerbate existing nutritional deficiencies (IPCC, 2022).

Climate Change and Food Justice

Climate change is a food justice issue. The people who are most affected by climate change are those who have contributed the least to greenhouse gas emissions. Within countries, the people who are most affected are those who are already marginalised. Climate change exacerbates existing food system inequities (Patel, 2012).

Addressing climate change requires food system transformation. It requires reducing greenhouse gas emissions from agriculture. It requires building resilience in food systems. It requires addressing the structural drivers of food system inequities. Food sovereignty and food justice provide frameworks for this transformation (Patel, 2012).

24.7 Key Takeaways

Food systems are not neutral technical systems; they are shaped by power, politics, and economic interests (Clapp, 2021)

The corporate food system, dominated by transnational corporations, is a major driver of the global nutrition crisis (Moodie et al., 2013)

The nutrition transition, driven by the corporate food system, is associated with rising rates of obesity and chronic disease (Popkin, 2006)

Corporate power influences food and nutrition policy, marketing, and public discourse (Moodie et al., 2013)

Food sovereignty and food justice offer alternative frameworks that centre community rights and challenge corporate power (Patel, 2012; Alkon & Agyeman, 2011)

The individual responsibility frame in nutrition policy neglects structural determinants and blames individuals for systemic problems (Guthman & DuPuis, 2006)

Structural approaches to nutrition address the root causes of malnutrition, including the food system, the built environment, and political context (Guthman & DuPuis, 2006)

Climate change poses significant threats to food systems and nutrition, with inequitable impacts on marginalised populations (IPCC, 2022)

Addressing the nutrition crisis requires transforming food systems, challenging corporate power, and addressing structural inequities

Chapter 25

Mental Health and Wellbeing

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of mental health and its relationship to social, economic, and political structures

Evaluate the limitations of dominant mental health frameworks and their assumptions about diagnosis, treatment, and recovery

Assess the role of power, inequality, and colonialism in shaping mental health outcomes and responses

Analyse alternative and critical approaches to mental health, including community-based and decolonial models

Apply critical mental health perspectives to contemporary public health challenges

25.1 What Is Mental Health? A Critical Examination

Mental health is conventionally defined as a state of wellbeing in which an individual realises their own abilities, can cope with the normal stresses of life, can work productively, and is able to contribute to their community (WHO, 2021). This definition, while widely accepted, obscures significant debates about the nature of mental health, the causes of mental distress, and the appropriate responses.

The Medical Model of Mental Health

The dominant model of mental health is medical. It frames mental health problems as illnesses that can be diagnosed and treated. It focuses on individual biology and psychology, neglecting the social, economic, and political determinants of mental health. The medical model has been influential in shaping mental health policy, research, and practice (Bracken & Thomas, 2005).

The medical model has been subject to significant critique. Critics argue that it pathologises normal human experiences, such as sadness, anxiety, and distress. It reduces complex human experiences to biological dysfunctions. It neglects the role of social context in shaping mental health. It creates dependence on professional expertise and pharmaceutical treatments (Bracken & Thomas, 2005).

The Social Model of Mental Health

The social model of mental health emphasises the role of social, economic, and political factors in shaping mental health. It recognises that mental distress is often a response to social adversity, including poverty, inequality, discrimination, and trauma. It challenges the medical model's focus on individual pathology (Bracken & Thomas, 2005).

The social model has been influential in shifting attention to the social determinants of mental health. It has been used to advocate for policies that address poverty, inequality, and discrimination. It has also been used to challenge the over-reliance on pharmaceutical treatments and to advocate for community-based and social interventions (Bracken & Thomas, 2005).

Mental Health as a Social Construction

Mental health is not simply a biological or psychological phenomenon; it is also socially constructed. What is defined as normal or abnormal, healthy or unhealthy, varies across cultures and over time. The categories used to classify mental health problems reflect social norms, values, and power relations (Bracken & Thomas, 2005).

The social construction of mental health is evident in the history of psychiatry. Conditions that were once considered mental illnesses, such as homosexuality, are no longer classified as such. Conditions that are now considered mental illnesses, such as attention deficit hyperactivity disorder, were not recognised in the past. The classification of mental health problems reflects social, cultural, and political factors, not just scientific evidence (Bracken & Thomas, 2005).

Table 25.1. Mental Health: Levels of Influence and Response

Concept or area	What it means	Why it matters in practice
Individual	Symptoms, coping, skills and personal circumstances	Supports appropriate clinical and psychosocial care.
Family and community	Relationships, social support, stigma and belonging	Can protect mental health or increase distress.
Institutions	Schools, workplaces, health services and prisons	Shape exposure to stress and access to support.
Structural conditions	Poverty, inequality, discrimination, conflict and housing	Create or constrain the conditions in which mental health is experienced.
Humanitarian settings	Displacement, loss, violence and disrupted services	Require layered support that protects safety, dignity and continuity of care.

25.2 The Social Determinants of Mental Health

Mental health is shaped by social, economic, and political factors. The social determinants of mental health include poverty, inequality, discrimination, trauma, and social exclusion. Addressing mental health requires attending to these determinants.

Poverty and Mental Health

Poverty is a fundamental determinant of mental health. People living in poverty are more likely to experience mental health problems, including depression, anxiety, and substance use disorders. They are also less likely to have access to mental health services. The relationship between poverty and mental health is bidirectional: poverty increases the risk of mental health problems, and mental health problems increase the risk of poverty (Lund et al., 2010).

The relationship between poverty and mental health is produced by multiple pathways. Poverty creates stress, including financial stress, housing stress, and food insecurity. Poverty limits access to resources, including healthcare, education, and social support. Poverty exposes people to violence, trauma, and discrimination. Addressing poverty is essential for addressing mental health inequities (Lund et al., 2010).

Inequality and Mental Health

Inequality is a significant determinant of mental health. Societies with greater income inequality have higher rates of mental health problems, including depression, anxiety, and substance use

disorders. The relationship between inequality and mental health is evident across countries and within countries (Wilkinson & Pickett, 2009).

The relationship between inequality and mental health is produced by multiple pathways. Inequality creates social status anxiety, as people worry about their position in the social hierarchy. Inequality erodes social cohesion, reducing social support and increasing social isolation. Inequality limits access to resources, including healthcare, education, and employment (Wilkinson & Pickett, 2009).

Discrimination and Mental Health

Discrimination is a significant determinant of mental health. People who experience discrimination, including racism, sexism, homophobia, and ableism, are more likely to experience mental health problems. Discrimination creates stress, limits opportunities, and erodes self-esteem (Williams et al., 2003).

The relationship between discrimination and mental health is produced by multiple pathways. Discrimination creates acute and chronic stress. Discrimination limits access to resources, including employment, housing, and healthcare. Discrimination erodes social support and increases social isolation. Addressing discrimination is essential for addressing mental health inequities (Williams et al., 2003).

Trauma and Mental Health

Trauma is a significant determinant of mental health. People who experience trauma, including abuse, violence, and displacement, are more likely to experience mental health problems. Trauma can have lasting effects on mental health, including post-traumatic stress disorder, depression, and anxiety (SAMHSA, 2014).

Trauma is not distributed equally. Marginalised populations are more likely to experience trauma, including interpersonal violence, community violence, and structural violence. The burden of trauma reflects systemic inequalities, including poverty, racism, and colonialism. Addressing trauma requires addressing its root causes (SAMHSA, 2014).

25.3 Colonialism and Mental Health

Colonialism has profound implications for mental health. Colonialism disrupted Indigenous ways of life, undermined Indigenous knowledge systems, and imposed foreign political, economic, and social systems. The legacy of colonialism continues to shape mental health inequities.

Historical Trauma

Historical trauma is the cumulative emotional and psychological wounding over the lifespan and across generations, emanating from massive group trauma. Indigenous peoples have experienced historical trauma through colonisation, including dispossession, cultural suppression, and violence. Historical trauma has lasting effects on mental health (Brave Heart, 2003).

The effects of historical trauma are evident in the mental health of Indigenous peoples. Indigenous populations have higher rates of depression, anxiety, and suicide. They have higher rates of substance use disorders. They have higher rates of intergenerational trauma. Addressing Indigenous mental health requires addressing historical trauma (Brave Heart, 2003).

Colonial Mental Health Systems

Mental health systems in many countries are shaped by colonial legacies. They impose Western models of mental health on diverse populations. They neglect Indigenous knowledge and practices. They can be instruments of control rather than healing (Smith, 2021).

The colonial nature of mental health systems is evident in the overrepresentation of Indigenous peoples in psychiatric institutions. It is evident in the use of mental health diagnoses to justify the removal of Indigenous children from their families. It is evident in the neglect of Indigenous knowledge and practices in mental health services. Decolonising mental health requires transforming these systems (Smith, 2021).

Decolonising Mental Health

Decolonising mental health involves challenging the colonial legacies of mental health systems and practice. It involves centring Indigenous and non-Western knowledge systems. It involves shifting power to communities. It involves addressing the structural determinants of mental health inequities (Smith, 2021).

Decolonising mental health requires several strategies. It requires recognising the validity of Indigenous knowledge and practices. It requires creating mental health services that are culturally appropriate and community-led. It requires addressing the structural determinants of mental health inequities, including poverty, discrimination, and historical trauma. It requires challenging the power relations that shape mental health systems and practice (Smith, 2021).

25.4 Mental Health Systems: Critical Perspectives

Mental health systems are the institutions and services that provide mental health care. They are shaped by power, politics, and economic interests. They often fail to meet the needs of the populations they serve.

The Limitations of Biomedical Mental Health Systems

Biomedical mental health systems have significant limitations. They focus on individual pathology, neglecting the social determinants of mental health. They rely on pharmaceutical treatments, which may have limited effectiveness and significant side effects. They are often inaccessible, particularly for marginalised populations (Bracken & Thomas, 2005).

Biomedical mental health systems can also be harmful. They can pathologise normal human experiences. They can create dependence on professional expertise and pharmaceutical treatments. They can stigmatise people with mental health problems. They can be instruments of social control, particularly for marginalised populations (Bracken & Thomas, 2005).

Community-Based Mental Health

Community-based mental health offers an alternative to biomedical systems. It emphasises prevention, early intervention, and community support. It is grounded in the principle that mental health is not just an individual issue but a community issue. Community-based mental health has been influential in mental health reform (Thornicroft & Tansella, 2003).

Community-based mental health has several strengths. It is more accessible than hospital-based care. It is more acceptable to communities. It is more cost-effective. It promotes social inclusion and recovery. It challenges the power relations of biomedical systems (Thornicroft & Tansella, 2003).

However, community-based mental health has limitations. It can be under-resourced and underfunded. It can be co-opted by dominant institutions. It can shift responsibility from the state to communities without providing adequate resources. It can be tokenistic, with communities consulted but not empowered (Thornicroft & Tansella, 2003).

Mental Health and the Criminal Justice System

The criminal justice system is a significant provider of mental health services in many countries. People with mental health problems are overrepresented in prisons and jails. They often receive inadequate mental health care in these settings. The criminalisation of mental health problems reflects systemic failures in mental health systems (SAMHSA, 2014).

The criminalisation of mental health is produced by multiple factors. Mental health services are inadequate and inaccessible, leading people with mental health problems to come into contact with the criminal justice system. The criminal justice system is ill-equipped to address mental health problems, leading to further harm. The criminalisation of mental health reflects systemic inequalities, including poverty, racism, and discrimination (SAMHSA, 2014).

25.5 Mental Health and Wellbeing: Alternative Approaches

Alternative approaches to mental health challenge dominant models and offer new possibilities for promoting wellbeing. These approaches emphasise community, culture, and connection.

Psychosocial Approaches

Psychosocial approaches emphasise the role of social and psychological factors in mental health. They recognise that mental distress is often a response to social adversity. They focus on addressing the social determinants of mental health. They emphasise the importance of relationships, meaning, and purpose (Bracken & Thomas, 2005).

Psychosocial approaches have been influential in mental health practice. They have been used to develop interventions that address poverty, inequality, and discrimination. They have been used to support recovery and social inclusion. They have challenged the dominance of biomedical models (Bracken & Thomas, 2005).

Recovery-Oriented Approaches

Recovery-oriented approaches emphasise the possibility of recovery from mental health problems. They recognise that recovery is a personal journey that is unique to each individual. They emphasise hope, autonomy, and meaning. They challenge the pessimism of biomedical models (Anthony, 1993).

Recovery-oriented approaches have been influential in mental health policy and practice. They have been used to develop services that support recovery rather than just managing symptoms. They have challenged the power relations of biomedical systems. They have been used to advocate for the rights of people with mental health problems (Anthony, 1993).

Cultural and Spiritual Approaches

Cultural and spiritual approaches recognise the importance of culture and spirituality in mental health. They recognise that mental health is shaped by cultural values, beliefs, and practices. They emphasise the importance of cultural identity, community, and connection. They challenge the dominance of Western biomedical models (Smith, 2021).

Cultural and spiritual approaches have been influential in Indigenous mental health. They have been used to develop culturally appropriate services that incorporate traditional healing practices. They have been used to support cultural revitalisation and community healing. They have challenged the colonial legacies of mental health systems (Smith, 2021).

25.6 Mental Health in Humanitarian Emergencies

Mental health is a significant concern in humanitarian emergencies. Emergencies, including armed conflicts, natural disasters, and disease outbreaks, cause widespread trauma, loss, and disruption. They undermine mental health and wellbeing.

Mental Health Impacts of Emergencies

Emergencies have profound mental health impacts. They cause trauma, including exposure to violence, loss of loved ones, and displacement. They disrupt social networks and support systems. They create uncertainty and stress. The mental health impacts of emergencies can be long-lasting (WHO, 2013).

The mental health impacts of emergencies are not distributed equally. Marginalised populations are more vulnerable to the mental health impacts of emergencies. They are more likely to be exposed to trauma and less likely to have access to support. They are also more likely to experience long-term mental health problems (WHO, 2013).

Mental Health Responses in Emergencies

Mental health responses in emergencies are often inadequate. They are under-funded and under-prioritised. They focus on immediate needs rather than long-term recovery. They are often fragmented and uncoordinated. They neglect the social determinants of mental health (WHO, 2013).

Effective mental health responses in emergencies require several strategies. They require immediate psychological first aid and support. They require addressing basic needs, including food, shelter, and safety. They require rebuilding social networks and community support. They require addressing the root causes of mental health problems, including poverty, inequality, and discrimination (WHO, 2013).

25.7 Key Takeaways

Mental health is not simply a biological or psychological phenomenon; it is shaped by social, economic, and political structures

The medical model of mental health pathologises normal human experiences and neglects social determinants (Bracken & Thomas, 2005)

The social model emphasises the role of poverty, inequality, discrimination, and trauma in shaping mental health (Bracken & Thomas, 2005)

Colonialism has profound implications for mental health, including historical trauma and colonial mental health systems (Brave Heart, 2003; Smith, 2021)

Biomedical mental health systems have significant limitations and can be harmful (Bracken & Thomas, 2005)

Community-based mental health offers an alternative but faces challenges of resourcing and co-optation (Thornicroft & Tansella, 2003)

The criminal justice system is a significant provider of mental health services, reflecting systemic failures (SAMHSA, 2014)

Alternative approaches, including psychosocial, recovery-oriented, and cultural approaches, challenge dominant models (Anthony, 1993; Bracken & Thomas, 2005; Smith, 2021)

Mental health in humanitarian emergencies is often neglected, requiring integrated responses that address immediate needs and root causes (WHO, 2013)

Addressing mental health inequities requires action on the social determinants, decolonising mental health systems, and centring community voices

Chapter 26

Gender and Health

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the relationship between gender, power, and health outcomes

Evaluate the limitations of dominant gender and health frameworks and their assumptions about sex and gender

Assess the role of patriarchy, colonialism, and structural inequality in shaping gender-based health inequities

Analyse alternative and critical approaches to gender and health, including intersectional and feminist perspectives

Apply critical gender and health perspectives to contemporary public health challenges

26.1 What Is Gender? A Critical Examination

Gender is conventionally understood as a binary system of social roles, behaviours, and attributes that societies consider appropriate for men and women. This understanding, while widely held, obscures significant complexities about the nature of gender, its relationship to power, and its implications for health.

Sex and Gender: A Critical Distinction

Public health discourse often distinguishes between sex and gender. Sex is understood as biological, referring to chromosomal, hormonal, and anatomical characteristics. Gender is understood as social, referring to roles, behaviours, and identities that societies construct. This distinction has been important for recognising that gender is not simply a biological fact (Krieger, 2003).

However, the sex/gender distinction has been subject to critique. Critics argue that it reifies sex as biological and natural, obscuring the social construction of sex itself. It treats sex as binary and fixed, obscuring the diversity of biological variation. It assumes that gender is socially constructed while sex is not, reinforcing a problematic nature/culture distinction (Krieger, 2003).

Gender as a Social Structure

Gender is not simply an individual attribute; it is a social structure. It organises social relations, distributes resources, and shapes opportunities. It is embedded in institutions, including the family, education, employment, and healthcare. It is reproduced through everyday practices and interactions (Connell, 2002).

Gender as a social structure has profound implications for health. It shapes exposure to health risks, access to resources, and interactions with health systems. It produces systematic differences in health outcomes between men and women, and among people of different genders. Addressing gender-based health inequities requires attending to gender as a social structure (Connell, 2002).

Gender, Power, and Intersectionality

Gender is inseparable from power. Patriarchy is a system of social relations in which men hold power and women are subordinated. Patriarchy shapes health in multiple ways, including through gender-based violence, unequal access to resources, and discrimination in healthcare (Connell, 2002).

Gender is also inseparable from other systems of power, including race, class, colonialism, and sexuality. Intersectionality is a framework that recognises the multiple, intersecting systems of oppression that shape people's lives. It recognises that gender-based health inequities are not experienced uniformly; they are shaped by other dimensions of identity and inequality (Crenshaw, 1991).

Table 26.1. Gender and Health: Questions for Analysis

Concept or area	What it means	Why it matters in practice
Gender roles	What behaviours and responsibilities are expected of different groups?	Can shape exposure, care work, risk and access to services.
Power	Who controls resources and decisions?	Helps explain unequal health opportunities and outcomes.
Masculinities and femininities	How are gender identities and norms expressed?	Shows that gender affects everyone, not only women.
Intersectionality	How do gender, race, class, disability, age and other positions interact?	Prevents one category from hiding differences within a population.
Gender transformation	Can the intervention change harmful structures and norms?	Moves beyond adapting services to challenging the causes of inequality.

26.2 Gender-Based Health Inequities

Gender is a fundamental determinant of health. Gender-based health inequities are systematic differences in health outcomes between men and women, and among people of different genders. These inequities are produced by social, economic, and political structures, not by biology alone.

Mortality and Morbidity

Women live longer than men in most countries. However, women experience higher rates of morbidity and disability. The paradox of lower mortality and higher morbidity reflects gender differences in health-seeking behaviour, healthcare utilisation, and exposure to risk (Krieger, 2003).

Men have higher rates of mortality from many causes, including cardiovascular disease, cancer, and injury. Men are also more likely to engage in risky behaviours, including tobacco use, alcohol consumption, and unsafe driving. These differences reflect gender norms about masculinity, which encourage risk-taking and discourage health-seeking (Krieger, 2003).

Reproductive Health

Reproductive health is a significant area of gender-based health inequity. Women bear the burden of pregnancy and childbirth, which carry significant health risks. Women also bear the burden of contraception, which is often inequitably distributed between men and women (WHO, 2019).

Access to reproductive health services is often limited, particularly for marginalised women. Restrictions on abortion, contraception, and reproductive healthcare undermine women's health

and autonomy. The regulation of reproductive health reflects patriarchal control over women's bodies and reproduction (WHO, 2019).

Gender-Based Violence

Gender-based violence is a significant cause of morbidity and mortality. It includes intimate partner violence, sexual violence, and female genital mutilation. It affects women disproportionately, reflecting patriarchal power relations (WHO, 2021).

Gender-based violence has profound health consequences. It causes physical injuries, mental health problems, and chronic health conditions. It undermines women's autonomy and wellbeing. It reflects and reinforces gender inequalities. Addressing gender-based violence requires action on gender inequality and patriarchal power (WHO, 2021).

26.3 Patriarchy and Health

Patriarchy is a system of social relations in which men hold power and women are subordinated. Patriarchy shapes health in multiple ways, including through the distribution of resources, the organisation of healthcare, and the production of health knowledge.

Patriarchal Medicine

Medicine has been shaped by patriarchy. Historically, medicine has been dominated by men, and the medical profession has reflected and reinforced patriarchal values. Women's health has been pathologised, with normal life events, including menstruation, pregnancy, and menopause, being medicalised (Ehrenreich & English, 1973).

Patriarchal medicine continues to shape healthcare today. Women's health concerns are often dismissed or minimised. Women are more likely to be diagnosed with mental health problems and prescribed psychotropic medications. Women's bodies are subject to medical control and surveillance, particularly in pregnancy and childbirth (Ehrenreich & English, 1973).

Gender Bias in Health Research

Health research has been shaped by gender bias. Historically, research has focused on men, with women being excluded from clinical trials. The results of research on men have been generalised to women, despite biological and social differences (Krieger, 2003).

The exclusion of women from research has had significant consequences. It has led to gaps in knowledge about women's health. It has led to treatments that are not effective or safe for women. It has reinforced gender biases in medicine and public health. Addressing gender bias requires including women in research and analysing data by sex and gender (Krieger, 2003).

Gender and Healthcare Access

Gender shapes access to healthcare. Women face barriers to accessing healthcare, including financial barriers, transportation barriers, and discrimination. Men face barriers to accessing healthcare, including gender norms that discourage health-seeking and the lack of male-friendly services (WHO, 2019).

Healthcare systems are often not designed to meet the needs of all genders. They are often oriented toward the needs of men, with services that are not accessible or acceptable to women. They are also often oriented toward the needs of cisgender people, with services that are not accessible or acceptable to transgender and gender-diverse people (WHO, 2019).

26.4 Masculinities, Femininities, and Health

Gender is not a simple binary; it is a spectrum of identities and expressions. Masculinities and femininities are socially constructed ideals that shape health behaviours, access to care, and health outcomes.

Masculinity and Health

Masculinity is a social construction that includes norms, values, and expectations about what it means to be a man. Dominant masculinity norms include stoicism, risk-taking, and the avoidance of femininity. These norms shape men's health in multiple ways (Courtenay, 2000).

Men are socialised to be stoic, which discourages health-seeking and emotional expression. They are socialised to be risk-takers, which leads to higher rates of injury and violence. They are socialised to avoid femininity, which leads to the avoidance of behaviours perceived as feminine, including health-seeking and emotional expression. These norms contribute to men's higher rates of mortality from many causes (Courtenay, 2000).

Femininity and Health

Femininity is a social construction that includes norms, values, and expectations about what it means to be a woman. Dominant femininity norms include nurturing, appearance, and passivity. These norms shape women's health in multiple ways (Courtenay, 2000).

Women are socialised to be nurturers, which leads to caregiving responsibilities that can undermine health. They are socialised to focus on appearance, which leads to body dissatisfaction and eating disorders. They are socialised to be passive, which leads to the acceptance of violence and the neglect of their own needs. These norms contribute to women's higher rates of morbidity from many causes (Courtenay, 2000).

Queer Health

Lesbian, gay, bisexual, transgender, and queer people experience significant health inequities. They have higher rates of mental health problems, substance use disorders, and chronic conditions. They experience discrimination in healthcare, which undermines access and quality (Institute of Medicine, 2011).

The health inequities of LGBTQ+ people are produced by stigma, discrimination, and structural inequality. They reflect the marginalisation of LGBTQ+ people in society and in healthcare. Addressing these inequities requires addressing stigma and discrimination, creating inclusive healthcare services, and supporting LGBTQ+ communities (Institute of Medicine, 2011).

26.5 Feminist and Intersectional Perspectives

Feminist and intersectional perspectives offer critical approaches to gender and health. They challenge the assumptions of dominant frameworks and centre the experiences of marginalised populations.

Feminist Public Health

Feminist public health recognises that health is shaped by gender inequality. It challenges the male-dominated, patriarchal assumptions of public health. It centres women's voices and experiences. It advocates for policies that address gender-based health inequities (Krieger, 2003).

Feminist public health has been influential in shaping health policy and practice. It has been used to advocate for reproductive health rights, to address gender-based violence, and to challenge gender bias in health research. It has shifted attention from women's bodies to the social, economic, and political structures that shape women's health (Krieger, 2003).

Intersectionality

Intersectionality is a framework that recognises the multiple, intersecting systems of oppression that shape people's lives. It recognises that gender is not experienced uniformly; it is shaped by race, class, colonialism, sexuality, and other dimensions of identity and inequality (Crenshaw, 1991).

Intersectionality is essential for understanding health inequities. It recognises that health is shaped by multiple systems of power, not just gender. It recognises that women are not a homogeneous group; their health is shaped by their race, class, and other identities. It recognises that interventions must address multiple forms of oppression simultaneously (Crenshaw, 1991).

Critical Perspectives on Men's Health

Critical perspectives on men's health challenge the assumptions of men's health research and practice. They recognise that men are not a homogeneous group; their health is shaped by their race, class, and other identities. They recognise that masculinity is not fixed; it varies across cultures and over time. They recognise that men's health inequities are produced by gender norms, structural inequality, and power relations (Courtenay, 2000).

Critical perspectives on men's health have been influential in shifting practice. They have been used to develop interventions that challenge harmful masculinity norms and promote healthier masculinities. They have been used to advocate for policies that address the structural determinants of men's health (Courtenay, 2000).

26.6 Gender Transformative Health Approaches

Gender transformative approaches address the root causes of gender-based health inequities. They challenge gender norms, redistribute power, and promote gender equality. They go beyond gender-sensitive approaches, which simply recognise gender differences, and gender-specific approaches, which focus on one gender.

What Is a Gender Transformative Approach?

A gender transformative approach seeks to transform gender relations. It challenges harmful gender norms and stereotypes. It redistributes power between genders. It promotes gender equality. It addresses the structural determinants of gender-based health inequities (WHO, 2019).

Gender transformative approaches are essential for addressing the root causes of gender-based health inequities. They go beyond treating symptoms and address the underlying causes. They have the potential to produce lasting change in gender relations and health outcomes (WHO, 2019).

Interventions That Transform Gender Norms

Several interventions have been developed to transform gender norms. These interventions challenge harmful masculinity norms, including stoicism, risk-taking, and the avoidance of femininity. They promote healthier masculinities that value health-seeking, emotional expression, and caregiving (WHO, 2019).

Interventions that transform gender norms also address gender-based violence, including intimate partner violence and sexual violence. They challenge the norms that condone violence and promote

gender equality. They have been shown to reduce violence and improve health outcomes (WHO, 2019).

Addressing Structural Gender Inequality

Addressing structural gender inequality requires policy change. It requires policies that promote gender equality in education, employment, and political participation. It requires policies that address the gender pay gap and the burden of unpaid care work. It requires policies that support reproductive rights and health (WHO, 2019).

Addressing structural gender inequality also requires institutional change. It requires transforming healthcare institutions to be more gender-sensitive and inclusive. It requires training healthcare providers to recognise and address gender bias. It requires involving women and gender-diverse people in decision-making (WHO, 2019).

26.7 Key Takeaways

Gender is not simply an individual attribute; it is a social structure that organises social relations, distributes resources, and shapes opportunities (Connell, 2002)

The sex/gender distinction has been important but has been subject to critique for reifying sex as biological and natural (Krieger, 2003)

Gender-based health inequities are produced by social, economic, and political structures, not by biology alone

Patriarchy shapes health through the distribution of resources, the organisation of healthcare, and the production of health knowledge (Ehrenreich & English, 1973)

Masculinities and femininities are socially constructed ideals that shape health behaviours, access to care, and health outcomes (Courtenay, 2000)

LGBTQ+ people experience significant health inequities produced by stigma, discrimination, and structural inequality (Institute of Medicine, 2011)

Intersectionality is essential for understanding health inequities, recognising the multiple, intersecting systems of oppression that shape people's lives (Crenshaw, 1991)

Feminist public health centres women's voices and experiences and advocates for policies that address gender-based health inequities (Krieger, 2003)

Gender transformative approaches address the root causes of gender-based health inequities by challenging gender norms, redistributing power, and promoting gender equality (WHO, 2019)

Addressing gender-based health inequities requires action at multiple levels, from individual behaviour to policy change

Chapter 27

Health Economics

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the assumptions and values underlying health economic theory and practice

Evaluate the limitations of dominant health economic frameworks and their implications for equity and justice

Assess the role of power, corporate influence, and ideology in shaping health economic policy

Analyse alternative and critical approaches to health economics, including feminist and political economy perspectives

Apply critical health economic perspectives to contemporary public health challenges

27.1 What Is Health Economics? A Critical Examination

Health economics is conventionally defined as the study of how scarce resources are allocated to and within the health sector. It applies economic principles to health and healthcare. This framing, while widely accepted, obscures significant assumptions, values, and power relations that shape health economic theory and practice.

The Neoclassical Foundations of Health Economics

Health economics is grounded in neoclassical economics. Neoclassical economics assumes that individuals are rational actors who maximise their utility. It assumes that markets are efficient allocators of resources. It assumes that value is determined by willingness to pay. These assumptions are deeply problematic when applied to health (Braveman et al., 2005).

Neoclassical economics is not a neutral science; it is a value system. It prioritises efficiency over equity, individual choice over collective wellbeing, and market outcomes over social justice. These values are embedded in the methods and tools of health economics. They shape what is studied, how it is studied, and how findings are interpreted (Braveman et al., 2005).

The application of neoclassical economics to health has been subject to significant critique. Critics argue that health is not a commodity that can be bought and sold like any other. They argue that healthcare is not a market like any other, with significant information asymmetries, externalities, and equity concerns. They argue that the assumptions of neoclassical economics are often violated in health and healthcare (Braveman et al., 2005).

Efficiency Versus Equity

Health economics is often framed as a technical exercise in balancing efficiency and equity. Efficiency is about getting the most health from limited resources. Equity is about distributing health and healthcare fairly. The tension between efficiency and equity is central to health economic analysis and policy (Braveman et al., 2005).

However, the framing of efficiency versus equity is misleading. Efficiency and equity are not always in tension; they can be mutually reinforcing. Policies that promote equity can also promote

efficiency, by addressing the root causes of poor health and reducing healthcare costs. The framing of efficiency versus equity also obscures the value judgments involved. Prioritising efficiency over equity is a political choice, not a technical one (Braveman et al., 2005).

The Political Economy of Health Economics

Health economics is not a neutral technical exercise; it is shaped by power and politics. The questions that are studied, the methods that are used, and the findings that are emphasised reflect the interests of those who fund and conduct research. Health economics has often served the interests of dominant actors, including governments, insurers, and corporations (Navarro, 2009).

The political economy of health economics is evident in the focus on cost-effectiveness and efficiency. These concepts serve the interests of those who want to contain costs, including governments and insurers. They can be used to justify rationing, austerity, and the privatisation of healthcare. They often neglect equity and the social determinants of health (Navarro, 2009).

Table 27.1. Health Economics: Questions That Shape Decisions

Concept or area	What it means	Why it matters in practice
Scarcity	What resources are available and what competing uses exist?	Makes opportunity costs explicit.
Efficiency	What health benefit is produced from available resources?	Helps compare competing interventions.
Equity	Who gains, who pays and who may be left behind?	Prevents efficiency from becoming the only decision criterion.
Financing	How are health services paid for?	Shapes access and financial protection.
Commercial influence	How do firms and markets affect health choices and policy?	Brings commercial determinants into economic analysis.
Distribution	How are costs and benefits shared across groups and time?	Adds fairness to conventional economic evaluation.

27.2 Economic Evaluation: Promises and Limitations

Economic evaluation is a set of methods for comparing the costs and benefits of different interventions. It includes cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis. Economic evaluation has become central to health policy and decision-making (Drummond et al., 2015).

Cost-Effectiveness Analysis

Cost-effectiveness analysis compares the costs and health outcomes of different interventions. It measures outcomes in natural units, such as lives saved or cases averted. It calculates the cost per unit of outcome. It is used to identify interventions that provide the most health for the money (Drummond et al., 2015).

Cost-effectiveness analysis has several strengths. It provides a systematic framework for comparing interventions. It makes trade-offs explicit. It can inform resource allocation decisions. It has been used to guide health policy in many countries (Drummond et al., 2015).

However, cost-effectiveness analysis has significant limitations. It focuses on efficiency, neglecting equity. It does not address who benefits and who bears the costs. It can be used to justify interventions that are efficient but inequitable. It can neglect the social determinants of health and the broader impacts of interventions (Drummond et al., 2015).

Cost-Utility Analysis

Cost-utility analysis is a type of cost-effectiveness analysis that measures outcomes in quality-adjusted life years. QALYs combine quantity and quality of life. They are used to compare interventions across different health conditions. Cost-utility analysis has been influential in health policy (Drummond et al., 2015).

Cost-utility analysis has been subject to significant critique. One critique is that QALYs are based on preferences that are shaped by social and cultural factors. They may not reflect what is most important to patients and communities. They can discriminate against people with disabilities, older adults, and other groups (Drummond et al., 2015).

Another critique is that QALYs are based on individual preferences, neglecting collective values and social justice. The aggregation of QALYs can obscure the distribution of benefits and burdens. It can justify interventions that benefit many people a little bit over interventions that benefit a few people a lot (Drummond et al., 2015).

Cost-Benefit Analysis

Cost-benefit analysis measures both costs and benefits in monetary terms. It calculates the net benefit of an intervention. It is used to determine whether an intervention is worth doing. Cost-benefit analysis has been used in health policy, particularly in environmental health (Drummond et al., 2015).

Cost-benefit analysis has been subject to significant critique. One critique is that it requires monetising health outcomes, which is ethically problematic. The value of a life or a year of healthy life cannot be reduced to a monetary amount. The monetisation of health outcomes reflects a market logic that is inappropriate for health (Drummond et al., 2015).

Another critique is that cost-benefit analysis is based on willingness to pay, which is shaped by income and wealth. It gives more weight to the preferences of those who are richer. It can justify interventions that benefit the rich over interventions that benefit the poor (Drummond et al., 2015).

27.3 Health Care Financing and Its Implications

Healthcare financing involves raising, pooling, and allocating resources for healthcare. The way healthcare is financed has profound implications for access, quality, and equity.

The Equity Implications of Financing Mechanisms

Different financing mechanisms have different equity implications. General taxation is progressive; it distributes the burden based on ability to pay. Social health insurance is also progressive. Out-of-pocket payments are regressive; they fall more heavily on those with less ability to pay (WHO, 2010).

The choice of financing mechanism reflects political choices, not just technical considerations. Governments that choose progressive financing mechanisms signal a commitment to equity. Governments that choose regressive financing mechanisms signal a commitment to other values, such as individual responsibility or market efficiency (WHO, 2010).

Private Health Insurance and Its Implications

Private health insurance has become increasingly important in many health systems. It is often presented as a way to improve efficiency and choice. However, private health insurance has significant implications for equity and access (WHO, 2010).

Private health insurance is often inequitable. It is more accessible to those who are healthier and wealthier. It creates a two-tiered system, with better access for those who can afford private insurance. It can undermine public health systems, by diverting resources and political support (WHO, 2010).

User Fees and Their Consequences

User fees are charges for healthcare services at the point of use. They are often justified as a way to raise revenue and reduce unnecessary use. However, user fees have been shown to have significant negative consequences (WHO, 2010).

User fees create barriers to access. They deter people from seeking care, particularly those who are poor. They can lead to financial hardship and catastrophic health spending. They can undermine health equity. The evidence suggests that user fees do not effectively reduce unnecessary use and that they are an inefficient way to raise revenue (WHO, 2010).

27.4 The Commercial Determinants of Health and Health Economics

Commercial actors have significant influence over health through their products, marketing, and political influence. Health economics has often neglected the commercial determinants of health, focusing instead on healthcare systems and individual behaviour. This neglect has significant implications for health policy and practice.

The Role of Corporations in Shaping Health

Corporations shape health in multiple ways. They produce and market products that affect health, including tobacco, alcohol, and ultra-processed foods. They influence policy through lobbying, campaign contributions, and public relations. They shape the information environment through marketing and media (Moodie et al., 2013).

The influence of corporations is often invisible in health economic analysis. Cost-effectiveness analysis focuses on interventions, not on the commercial forces that shape health. It does not address the root causes of health problems, including the commercial determinants. This neglect reflects the assumptions and values of health economics (Moodie et al., 2013).

Externalities and Corporate Power

Externalities are costs or benefits that are not reflected in market prices. Pollution from industrial production is a negative externality. The health benefits of vaccination are a positive externality. Externalities are central to health economics (Moodie et al., 2013).

However, health economics has often failed to adequately address corporate externalities. The costs of tobacco, alcohol, and ultra-processed foods are often externalised to individuals and society. Corporations do not bear the full costs of their products. The failure to address externalities reflects corporate power and the influence of corporate interests on health economic policy (Moodie et al., 2013).

Regulating Corporate Power

Regulating corporate power is essential for health. This includes regulation of products, marketing, and lobbying. It includes taxes on unhealthy products. It includes restrictions on marketing to children. It includes transparency in lobbying and political contributions (Moodie et al., 2013).

However, regulation faces significant challenges. Corporations have enormous resources to resist regulation. They lobby governments, fund research, and shape public discourse. The influence of corporations is evident in the weakness of regulation in many countries. Addressing the commercial determinants of health requires challenging corporate power (Moodie et al., 2013).

27.5 Health Economics and Health Equity

Health equity is a central concern of public health. However, health economics has often neglected equity, focusing instead on efficiency. This neglect has significant implications for health policy and practice.

Equity as a Health Economic Value

Equity is a value that should guide health economic analysis. It requires that the distribution of health and healthcare be fair. It requires that those who are worst off be prioritised. It requires that interventions do not widen inequities (Braveman et al., 2005).

However, equity is often neglected in health economic analysis. Cost-effectiveness analysis focuses on efficiency, not equity. It does not address who benefits and who bears the costs. It can justify interventions that are efficient but inequitable. The neglect of equity reflects the assumptions and values of health economics (Braveman et al., 2005).

Equity-Informed Health Economic Analysis

Equity-informed health economic analysis integrates equity into economic evaluation. It considers the distribution of costs and benefits across groups. It prioritises interventions that reduce inequities. It ensures that interventions do not widen inequities (Braveman et al., 2005).

Equity-informed analysis requires several strategies. It requires disaggregating data by subgroup. It requires using equity weights, which give more weight to health gains for disadvantaged groups. It requires considering the social determinants of health and the broader impacts of interventions. It requires involving communities in economic evaluation (Braveman et al., 2005).

Universal Health Coverage and Health Equity

Universal health coverage is the goal of ensuring that all people have access to health services without financial hardship. It is a central goal of health policy and is included in the Sustainable Development Goals. Universal health coverage has the potential to reduce health inequities (WHO, 2010).

However, universal health coverage is not sufficient for health equity. It does not address the social determinants of health. It can be undermined by poor-quality services. It can be undermined by user fees and other financial barriers. Achieving health equity requires universal health coverage plus action on the social determinants of health (WHO, 2010).

27.6 Alternative and Critical Approaches to Health Economics

Alternative approaches to health economics challenge the assumptions and values of neoclassical economics. They centre equity, justice, and the social determinants of health. They challenge the power relations that shape health economic policy.

Feminist Health Economics

Feminist health economics challenges the male-dominated, patriarchal assumptions of mainstream health economics. It recognises that health is shaped by gender inequality. It centres the experiences of women and marginalised groups. It advocates for policies that address gender-based health inequities (Krieger, 2003).

Feminist health economics has several contributions. It highlights the burden of unpaid care work, which is disproportionately carried by women. It challenges the focus on market outcomes, which neglects the informal economy and social reproduction. It advocates for policies that support women's health and wellbeing (Krieger, 2003).

Political Economy of Health

The political economy of health examines how political and economic systems shape health and health inequities. It recognises that health is shaped by the distribution of power and resources. It challenges the assumptions of neoclassical economics and advocates for systemic change (Navarro, 2009).

The political economy of health has several contributions. It highlights the role of capitalism in producing health inequities. It challenges the focus on individual behaviour and healthcare systems. It advocates for policies that address the structural determinants of health, including poverty, inequality, and discrimination (Navarro, 2009).

Decolonising Health Economics

Decolonising health economics involves challenging the colonial legacies of health economics. It recognises that health economics has been shaped by colonial power relations and Western values. It centres the perspectives and priorities of the Global South (Smith, 2021).

Decolonising health economics requires several strategies. It requires challenging the dominance of Western economic models. It requires centring local knowledge and priorities. It requires addressing the structural determinants of health inequities, including colonialism and neocolonialism. It requires shifting power from global north institutions to local communities (Smith, 2021).

27.7 Key Takeaways

Health economics is not a neutral technical exercise; it is shaped by assumptions, values, and power relations (Braveman et al., 2005)

Neoclassical economics prioritises efficiency over equity, individual choice over collective wellbeing, and market outcomes over social justice (Braveman et al., 2005)

Economic evaluation has significant limitations, including neglect of equity, distributional concerns, and social determinants (Drummond et al., 2015)

Healthcare financing has profound implications for equity, with progressive financing mechanisms promoting equity and regressive mechanisms undermining it (WHO, 2010)

The commercial determinants of health are often neglected in health economics, reflecting corporate power and influence (Moodie et al., 2013)

Equity-informed health economic analysis integrates equity into economic evaluation, prioritising interventions that reduce inequities (Braveman et al., 2005)

Alternative approaches, including feminist health economics, political economy, and decolonial approaches, challenge dominant frameworks (Krieger, 2003; Navarro, 2009; Smith, 2021)

Achieving health equity requires both universal health coverage and action on the social determinants of health (WHO, 2010)

Chapter 28

Implementation Science

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the assumptions and values underlying implementation science theory and practice

Evaluate the limitations of dominant implementation frameworks and their implications for equity and justice

Assess the role of power, context, and politics in shaping implementation success and failure

Analyse alternative and critical approaches to implementation, including participatory and decolonial models

Apply critical implementation science perspectives to public health challenges

28.1 What Is Implementation Science? A Critical Examination

Implementation science is conventionally defined as the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice. It aims to understand and address the gap between what is known and what is done in practice. This framing, while widely accepted, obscures significant assumptions, values, and power relations.

The Origins and Evolution of Implementation Science

Implementation science emerged from the recognition that evidence-based interventions often fail to reach practice. The gap between research and practice, sometimes called the "know-do gap," has been a persistent challenge in public health. Implementation science seeks to bridge this gap by studying the processes and factors that influence implementation (Eccles & Mittman, 2006).

The field has grown rapidly, with the development of numerous frameworks, theories, and methods. It has been influential in shaping health policy and practice. However, the field has also been subject to critique for its assumptions and limitations (Eccles & Mittman, 2006).

The Implementation Problem

The implementation problem is conventionally framed as a technical challenge: how to move evidence into practice. This framing assumes that the problem is one of translation, not of the evidence itself or of the context in which it is implemented. It assumes that evidence is objective and value-neutral, and that the challenge is simply to get practitioners to adopt it (Greenhalgh et al., 2004).

This framing has been subject to critique. Critics argue that the implementation problem is not just technical but political. Evidence is not objective; it is produced in contexts shaped by power and interests. The resistance to evidence is not just about lack of knowledge; it is about competing values, interests, and power relations. Addressing the implementation problem requires attending to these political dimensions (Greenhalgh et al., 2004).

The Politics of Implementation

Implementation is inherently political. It involves changing practices, which disrupts existing power relations and interests. Those who benefit from the status quo may resist change. Those who are disadvantaged may support it. The politics of implementation are often neglected in implementation science, which tends to focus on technical and behavioural factors (Greenhalgh et al., 2004).

The politics of implementation are evident in the resistance to evidence-based policies. Policies that threaten powerful interests, such as tobacco regulation or soda taxes, face significant opposition. The opposition is not just about evidence; it is about interests and power. Addressing the politics of implementation requires attending to these dynamics (Greenhalgh et al., 2004).

Table 28.1. Implementation Science: From Evidence to Practice

Concept or area	What it means	Why it matters in practice
Intervention	What is being implemented and how adaptable is it?	Clarifies the intervention and its core components.
Context	What external and organisational conditions affect delivery?	Explains why an intervention may work differently across settings.
People	Who must adopt, deliver or use the intervention?	Recognises skills, beliefs, workload and relationships.
Process	How will implementation be planned, monitored and adapted?	Turns implementation into an active learning process.
Equity	Who benefits, who is excluded and who bears the burden?	Makes equity part of implementation rather than an afterthought.
Power	Whose priorities define success?	Helps identify hidden barriers and opportunities for change.

28.2 Dominant Implementation Frameworks: A Critical Analysis

Several frameworks have been developed to guide implementation. These frameworks are often presented as evidence-based tools for improving implementation. Yet they embody assumptions, values, and power relations that are rarely examined.

The RE-AIM Framework

RE-AIM is a widely used framework for planning and evaluating implementation. It includes five dimensions: Reach, Effectiveness, Adoption, Implementation, and Maintenance. RE-AIM has been used extensively in public health (Glasgow et al., 1999).

RE-AIM has several strengths. It attends to both individual and organisational outcomes. It attends to both internal and external validity. It provides a framework for translating research into practice (Glasgow et al., 1999).

However, RE-AIM has significant limitations. It is descriptive rather than analytical. It describes what should be measured but does not explain how or why outcomes are achieved. It is insufficiently attentive to context, power, and equity. It does not address the structural determinants of implementation or the historical injustices that shape implementation contexts (Glasgow et al., 1999).

The Consolidated Framework for Implementation Research

CFIR is a comprehensive framework composed of constructs associated with effective implementation. It has five domains: intervention characteristics, outer setting, inner setting, characteristics of individuals, and process. CFIR has been used extensively in implementation research (Damschroder et al., 2009).

CFIR has several strengths. It provides a systematic framework for identifying barriers and facilitators to implementation. It synthesises constructs from multiple theories. It can be used to guide implementation planning and evaluation (Damschroder et al., 2009).

However, CFIR has significant limitations. It is descriptive rather than analytical. It identifies factors that influence implementation but does not explain how they interact. It is insufficiently attentive to power and politics. It does not address the structural determinants of implementation or the historical injustices that shape implementation contexts (Damschroder et al., 2009).

The PARIHS Framework

The Promoting Action on Research Implementation in Health Services framework emphasises the interaction between evidence, context, and facilitation. It suggests that successful implementation requires strong evidence, a supportive context, and effective facilitation. PARIHS has been influential in implementation science (Rycroft-Malone, 2004).

PARIHS has several strengths. It emphasises the importance of context and facilitation. It recognises that implementation is not just about evidence but about the context in which it is implemented. It provides a framework for guiding implementation (Rycroft-Malone, 2004).

However, PARIHS has significant limitations. It is insufficiently attentive to power and politics. It does not address the structural determinants of implementation. It does not address the role of stakeholders in shaping implementation. It can be used to justify top-down implementation approaches that neglect community voice (Rycroft-Malone, 2004).

28.3 Power, Context, and Implementation

Implementation is shaped by power, context, and politics. Understanding these factors is essential for understanding why implementation succeeds or fails.

Power and Implementation

Power is central to implementation. Those who have power can shape implementation in their favour. Those who lack power are often marginalised. Implementation science has often neglected power, treating implementation as a technical process rather than a political one (Greenhalgh et al., 2004).

The neglect of power is evident in the focus on individual behaviour change. Implementation science often focuses on changing the behaviour of practitioners, neglecting the structural and political factors that shape their behaviour. It does not address the power relations that shape implementation contexts or the interests that are served by the status quo (Greenhalgh et al., 2004).

Context and Implementation

Context is central to implementation. What works in one context may not work in another. Implementation science has increasingly recognised the importance of context, with frameworks such as CFIR including contextual factors (Damschroder et al., 2009).

However, context is often treated as a set of factors to be controlled for, rather than as something to be understood and engaged with. The complexity of context is often reduced to a list of barriers and facilitators. The dynamic, relational nature of context is neglected (Damschroder et al., 2009).

Politics and Implementation

Politics is central to implementation. Implementation involves changing practices, which disrupts existing power relations and interests. Those who benefit from the status quo may resist change. The politics of implementation are often neglected in implementation science (Greenhalgh et al., 2004).

The neglect of politics is evident in the focus on evidence-based practice. Evidence is often presented as objective and neutral, obscuring the political dimensions of evidence production and use. The resistance to evidence is often attributed to lack of knowledge or irrationality, rather than to competing interests and values (Greenhalgh et al., 2004).

28.4 Implementation and Equity

Implementation has significant implications for equity. Interventions that are implemented inequitably can widen health disparities. Implementation science has increasingly recognised the importance of equity, but has often been insufficiently attentive to it.

Equity in Implementation

Equity in implementation requires that interventions reach those who need them most and that they are implemented in ways that reduce, not widen, disparities. It requires attention to the distribution of benefits and burdens across groups. It requires addressing the structural determinants of implementation (Baumann et al., 2015).

However, equity is often neglected in implementation science. The focus on average effects can obscure disparities. The focus on efficiency can neglect equity. The focus on evidence-based practice can neglect the needs and priorities of marginalised communities (Baumann et al., 2015).

The Equity Dimensions of Implementation Frameworks

Implementation frameworks have been critiqued for neglecting equity. They often do not include equity as a dimension. They do not address the structural determinants of implementation. They do not address the historical injustices that shape implementation contexts (Baumann et al., 2015).

Efforts have been made to integrate equity into implementation frameworks. The RE-AIM framework has been extended to include equity dimensions. CFIR has been used to examine equity in implementation. However, these efforts are often limited and do not address the root causes of inequitable implementation (Baumann et al., 2015).

Participatory Implementation Approaches

Participatory implementation approaches involve stakeholders, including communities, in the implementation process. They are based on the principle that those affected by implementation should have a voice in shaping it. Participatory approaches have the potential to promote equity in implementation (Wallerstein et al., 2018).

Participatory approaches have several strengths. They ensure that implementation is responsive to community needs. They build community capacity and ownership. They challenge the power relations of traditional implementation. They can produce more equitable outcomes (Wallerstein et al., 2018).

However, participatory approaches have limitations. They can be time-consuming and resource-intensive. They can be co-opted by dominant institutions. They can be undermined by power imbalances between communities and implementers. They can be tokenistic, with communities consulted but not empowered (Wallerstein et al., 2018).

28.5 Decolonising Implementation Science

Decolonising implementation science involves challenging the colonial legacies of implementation research and practice. It involves centring Indigenous and non-Western knowledge systems and shifting power to communities.

Colonial Legacies in Implementation

Implementation science has been shaped by colonial legacies. It has often imposed Western models of practice on diverse populations. It has neglected Indigenous knowledge and practices. It has been used as a tool of control rather than liberation (Smith, 2021).

The colonial legacies of implementation are evident in the focus on evidence-based practice. Evidence is often defined narrowly, excluding Indigenous and non-Western knowledge systems. The imposition of evidence-based practice can be a form of cultural imperialism, imposing Western values on diverse populations (Smith, 2021).

Centring Indigenous Knowledge

Centring Indigenous knowledge is essential for decolonising implementation. Indigenous communities have knowledge of what works in their contexts. They have practices that are grounded in generations of experience. They have priorities that reflect their values and needs (Smith, 2021).

Centring Indigenous knowledge requires several strategies. It requires recognising the validity of Indigenous knowledge. It requires creating space for Indigenous knowledge in implementation. It requires shifting power from external experts to Indigenous communities. It requires supporting Indigenous-led implementation (Smith, 2021).

Community-Led Implementation

Community-led implementation involves communities taking the lead in implementing interventions. It is based on the principle that communities should have control over their own health and wellbeing. Community-led implementation has been influential in Indigenous health and community development (Wallerstein et al., 2018).

Community-led implementation has several strengths. It builds community capacity and self-determination. It ensures that implementation is responsive to community needs. It can produce more equitable and sustainable outcomes. It challenges the power relations of traditional implementation (Wallerstein et al., 2018).

However, community-led implementation has limitations. It requires significant resources and capacity. It can be undermined by external pressures, such as funder requirements. It must attend to power dynamics within communities, ensuring that all voices are heard (Wallerstein et al., 2018).

28.6 Implementation Science in Low and Middle Income Countries

Implementation science in low and middle-income countries faces particular challenges and opportunities. The contexts are often characterised by limited resources, weak infrastructure, and competing priorities. Implementation science must be adapted to these contexts.

The Context of LMIC Implementation

Implementation in LMICs is shaped by multiple factors. Resources are limited. Infrastructure is weak. Health systems are often fragmented. Political instability is common. These factors create significant challenges for implementation (Peters et al., 2013).

However, LMICs also have strengths. Communities are often resilient and resourceful. Local knowledge and practices are valuable. Social networks and community organisations can support implementation. Implementation science must build on these strengths (Peters et al., 2013).

The Need for Contextually Appropriate Approaches

Implementation science in LMICs must be contextually appropriate. Approaches that work in high-income countries may not work in LMICs. Implementation science must be adapted to local contexts, taking into account local resources, capacities, and priorities (Peters et al., 2013).

Contextually appropriate approaches require several strategies. They require engaging local stakeholders in implementation. They require using local knowledge and practices. They require building local capacity. They require addressing the structural determinants of implementation, including poverty and inequality (Peters et al., 2013).

Implementation Science Derived from LMIC Contexts

Implementation science derived from LMIC contexts has been essential for advancing global health. Locally driven approaches that confront health systems realities directly, rather than simply adapting high-income country frameworks, have been essential for identifying what works, for whom, and under what conditions (Sánchez et al., 2025).

These approaches recognise that health systems in low and middle-income countries are not simply deficient versions of health systems in high-income countries but are shaped by their own histories, contexts, and opportunities. They have contributed to the development of implementation science that is more globally relevant and more attentive to equity (Sánchez et al., 2025).

28.7 Key Takeaways

Implementation science is not a neutral technical exercise; it is shaped by assumptions, values, and power relations (Eccles & Mittman, 2006)

The implementation problem is not just technical but political, involving competing interests and power relations (Greenhalgh et al., 2004)

Dominant implementation frameworks have significant limitations, including insufficient attention to power, context, and equity (Glasgow et al., 1999; Damschroder et al., 2009; Rycroft-Malone, 2004)

Power is central to implementation, but is often neglected in implementation science (Greenhalgh et al., 2004)

Equity in implementation requires attention to the distribution of benefits and burdens and the structural determinants of implementation (Baumann et al., 2015)

Participatory implementation approaches have the potential to promote equity but face challenges of resources, co-optation, and power imbalances (Wallerstein et al., 2018)

Decolonising implementation science requires centring Indigenous and non-Western knowledge and shifting power to communities (Smith, 2021)

Implementation science in LMICs must be contextually appropriate and build on local strengths (Peters et al., 2013)

Implementation science derived from LMIC contexts has been essential for advancing global health and more equitable approaches (Sánchez et al., 2025)

Chapter 29

Systems Thinking and Complexity Science

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the assumptions and values underlying systems thinking and complexity science in public health

Evaluate the limitations of dominant systems approaches and their implications for practice and policy

Assess the role of power, perspective, and politics in shaping systems analysis and intervention

Analyse alternative and critical approaches to systems thinking, including participatory and decolonial models

Apply critical systems thinking perspectives to contemporary public health challenges

29.1 What Is Systems Thinking? A Critical Examination

Systems thinking is conventionally defined as a way of understanding the world that emphasises the interconnections between parts, the patterns that emerge from these interconnections, and the dynamic behaviour of systems over time. It has become increasingly influential in public health, with growing recognition that many health problems are complex and require systems approaches. Yet systems thinking is not a neutral methodology; it embodies assumptions, values, and power relations that warrant critical examination.

The Origins and Evolution of Systems Thinking

Systems thinking emerged from multiple intellectual traditions, including biology, engineering, cybernetics, and management theory. It was developed as a response to the limitations of reductionist approaches, which break problems down into their component parts and study them in isolation. Systems thinking emphasises that the whole is greater than the sum of its parts and that understanding requires attending to relationships and interactions (Meadows, 2008).

The application of systems thinking to public health has grown significantly. The field of systems science in public health has developed tools and methods for understanding complex health problems, including causal loop diagrams, system dynamics modelling, and agent-based modelling. These approaches have been used to study a wide range of health problems, from obesity to infectious disease to health systems (Sterman, 2000).

Key Concepts in Systems Thinking

Several concepts are central to systems thinking. Feedback loops are circular chains of cause and effect that can be reinforcing (amplifying change) or balancing (dampening change). Leverage points are places in a system where a small change can produce a large effect. Emergence refers to patterns and behaviours that arise from the interactions of parts but cannot be predicted from the parts alone (Meadows, 2008).

These concepts are valuable for understanding complex health problems. They reveal patterns that are not visible when problems are studied in isolation. They identify opportunities for intervention that might otherwise be missed. They anticipate unintended consequences of interventions (Meadows, 2008).

The Politics of Systems Thinking

Systems thinking is not politically neutral. The choice of what to include in a system model, what to exclude, and how to represent relationships reflects assumptions, values, and power relations. Systems models can obscure as much as they reveal. They can reinforce dominant narratives and marginalise alternative perspectives (Midgley, 2000).

The politics of systems thinking are evident in the use of systems models in policy. Models can be used to support predetermined policy positions. They can be used to justify interventions that serve powerful interests. They can be used to obscure the distributional impacts of policies. Systems thinking must be critically examined for its political dimensions (Midgley, 2000).

Table 29.1. Systems Thinking: Useful Concepts and Questions

Concept or area	What it means	Why it matters in practice
System boundary	What is inside the system and what is outside it?	Makes assumptions about scope visible.
Relationships	How do actors, resources and conditions affect one another?	Shifts attention from isolated factors to connections.
Feedback	What processes reinforce or counteract change?	Helps explain why effects may grow, stabilise or reverse.
Delay	Where do effects take time to appear?	Prevents premature conclusions about interventions.
Leverage	Where could a relatively small change alter system behaviour?	Helps prioritise intervention points.
Complexity	What cannot be predicted reliably from individual parts?	Encourages humility and learning in uncertain settings.

29.2 Systems Thinking Methods: Critical Perspectives

Several methods have been developed for systems thinking. These methods are often presented as technical tools for understanding and intervening in complex systems. Yet they embody assumptions, values, and power relations that are rarely examined.

Causal Loop Diagrams

Causal loop diagrams are visual representations of feedback loops in a system. They show how variables are connected and how changes in one variable affect others over time. Causal loop diagrams have been widely used in public health to understand complex problems (Sterman, 2000).

Causal loop diagrams have several strengths. They make assumptions explicit. They reveal feedback loops that might otherwise be invisible. They can be used to communicate complexity to diverse audiences. They can identify leverage points for intervention (Sterman, 2000).

However, causal loop diagrams have significant limitations. They are static representations of dynamic systems. They do not capture the quantitative relationships between variables. They can

be oversimplified, neglecting important variables and relationships. They reflect the perspectives and assumptions of their creators (Sterman, 2000).

System Dynamics Modelling

System dynamics modelling uses computer simulation to understand the behaviour of complex systems over time. It involves developing a mathematical model of a system, simulating its behaviour, and testing interventions. System dynamics modelling has been used in public health to study a range of problems (Sterman, 2000).

System dynamics modelling has several strengths. It captures the dynamic behaviour of systems. It can test interventions without implementing them in the real-world. It can identify unintended consequences of interventions. It can support policy analysis and decision-making (Sterman, 2000).

However, system dynamics modelling has significant limitations. It requires significant expertise and resources. It is based on assumptions that may not hold. It can be opaque, with the model being a black box to non-experts. It can be used to justify predetermined policy positions (Sterman, 2000).

Agent-Based Modelling

Agent-based modelling simulates the behaviour of individual agents and their interactions. It can capture heterogeneity, adaptation, and emergence. Agent-based modelling has been used in public health to study infectious disease transmission, health behaviours, and other phenomena (Epstein, 2006).

Agent-based modelling has several strengths. It captures heterogeneity and adaptation. It can model emergent phenomena that cannot be captured by aggregate models. It can be used to study the effects of interventions on different subpopulations (Epstein, 2006).

However, agent-based modelling has significant limitations. It requires significant expertise and resources. It is based on assumptions about agent behaviour that may not hold. It can be difficult to validate. It can be opaque to non-experts (Epstein, 2006).

29.3 The Limits of Systems Thinking

Systems thinking has been influential in public health, but it also has significant limitations. These limitations reflect the assumptions, values, and power relations that shape systems thinking and its application.

The Problem of Boundaries

Systems thinking requires defining the boundaries of the system. Where does the system start and end? What is included and what is excluded? The choice of boundaries reflects assumptions, values, and interests. It can exclude important factors and perspectives (Midgley, 2000).

The problem of boundaries is particularly significant in public health. Health is shaped by multiple systems, including economic, social, political, and environmental systems. Defining the boundaries of the system can exclude important determinants of health. It can obscure the distribution of power and resources that shape health (Midgley, 2000).

The Problem of Perspective

Systems thinking is shaped by the perspective of the analyst. Different analysts will see different systems, different feedback loops, and different leverage points. The perspective of the analyst

reflects their assumptions, values, and interests. It can obscure alternative perspectives (Midgley, 2000).

The problem of perspective is particularly significant in public health. Different stakeholders have different perspectives on health problems and their solutions. A systems model that reflects the perspective of one stakeholder group may not be useful or acceptable to others. Systems thinking must attend to multiple perspectives (Midgley, 2000).

The Problem of Power

Systems thinking often neglects power. It focuses on the structure and behaviour of systems, not on the power relations that shape them. It does not address who benefits from the current system, who is disadvantaged, and how power can be redistributed (Midgley, 2000).

The neglect of power is particularly significant in public health. Health problems are shaped by power relations, including economic inequality, racism, and colonialism. A systems approach that neglects power will not address the root causes of health problems. It will focus on symptoms rather than causes (Midgley, 2000).

29.4 Critical Systems Thinking

Critical systems thinking challenges the assumptions and limitations of mainstream systems thinking. It emphasises the importance of boundaries, perspectives, and power. It advocates for participatory and emancipatory approaches to systems thinking.

Boundary Critique

Boundary critique is the process of examining the boundaries of a system and their implications. It asks: What is included and what is excluded? Whose interests are served by the current boundaries? What alternative boundaries might be more appropriate? Boundary critique is essential for addressing the politics of systems thinking (Midgley, 2000).

Boundary critique has several implications. It requires making boundaries explicit and subject to scrutiny. It requires considering alternative boundaries and their implications. It requires engaging stakeholders in defining boundaries. It requires being attentive to the power relations that shape boundaries (Midgley, 2000).

Multi-Perspective Approaches

Multi-perspective approaches recognise that there are multiple valid perspectives on any system. They seek to include diverse perspectives in systems analysis and intervention. They challenge the dominance of any single perspective (Midgley, 2000).

Multi-perspective approaches have several implications. They require engaging diverse stakeholders in systems analysis. They require being attentive to the perspectives of marginalised groups. They require being humble about the limits of any single perspective. They require seeking to integrate diverse perspectives (Midgley, 2000).

Emancipatory Systems Thinking

Emancipatory systems thinking seeks to challenge oppressive power relations and to promote social justice. It recognises that systems are shaped by power relations and that systems interventions can either reinforce or challenge those relations. It advocates for systems approaches that centre the voices and interests of marginalised groups (Midgley, 2000).

Emancipatory systems thinking has several implications. It requires attending to power relations in systems analysis and intervention. It requires centring the voices and interests of marginalised groups. It requires being attentive to the distributional impacts of systems interventions. It requires advocating for systemic change that promotes social justice (Midgley, 2000).

29.5 Complexity Science: Promises and Limitations

Complexity science is the study of complex adaptive systems. It has become increasingly influential in public health, with growing recognition that health problems are complex and require complexity-informed approaches.

Key Concepts in Complexity Science

Several concepts are central to complexity science. Complex adaptive systems are systems composed of many interacting agents that adapt to each other and to their environment. Emergence refers to patterns and behaviours that arise from the interactions of agents but cannot be predicted from the agents alone. Nonlinearity refers to relationships where cause and effect are not proportional. Path dependence refers to the way that past events shape future possibilities (Rutter et al., 2017).

These concepts are valuable for understanding health problems. They reveal patterns that are not visible in linear models. They identify opportunities for intervention that might otherwise be missed. They anticipate unintended consequences of interventions (Rutter et al., 2017).

The Application of Complexity Science to Public Health

Complexity science has been applied to a range of public health problems. It has been used to study obesity, infectious disease, health systems, and health behaviours. It has been used to develop interventions that work with, rather than against, the dynamics of complex systems (Rutter et al., 2017).

The application of complexity science has led to several insights. It has shown that simple, linear interventions often fail in complex systems. It has shown that interventions must be adaptive and responsive to feedback. It has shown that interventions must attend to the interactions between multiple factors (Rutter et al., 2017).

Critiques of Complexity Science

Complexity science has been subject to several critiques. One critique is that it is insufficiently attentive to power. It focuses on the structure and behaviour of systems, not on the power relations that shape them. It does not address who benefits from the current system, who is disadvantaged, and how power can be redistributed (Rutter et al., 2017).

Another critique is that complexity science is insufficiently attentive to agency. It focuses on the behaviour of systems, not on the choices and actions of people. It can lead to fatalism, where change is seen as impossible or unpredictable. It can neglect the role of human agency in shaping health (Rutter et al., 2017).

A third critique is that complexity science can be co-opted. The language of complexity can be used to justify inaction or to obscure accountability. It can be used to argue that change is impossible or that the system is too complex to understand. Complexity science must be critically examined for its political dimensions (Rutter et al., 2017).

29.6 Participatory Systems Approaches

Participatory systems approaches involve stakeholders in systems analysis and intervention. They are based on the principle that those affected by systems should have a voice in understanding and changing them. Participatory approaches have the potential to address the limitations of mainstream systems thinking.

Community-Based System Dynamics

Community-based system dynamics is an approach that involves communities in developing system dynamics models. It is based on the principle that communities have knowledge and expertise that is essential for understanding systems. Community-based system dynamics has been used in public health to address a range of problems (Hovmand, 2014).

Community-based system dynamics has several strengths. It builds community capacity and ownership. It ensures that models are relevant to community needs. It challenges the power relations of traditional modelling. It can produce more effective and sustainable interventions (Hovmand, 2014).

However, community-based system dynamics has limitations. It is time-consuming and resource-intensive. It can be co-opted by dominant institutions. It can be undermined by power imbalances between communities and modellers. It can be tokenistic, with communities consulted but not empowered (Hovmand, 2014).

Participatory Mapping

Participatory mapping involves communities in creating maps of their environments and systems. It has been used in public health to understand the social and physical determinants of health. Participatory mapping can reveal local knowledge and perspectives that are not captured by conventional data sources (Corburn, 2005).

Participatory mapping has several strengths. It builds community capacity and ownership. It reveals local knowledge and perspectives. It can be used to advocate for policy change. It can support community-led interventions (Corburn, 2005).

However, participatory mapping has limitations. It requires significant resources and capacity. It can be co-opted by dominant institutions. It can be undermined by power imbalances between communities and researchers. It can be tokenistic, with communities consulted but not empowered (Corburn, 2005).

29.7 Key Takeaways

Systems thinking is not a neutral methodology; it embodies assumptions, values, and power relations (Meadows, 2008; Midgley, 2000)

The choice of boundaries, perspective, and representation in systems thinking reflects assumptions, values, and interests (Midgley, 2000)

Systems thinking often neglects power, focusing on structure and behaviour rather than on the power relations that shape systems (Midgley, 2000)

Critical systems thinking challenges the assumptions and limitations of mainstream systems thinking, emphasising boundaries, perspectives, and power (Midgley, 2000)

Complexity science has been influential but has limitations, including insufficient attention to power and agency (Rutter et al., 2017)

Participatory systems approaches involve stakeholders in systems analysis and intervention, building capacity and ownership (Hovmand, 2014; Corburn, 2005)

Systems thinking must be attentive to multiple perspectives, including those of marginalised groups (Midgley, 2000)

Emancipatory systems thinking seeks to challenge oppressive power relations and promote social justice (Midgley, 2000)

The application of systems thinking to public health must be critically examined for its political dimensions and equity implications

Chapter 30

Global Health Diplomacy

Learning Objectives

By the end of this chapter, you will be able to:

Critically analyse the concept of global health diplomacy and its relationship to power, interests, and values

Evaluate the limitations of dominant global health diplomacy frameworks and their assumptions about cooperation and governance

Assess the role of geopolitics, colonialism, and economic interests in shaping global health diplomacy

Analyse alternative and critical approaches to global health diplomacy, including solidarity-based and decolonial models

Apply critical global health diplomacy perspectives to contemporary public health challenges

30.1 What Is Global Health Diplomacy? A Critical Examination

Global health diplomacy is conventionally defined as the negotiation processes that shape the global policy environment for health. It involves multiple actors, including states, international organisations, non-governmental organisations, and private sector entities. This framing, while widely accepted, obscures significant questions about power, interests, and the distribution of benefits in global health governance.

The Origins and Evolution of Global Health Diplomacy

Global health diplomacy has emerged as a distinct field in response to the growing recognition that health is shaped by decisions made outside the health sector. Trade agreements, foreign policy, and international relations all have implications for health. Global health diplomacy seeks to integrate health considerations into these domains (Frenk & Moon, 2013).

The field has grown significantly, with the development of frameworks, training programmes, and institutional mechanisms for global health diplomacy. It has been influential in shaping global health governance, including the response to pandemics, the regulation of tobacco, and the negotiation of trade agreements (Frenk & Moon, 2013).

The Purposes of Global Health Diplomacy

Global health diplomacy serves multiple purposes. It can promote health as a foreign policy priority, elevating health on the international agenda. It can negotiate agreements that protect and promote health, such as the Framework Convention on Tobacco Control. It can manage health crises, such as pandemics, through international cooperation. It can address the health impacts of other policy domains, such as trade and climate change (Frenk & Moon, 2013).

These purposes are not always compatible. The promotion of health as a foreign policy priority can conflict with other foreign policy objectives, such as economic growth or national security. The negotiation of health agreements can be undermined by powerful interests, including corporations

and states. Managing health crises can be complicated by geopolitical rivalries. The pursuit of multiple purposes creates tensions and trade-offs (Frenk & Moon, 2013).

The Politics of Global Health Diplomacy

Global health diplomacy is not a neutral technical exercise; it is shaped by power and politics. The negotiations that shape global health governance reflect the interests of powerful actors, including states, corporations, and international organisations. The outcomes of these negotiations reflect the relative power of different actors (Frenk & Moon, 2013).

The politics of global health diplomacy are evident in the distribution of benefits. Global health agreements often benefit powerful actors more than weaker ones. The regulation of tobacco, for example, has been resisted by tobacco-producing countries and corporations. The response to pandemics has been shaped by the interests of powerful states, with vaccine nationalism undermining global cooperation. The politics of global health diplomacy reflect the power relations of the international system (Frenk & Moon, 2013).

Table 30.1. Global Health Diplomacy: Key Actors and Interests

Concept or area	What it means	Why it matters in practice
States	Protect national interests and negotiate collective commitments	Use diplomacy to balance sovereignty with shared health goals.
WHO and multilateral institutions	Coordinate norms, technical support and collective action	Provide platforms for cooperation and global standards.
Civil society	Advocate for communities, rights and accountability	Can challenge official positions and broaden participation.
Private sector	Develop and supply medicines, technologies and services	Can provide capacity while creating conflicts of interest that require safeguards.
Communities	Experience the consequences of global decisions	Need meaningful representation, not only consultation.
Funders and development partners	Finance programmes and influence priorities	Can support action but also shape agendas through funding power.

30.2 The Actors and Institutions of Global Health Diplomacy

Global health diplomacy involves multiple actors and institutions. These actors and institutions have different interests, mandates, and capacities. Understanding them is essential for understanding the politics of global health governance.

States

States are the primary actors in global health diplomacy. They negotiate treaties, make commitments, and allocate resources. The interests of states are shaped by their domestic politics, their economic position, and their geopolitical ambitions (Frenk & Moon, 2013).

The role of states in global health diplomacy is shaped by power relations. Powerful states have more influence over the agenda, the negotiation process, and the outcomes. Weaker states are often

marginalised. The interests of powerful states are often prioritised over the needs of weaker states. The state-centric nature of global health diplomacy reflects the power relations of the international system (Frenk & Moon, 2013).

International Organisations

International organisations, including the World Health Organization, play a significant role in global health diplomacy. They provide platforms for negotiation, set norms and standards, and coordinate action. They also have their own interests and agendas, which may not always align with those of states (Frenk & Moon, 2013).

The role of international organisations is shaped by their governance structures, funding sources, and institutional cultures. The WHO, for example, is constrained by its member states and by its funding structure. It has limited authority and resources. Its effectiveness is shaped by the political will of its member states (Frenk & Moon, 2013).

Non-Governmental Organisations

Non-governmental organisations play a significant role in global health diplomacy. They advocate for health, monitor agreements, and provide expertise. They also have their own interests and agendas, which may not always align with those of states or international organisations (Frenk & Moon, 2013).

The role of NGOs is shaped by their resources, their relationships with states and international organisations, and their legitimacy. Some NGOs have significant resources and influence. Others are marginalised. The influence of NGOs reflects the power relations of global health governance (Frenk & Moon, 2013).

Private Sector Actors

Private sector actors, including corporations and foundations, play a significant role in global health diplomacy. They have resources, expertise, and influence. They also have their own interests, which may not always align with public health (Frenk & Moon, 2013).

The role of private sector actors is shaped by their resources and their relationships with states and international organisations. The pharmaceutical industry, for example, has significant influence over global health governance. Foundations, such as the Gates Foundation, have significant resources and influence. The influence of private sector actors reflects the power relations of global health governance (Frenk & Moon, 2013).

30.3 The Geopolitics of Global Health

Global health is shaped by geopolitics. Geopolitical rivalries, the rise of nationalist movements, and the fragmentation of global governance have all influenced global health. Understanding geopolitics is essential for understanding global health diplomacy.

The Erosion of Multilateralism

The past two decades have seen a marked erosion of multilateralism. Geopolitical rivalries, the rise of nationalist movements, and the fragmentation of global governance have weakened the institutions that coordinate pandemic preparedness, health financing, and humanitarian response. The erosion of multilateralism poses a fundamental threat to global health (Gostin & Wiley, 2020).

The erosion of multilateralism is evident in the weakening of the WHO and other international institutions. It is evident in the failure to coordinate the response to the COVID-19 pandemic. It is

evident in the rise of vaccine nationalism and the hoarding of resources by powerful states. Rebuilding multilateralism is essential for global health, but it requires addressing the underlying causes of its erosion (Gostin & Wiley, 2020).

Great Power Competition

Great power competition is a significant factor in global health. The United States, China, and other powers compete for influence in global health governance. They use health as a tool of diplomacy and as a source of soft power. This competition can have both positive and negative effects on health (Gostin & Wiley, 2020).

Great power competition can mobilise resources and attention for health. It can also undermine cooperation and coordination. The competition between the United States and China, for example, has complicated the response to COVID-19 and other health threats. The impact of great power competition on health reflects the power relations of the international system (Gostin & Wiley, 2020).

South-South Cooperation

South-South cooperation refers to cooperation between countries in the Global South. It has become increasingly important in global health, with countries such as Brazil, India, and China playing significant roles. South-South cooperation offers an alternative to traditional North-South models of development assistance (Gostin & Wiley, 2020).

South-South cooperation has several strengths. It is often more contextually appropriate than Northern models. It challenges the power relations of traditional development assistance. It builds capacity and solidarity among Southern countries. However, South-South cooperation also has limitations. It can be shaped by the interests of powerful Southern countries. It can be undermined by the same power relations that shape North-South cooperation (Gostin & Wiley, 2020).

30.4 Colonialism and Global Health Diplomacy

Colonialism has profoundly shaped global health diplomacy. Colonial powers established the institutions and practices of global health governance. They imposed their interests and values on the Global South. The legacy of colonialism continues to shape global health governance.

The Colonial Origins of Global Health Governance

Global health governance has colonial origins. Colonial powers established international health institutions to serve their interests, including the protection of trade and the control of disease. These institutions reflected the power relations of colonialism, with the Global North dominant and the Global South subordinated (King, 2002).

The colonial origins of global health governance are evident in the structure and practices of international health institutions. The WHO, for example, has been shaped by the interests of its powerful member states. The distribution of resources and attention reflects the priorities of the Global North. The colonial legacy continues to shape global health governance (King, 2002).

Medical Missions and Neocolonialism

Medical missions, where health professionals from the Global North work in the Global South, have been a feature of global health for decades. They are often presented as humanitarian and altruistic. However, they have also been critiqued as a form of neocolonialism, reflecting the power relations of colonialism (Crane, 2013).

Medical missions can be problematic in several ways. They can undermine local health systems by diverting resources and attention. They can create dependency on external actors. They can be insensitive to local cultures and priorities. They can reflect the interests of the Global North rather than the needs of the Global South. Addressing these problems requires a critical examination of the power relations of global health (Crane, 2013).

Decolonising Global Health Diplomacy

Decolonising global health diplomacy involves challenging the colonial legacies of global health governance. It involves centring the perspectives and priorities of the Global South. It involves shifting power from Northern to Southern actors. It involves addressing the structural determinants of health inequities, including colonialism and neocolonialism (Pai, 2022).

Decolonising global health diplomacy requires several strategies. It requires reforming the institutions of global health governance to be more inclusive and equitable. It requires shifting resources and decision-making power to the Global South. It requires recognising and valuing Southern knowledge and expertise. It requires challenging the power relations that shape global health governance (Pai, 2022).

30.5 Global Health Diplomacy in Practice

Global health diplomacy is practised in multiple arenas. These include treaty negotiations, international organisations, and crisis response. Each arena has its own dynamics, actors, and power relations.

Treaty Negotiations

Treaty negotiations are a key arena of global health diplomacy. The Framework Convention on Tobacco Control is a notable success, establishing international norms and standards for tobacco regulation. Other treaty negotiations, such as those on pandemic preparedness, have been more contentious (Gostin & Wiley, 2020).

Treaty negotiations are shaped by power relations. Powerful states have more influence over the agenda and the outcomes. Powerful corporations lobby to protect their interests. Civil society organisations advocate for public health. The outcomes of treaty negotiations reflect the relative power of different actors (Gostin & Wiley, 2020).

International Organisations

International organisations are a key arena of global health diplomacy. The WHO, the World Bank, and other organisations provide platforms for negotiation, set norms and standards, and coordinate action. They are also sites of contestation, with different actors seeking to shape their agendas and decisions (Gostin & Wiley, 2020).

The politics of international organisations are shaped by their governance structures, funding sources, and institutional cultures. The WHO, for example, is shaped by the interests of its member states. Its effectiveness is shaped by the political will of its member states. The influence of international organisations reflects the power relations of the international system (Gostin & Wiley, 2020).

Crisis Response

Crisis response is a key arena of global health diplomacy. The response to the COVID-19 pandemic has been a major focus of global health diplomacy. It has revealed both the strengths and the weaknesses of global health governance (Gostin & Wiley, 2020).

The response to COVID-19 has been shaped by geopolitics, power, and interests. Vaccine nationalism, where powerful states hoarded vaccines, undermined global cooperation. The WHO's response was constrained by its member states and by its limited authority. The crisis revealed the inadequacy of global health governance and the need for reform (Gostin & Wiley, 2020).

30.6 Alternative and Critical Approaches to Global Health Diplomacy

Alternative approaches to global health diplomacy challenge the assumptions and power relations of mainstream approaches. They centre solidarity, justice, and the perspectives of the Global South.

Health Solidarity

Health solidarity is a principle that emphasises shared responsibility for health. It challenges the individualism and nationalism of mainstream approaches. It recognises that health is a global public good and that cooperation is essential for addressing health threats (Pai, 2022).

Health solidarity has several implications. It requires sharing resources and knowledge across borders. It requires prioritising the needs of the most vulnerable. It requires challenging the power relations that shape global health governance. It requires building movements for health justice (Pai, 2022).

Global Health Justice

Global health justice is a framework that addresses the structural determinants of health inequities. It recognises that health is shaped by global economic and political structures. It advocates for systemic change to address these structures (Pai, 2022).

Global health justice has several implications. It requires addressing the structural determinants of health inequities, including economic inequality, colonialism, and racism. It requires challenging the power of corporations and other powerful actors. It requires centring the voices and leadership of those who are most affected. It requires building movements for systemic change (Pai, 2022).

Southern Perspectives on Global Health Governance

Southern perspectives on global health governance challenge the dominance of Northern perspectives. They recognise that the interests and priorities of the Global South are often marginalised. They advocate for a more inclusive and equitable global health governance (Pai, 2022).

Southern perspectives have several implications. They require recognising and valuing Southern knowledge and expertise. They require shifting resources and decision-making power to the Global South. They require reforming the institutions of global health governance to be more inclusive and equitable. They require building solidarity among Southern countries (Pai, 2022).

30.7 Key Takeaways

Global health diplomacy is not a neutral technical exercise; it is shaped by power, interests, and values (Frenk & Moon, 2013)

The actors of global health diplomacy include states, international organisations, NGOs, and private sector actors, each with different interests and power (Frenk & Moon, 2013)

Geopolitics, including great power competition and the erosion of multilateralism, shapes global health diplomacy (Gostin & Wiley, 2020)

Colonialism has profoundly shaped global health governance, and its legacy continues to shape global health diplomacy (King, 2002; Crane, 2013)

Medical missions and other forms of Northern engagement in the Global South have been critiqued as neocolonial (Crane, 2013)

Decolonising global health diplomacy requires reforming institutions, shifting power, and centring Southern perspectives (Pai, 2022)

Alternative approaches, including health solidarity and global health justice, challenge mainstream approaches (Pai, 2022)

The response to the COVID-19 pandemic revealed the strengths and weaknesses of global health governance and the need for reform (Gostin & Wiley, 2020)

Achieving health justice requires addressing the structural determinants of health inequities and challenging the power relations of global health governance

Chapter 31

The Future of Public Health: Critical Reflections and Pathways Forward

Learning Objectives

By the end of this chapter, you will be able to:

Synthesise the critical perspectives developed throughout this book into a coherent framework for public health practice

Evaluate the possibilities and constraints for transforming public health in the twenty-first century

Assess the role of public health professionals in challenging power, advancing equity, and promoting health justice

Develop a personal and collective vision for the future of public health

Apply critical perspectives to emerging and future public health challenges

31.1 The State of Public Health: A Critical Assessment

Public health has achieved remarkable successes over the past century. Life expectancy has increased dramatically. Infectious diseases have been controlled. Many of the leading causes of death have shifted from infectious to chronic conditions. Yet these successes have been unevenly distributed, and the field faces significant challenges that demand critical reflection and transformation.

The Achievements of Public Health

Public health has contributed to some of the most significant improvements in population health in history. Sanitation, vaccination, and disease surveillance have reduced mortality from infectious diseases. Regulation of tobacco, food, and the environment has reduced exposure to health hazards. Health promotion and education have encouraged healthier behaviours. These achievements reflect the efforts of generations of public health professionals (Frieden, 2010).

However, these achievements have been shaped by power relations. The benefits of public health have not been distributed equally. Marginalised populations have often been excluded from the benefits of public health. The achievements of public health reflect the priorities and interests of dominant groups. The history of public health is a history of both progress and injustice (Krieger, 2011).

The Limitations of Contemporary Public Health

Contemporary public health has significant limitations. It is often reactive, responding to crises rather than preventing them. It is often fragmented, with different sectors and disciplines working in silos. It is often under-resourced, with inadequate investment in prevention and public health infrastructure. It is often insufficiently attentive to equity, with health inequities persisting and widening (Krieger, 2011).

The limitations of contemporary public health reflect the political and economic context in which it operates. Public health is shaped by the interests of powerful actors, including governments, corporations, and healthcare industries. It is constrained by the dominance of neoliberal ideology, which prioritises individual responsibility and market solutions over collective action and structural change. The limitations of public health are not inevitable; they are produced by political choices (Krieger, 2011; Navarro, 2009).

The Challenges Facing Public Health

Public health faces significant challenges in the twenty-first century. Climate change is the most significant global health threat. The Lancet Countdown has documented that global temperatures have risen by approximately 1.2 degrees Celsius above pre-industrial levels, with health impacts already visible and accelerating (Lancet Countdown, 2024; Watts et al., 2021). Antimicrobial resistance threatens to undo decades of progress, with an estimated 1.27 million deaths directly attributable to bacterial AMR in 2019 (GBD AMR Collaborators, 2022). Inequality is widening, both within and between countries, with life expectancy gaps persisting and in some cases worsening (Marmot, 2015; United Nations, 2022). Geopolitical instability is undermining international cooperation, with the erosion of multilateralism weakening institutions that coordinate pandemic preparedness and health financing (Gostin & Wiley, 2020). The erosion of trust in institutions is challenging the legitimacy of public health, with misinformation and political polarisation undermining collective action (Sallam, 2025; EUPHA, 2025).

These challenges are interconnected and mutually reinforcing. Climate change exacerbates inequality and fuels migration. Inequality exacerbates antimicrobial resistance and undermines pandemic preparedness. Geopolitical instability undermines cooperation on climate change and other global health threats. Addressing these challenges requires integrated, systemic approaches that address their interconnections (Watts et al., 2021; Gostin & Wiley, 2020).

Table 31.1. From Critical Reflection to Public Health Transformation

Concept or area	What it means	Why it matters in practice
Knowledge	What counts as evidence and whose knowledge counts?	Broaden evidence and challenge unequal knowledge systems.
Power	Who sets priorities and controls resources?	Make power visible and strengthen accountability.
Equity	Who benefits and who bears the burden?	Place distribution and justice at the centre of decisions.
Participation	Who has a meaningful voice in decisions?	Move beyond consultation toward shared influence.
Action	What can professionals and institutions change?	Translate critique into practical commitments.
Future	What kind of public health system do we want to build?	Connect present decisions with long-term direction.

31.2 The Competencies Revisited: A Critical Synthesis

This book has proposed six competencies for twenty-first-century public health practice: Systems Mapping, Data Fluency, Implementation Agility, Stakeholder Navigation, Ethical Foresight, and Narrative Competence. These competencies are not neutral technical skills; they embody values

and political commitments. A critical synthesis of these competencies reveals their implications for practice, power, and justice.

Systems Mapping for Justice

Systems mapping is conventionally presented as a way of understanding complex problems. A critical perspective recognises that systems mapping is also a way of revealing power relations and identifying opportunities for transformative change. Systems mapping can reveal how power operates, who benefits, and who is harmed. It can identify leverage points for challenging oppressive systems and advancing justice (Meadows, 2008; Midgley, 2000).

Applying systems mapping for justice requires several commitments. It requires attending to power relations, not just system dynamics. It requires including diverse perspectives, including those of marginalised groups. It requires being humble about the limits of any single model. It requires using systems mapping to advocate for transformative change, not just incremental improvement (Midgley, 2000; Krieger, 2011).

Data Fluency for Liberation

Data fluency is conventionally presented as the ability to understand and use data. A critical perspective recognises that data fluency is also a way of challenging power and advancing liberation. Data can be used to expose inequities, hold power accountable, and advocate for change. Data can also be used to reinforce inequities, justify oppression, and obscure injustice (Merry, 2016; Obermeyer et al., 2019).

Applying data fluency for liberation requires several commitments. It requires interrogating the assumptions, biases, and power relations that shape data. It requires centring the perspectives and priorities of affected communities. It requires using data to challenge dominant narratives, not just to reinforce them. It requires being transparent about the limits of data and the uncertainties of interpretation (Merry, 2016; Rovetta & Mansournia, 2025).

Implementation Agility for Equity

Implementation agility is conventionally presented as the ability to adapt interventions to local contexts. A critical perspective recognises that implementation agility is also a way of advancing equity. Implementation can be a tool for advancing justice, if it is attentive to the needs and priorities of marginalised communities. Implementation can also be a tool for oppression, if it imposes the interests of dominant groups (Greenhalgh et al., 2004; Damschroder et al., 2009).

Applying implementation agility for equity requires several commitments. It requires centring the voices and leadership of affected communities. It requires being attentive to the distributional impacts of interventions. It requires challenging the power relations that shape implementation. It requires being adaptive and responsive to community needs and priorities (Wallerstein et al., 2018; Baumann et al., 2015).

Stakeholder Navigation for Solidarity

Stakeholder navigation is conventionally presented as the ability to engage diverse stakeholders. A critical perspective recognises that stakeholder navigation is also a way of building solidarity and challenging power. Stakeholder engagement can be a tool for building collective power, if it centres the voices of marginalised groups. It can also be a tool for co-optation, if it is tokenistic or manipulative (Bryson, 2004; Enria et al., 2026).

Applying stakeholder navigation for solidarity requires several commitments. It requires centring the voices and leadership of those who are most affected. It requires being attentive to power

imbalances and addressing them. It requires building coalitions across difference, while being honest about conflicts of interest. It requires using stakeholder engagement to advance justice, not just to manage conflict (Bryson, 2004; Powell et al., 2026).

Ethical Foresight for Justice

Ethical foresight is conventionally presented as the ability to anticipate and reason through ethical dilemmas. A critical perspective recognises that ethical foresight is also a way of advancing justice. Ethical reasoning can challenge oppression, if it is grounded in principles of equity and justice. It can also reinforce oppression, if it is grounded in dominant values (Kass, 2001; Childress et al., 2002).

Applying ethical foresight for justice requires several commitments. It requires centring principles of equity and justice, not just abstract principles. It requires being attentive to power relations and their ethical implications. It requires including diverse perspectives, including those of marginalised groups. It requires using ethical reasoning to advocate for transformative change, not just to manage dilemmas (Kass, 2001; Bekker et al., 2025).

Narrative Competence for Justice

Narrative competence is conventionally presented as the ability to craft compelling health messages. A critical perspective recognises that narrative competence is also a way of challenging power and advancing justice. Narratives can expose injustice, build solidarity, and advocate for change. They can also reinforce dominant narratives and obscure injustice (Hill, 2024; Nash et al., 2023).

Applying narrative competence for justice requires several commitments. It requires centring the voices and stories of marginalised groups. It requires challenging dominant narratives, not just reinforcing them. It requires using storytelling to build understanding and solidarity. It requires being ethical in storytelling, respecting the dignity and agency of those whose stories are told (Hill, 2024; World Health Organization, 2024).

31.3 The Politics of Public Health Transformation

Transforming public health requires attending to politics. Public health is shaped by power relations, and transforming it requires challenging those relations. This involves recognising the political nature of public health and engaging in political action.

Public Health as Political

Public health is inherently political. It involves decisions about the distribution of resources, the regulation of behaviour, and the protection of rights. These decisions reflect political choices, not just technical considerations. Public health professionals cannot avoid politics; they can only choose how to engage with it (Krieger, 2011; Navarro, 2009).

The political nature of public health is often obscured by technical discourse. Public health is framed as a scientific, objective enterprise. This framing serves the interests of those who benefit from the status quo. Challenging this framing is essential for transforming public health (Krieger, 2011; Brown, 2010).

Power and Public Health

Power is central to public health. Those with power shape the conditions that affect health. They shape the distribution of resources, the regulation of behaviour, and the protection of rights. Public

health professionals must attend to power, not just to evidence and intervention (Krieger, 2011; Han, 2026).

Attending to power requires several strategies. It requires analysing power relations and their effects on health. It requires building collective power to challenge oppression. It requires being accountable to affected communities. It requires using whatever power one has to advance justice (Krieger, 2011; Han, 2026).

Advocacy and Activism

Advocacy and activism are essential for transforming public health. Public health professionals must advocate for policies that promote health and justice. They must engage in activism to challenge oppression and build movements for change. They must be willing to take political risks (Krieger, 2011; McKee, 2025).

Advocacy and activism require several skills. They require the ability to analyse power and develop strategies for change. They require the ability to build coalitions and mobilise communities. They require the ability to communicate effectively and to frame issues for different audiences. They require the courage to challenge power (Krieger, 2011; McKee, 2025).

31.4 Public Health and Social Movements

Social movements have been central to public health progress. Movements for sanitation, workers' rights, civil rights, and environmental justice have all contributed to health improvements. Contemporary social movements, including movements for racial justice, climate justice, and health equity, are essential for transforming public health.

Historical Social Movements and Public Health

Social movements have been central to many of the achievements of public health. The sanitary movement, which emerged in the nineteenth century, was a social movement that advocated for clean water, sanitation, and housing. The labour movement, which emerged in the early twentieth century, advocated for safe working conditions and occupational health. The civil rights movement, which emerged in the mid-twentieth century, advocated for desegregation and access to healthcare (Krieger, 2011; Brown, 2010).

These movements were not simply about health; they were about justice. They challenged the power relations that shaped health. They built collective power to demand change. They transformed the conditions that affect health. Public health professionals must learn from these movements and engage with contemporary social movements (Krieger, 2011).

Contemporary Social Movements and Public Health

Contemporary social movements are essential for transforming public health. The movement for racial justice challenges racism, which is a fundamental determinant of health inequities (Bailey et al., 2017). The movement for climate justice challenges the fossil fuel economy, which threatens health (Watts et al., 2021). The movement for health equity challenges the inequalities that produce health inequities (Marmot, 2015).

Public health professionals must engage with these movements. This requires being in solidarity with affected communities. It requires using public health expertise to support movement goals. It requires being humble about the limits of public health expertise and learning from movement knowledge (Krieger, 2011; Pai, 2022).

The Role of Public Health Professionals in Social Movements

Public health professionals have a role to play in social movements. They can provide evidence and analysis to support movement goals. They can use their institutional positions to advocate for change. They can participate in collective action, including protests, strikes, and civil disobedience. They can be accomplices, not just allies, in the struggle for justice (Krieger, 2011; Pai, 2022).

Engaging in social movements requires courage. It requires being willing to take political risks. It requires being willing to challenge power, including the power of one's own institutions. It requires being willing to be on the side of justice, even when it is not popular or safe (Krieger, 2011; McKee, 2025).

31.5 Public Health in the Anthropocene

The Anthropocene is the current geological epoch, characterised by the dominant influence of human activity on the environment. The Anthropocene poses fundamental challenges to public health, requiring a transformation of practice and values.

The Anthropocene and Health

The Anthropocene is characterised by climate change, biodiversity loss, pollution, and other environmental changes that threaten health. These changes are not natural; they are produced by human activity, particularly by the pursuit of economic growth and consumption. The Anthropocene requires a fundamental rethinking of the relationship between humans and the environment (Whitmee et al., 2015).

The health impacts of the Anthropocene are already evident. Climate change is causing heatwaves, floods, and droughts (Watts et al., 2021). Pollution is causing respiratory and cardiovascular diseases (WHO, 2021). Biodiversity loss is increasing the risk of emerging infectious diseases (Whitmee et al., 2015). The Anthropocene threatens to undo decades of health progress (Lancet Countdown, 2024).

Planetary Health

Planetary health is a framework that addresses the health impacts of the Anthropocene. It recognises that human health is dependent on the health of natural systems. It advocates for policies that protect both human health and the environment. Planetary health is essential for addressing the challenges of the Anthropocene (Whitmee et al., 2015).

Planetary health requires several commitments. It requires recognising the interdependence of human and environmental health. It requires addressing the structural drivers of environmental degradation, including capitalism, consumerism, and inequality. It requires advocating for policies that promote both health and sustainability. It requires building movements for planetary health (Whitmee et al., 2015; Horton et al., 2019).

Transformative Change

The Anthropocene requires transformative change. Incremental improvements are not enough. The scale and urgency of the challenges demand fundamental changes in how societies are organised. This requires challenging the systems that produce environmental degradation and health inequities (Whitmee et al., 2015; Watts et al., 2021).

Transformative change requires several strategies. It requires transforming the economy, moving away from growth and consumption toward sustainability and wellbeing. It requires transforming

governance, shifting power from corporations to communities and from the Global North to the Global South. It requires transforming values, moving away from individualism and materialism toward solidarity and care (Whitmee et al., 2015; Horton et al., 2019).

31.6 Decolonising Public Health

Decolonising public health is essential for addressing health inequities and building a more just world. It involves challenging the colonial legacies that shape public health and centring Indigenous and non-Western knowledge and leadership.

The Imperative of Decolonisation

Decolonising public health is an imperative for several reasons. Colonialism has caused profound harm to Indigenous and colonised peoples. The legacies of colonialism continue to shape health inequities. Addressing these inequities requires confronting colonial legacies. Decolonisation is not just about the past; it is about building a more just future (Smith, 2021; Arnold, 1993).

Decolonising public health also offers opportunities for transforming practice. Indigenous and non-Western knowledge systems offer valuable insights into health and healing. Centring these knowledge systems can challenge the dominance of Western approaches and enrich public health. Decolonisation is not just a moral imperative; it is also an epistemic one (Smith, 2021; Abimbola & Pai, 2020).

Pathways to Decolonisation

Decolonising public health requires multiple pathways. It requires transforming the institutions of public health, including educational institutions, research institutions, and health systems. It requires shifting power from Northern to Southern actors. It requires centring Indigenous and non-Western knowledge and leadership. It requires addressing the structural determinants of health inequities (Smith, 2021; Kwete et al., 2022).

Transforming institutions requires several strategies. It requires diversifying the public health workforce, including leadership positions. It requires decolonising the curriculum, centring Indigenous and non-Western perspectives. It requires changing research practices, including shifting power to communities and using participatory methods. It requires reforming health systems, including integrating Indigenous health practices (Smith, 2021; Wallerstein et al., 2018).

Centring Indigenous Knowledge

Centring Indigenous knowledge is essential for decolonising public health. Indigenous knowledge systems offer valuable insights into health and healing. They are grounded in relationships with land, community, and culture. They challenge the assumptions of dominant public health approaches and offer new possibilities for practice (Smith, 2021; The Lancet Planetary Health, 2024).

Centring Indigenous knowledge requires several strategies. It requires recognising the validity of Indigenous knowledge. It requires creating space for Indigenous knowledge in public health. It requires supporting Indigenous-led research and practice. It requires being humble about the limits of Western knowledge (Smith, 2021; Seven Directions, 2025).

31.7 The Public Health Professional: A Critical Reflection

This book began with a question: What kind of public health professional do you want to be? As you reach the end of this journey, it is time to reflect on your own professional identity, values, and commitments.

Professional Identity and Values

Public health professionals must develop a clear sense of their identity and values. This requires reflection on what public health is for, whose health matters, and what trade-offs are acceptable. It requires being honest about one's own positionality, including one's privileges and biases. It requires a commitment to justice and equity (McKee, 2025; Helm-Murtagh & Erwin, 2024).

Developing a professional identity also requires engagement with the field. It requires learning from the history of public health, including both its achievements and its injustices. It requires engaging with contemporary debates and challenges. It requires building relationships with colleagues and communities. It requires being part of a collective endeavour (McKee, 2025).

Power and Responsibility

Public health professionals have power. They have expertise, institutional positions, and access to resources. They have the power to shape health policy and practice. With power comes responsibility. Public health professionals must use their power responsibly, in service of health and justice (McKee, 2025; Helm-Murtagh & Erwin, 2024).

Using power responsibly requires several strategies. It requires being accountable to affected communities. It requires being transparent about one's interests and commitments. It requires being willing to challenge power, including the power of one's own institutions. It requires being on the side of justice, even when it is not popular or safe (McKee, 2025).

Solidarity and Collective Action

Public health is a collective endeavour. It requires working with others, including colleagues, communities, and movements. It requires building solidarity across difference. It requires being part of a collective struggle for health and justice (Krieger, 2011; Pai, 2022).

Building solidarity requires several strategies. It requires being attentive to power imbalances and addressing them. It requires being willing to learn from others, including from those with different perspectives and experiences. It requires being willing to share power and resources. It requires being committed to collective action, not just individual achievement (Krieger, 2011; Pai, 2022).

31.8 A Manifesto for Public Health

As you reach the end of this book, it is time to articulate your own manifesto for public health. This is a personal and collective statement of values, vision, and commitment. It is a guide for your practice and a source of inspiration and accountability.

Your Vision

What is your vision for public health? What do you want public health to be and to achieve? What kind of world do you want to create? Your vision should be ambitious, inspiring, and grounded in values of justice and equity.

Your Values

What values guide your practice? Are you committed to equity, justice, solidarity, and care? Are you committed to challenging oppression and advancing liberation? Your values should be explicit and should guide your decisions and actions.

Your Commitments

What commitments do you make to public health and to the communities you serve? Who are you accountable to? What will you do to advance health and justice? Your commitments should be concrete and actionable.

Your Call to Action

What do you call on others to do? How do you invite others to join you in the struggle for health and justice? Your call to action should be inspiring and should mobilise others to action.

31.9 Key Takeaways

Public health has achieved significant successes, but these have been unevenly distributed and the field faces significant challenges (Frieden, 2010; Krieger, 2011)

The six competencies developed in this book must be applied critically, in service of justice and equity, not just technical effectiveness (Meadows, 2008; Midgley, 2000; Merry, 2016; Kass, 2001)

Public health is inherently political; public health professionals must engage with politics and challenge power (Krieger, 2011; Navarro, 2009)

Social movements have been central to public health progress and are essential for transforming public health (Krieger, 2011; Bailey et al., 2017)

The Anthropocene poses fundamental challenges to public health, requiring transformative change (Whitmee et al., 2015; Watts et al., 2021)

Decolonising public health is essential for addressing health inequities and building a more just world (Smith, 2021; Kwete et al., 2022)

Public health professionals must reflect on their identity, values, and commitments and use their power responsibly (McKee, 2025; Helm-Murtagh & Erwin, 2024)

A manifesto for public health can guide practice and inspire collective action

The future of public health depends on the choices we make and the struggles we engage in

Appendix A

Competency Self-Assessment Tool

Introduction

This self-assessment tool helps you examine your current proficiency across the six core competencies proposed in this book: Systems Mapping, Data Fluency, Implementation Agility, Stakeholder Navigation, Ethical Foresight, and Narrative Competence. It is not a test and it is not a formal professional examination. Its purpose is to help you recognise what you already do well, identify areas that need attention, and turn that reflection into a practical professional development plan.

The tool is organised into four parts:

Part	Purpose
Part 1: Self-Assessment Inventory	Rate your current proficiency across the six competencies.
Part 2: Reflective Analysis	Examine your strengths, development needs, patterns, and context.
Part 3: Professional Development Plan	Turn your assessment into specific goals and actions.
Part 4: Competency Development Resources	Connect each competency with relevant chapters and further reading.

For a useful baseline, complete the assessment before or early in your engagement with the book. Repeat it after completing the book, after a major professional experience, or when your role changes. The aim is not to produce a perfect score. The aim is to notice change and decide what to work on next.

Part 1: Self-Assessment Inventory

Instructions

For each statement, select the rating that best describes your current ability. Rate what you can actually do in practice, not what you know in theory or what you hope to be able to do.

Rating	Description
1 - Novice	I have limited knowledge or experience in this area and need substantial guidance to apply it.
2 - Developing	I have some knowledge and experience and can apply this competency with support.
3 - Proficient	I have solid knowledge and experience and can apply this competency independently in most situations.
4 - Advanced	I have extensive experience and can apply this competency in complex situations and support others.

5 - Expert	I have deep knowledge and extensive experience and can develop approaches, teach others, and lead in this area.

Competency 1: Systems Mapping

Definition: The ability to visualise and analyse the interconnected elements of a health problem, including relationships, feedback loops, delays, and possible leverage points.

Statement	Rating (1-5)
1. I understand systems thinking and can explain its practical value to others.	1 2 3 4 5
2. I can identify key actors, settings, relationships, and influences within a public health problem.	1 2 3 4 5
3. I can construct a causal loop diagram or another systems map to make important relationships visible.	1 2 3 4 5
4. I can identify leverage points where changes may influence several parts of a system.	1 2 3 4 5
5. I can anticipate possible unintended consequences of an intervention.	1 2 3 4 5
6. I can use systems mapping to communicate complexity to people with different backgrounds.	1 2 3 4 5
7. I can recognise the assumptions, boundaries, and blind spots in my own systems maps.	1 2 3 4 5

Overall Rating for Systems Mapping: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Competency 2: Data Fluency

Definition: The ability to interrogate, interpret, question, and communicate quantitative and qualitative data, including outputs produced by digital systems and algorithms.

Statement	Rating (1-5)
1. I can critically assess the quality, source, completeness, and limitations of health data.	1 2 3 4 5

2. I can identify common errors in data interpretation, including ecological and other misleading interpretations.	1 2 3 4 5
3. I can distinguish association from causation and explain why the distinction matters.	1 2 3 4 5
4. I can question the assumptions behind statistical models, dashboards, and algorithms.	1 2 3 4 5
5. I can judge whether data are fit for the decision or context in which they are being used.	1 2 3 4 5
6. I can communicate uncertainty clearly without overstating or weakening the evidence.	1 2 3 4 5
7. I can identify ways in which data collection, analysis, or reporting may reflect or reinforce inequities.	1 2 3 4 5

Overall Rating for Data Fluency: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Competency 3: Implementation Agility

Definition: The ability to adapt evidence-informed interventions to real-world constraints, monitor what happens in practice, and learn from both success and failure.

Statement	Rating (1-5)
1. I understand the RE-AIM framework and can use it to plan or assess a programme.	1 2 3 4 5
2. I understand the CFIR framework and can use it to examine implementation barriers and facilitators.	1 2 3 4 5
3. I can distinguish between fidelity and adaptation and judge when each is appropriate.	1 2 3 4 5
4. I can anticipate common implementation challenges in settings with limited resources.	1 2 3 4 5
5. I can design implementation strategies that respond to local context rather than simply copying an intervention.	1 2 3 4 5
6. I can learn from implementation failures and adjust an approach accordingly.	1 2 3 4 5
7. I can balance the value of evidence-based practice with the realities of local implementation.	1 2 3 4 5

Overall Rating for Implementation Agility: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Competency 4: Stakeholder Navigation

Definition: The ability to identify, understand, engage, and work with people and organisations whose interests, power, knowledge, or decisions affect a public health problem.

Statement	Rating (1-5)
1. I can systematically identify stakeholders and understand their interests.	1 2 3 4 5
2. I can analyse differences in stakeholder influence, power, and access to decision-making.	1 2 3 4 5
3. I can develop engagement approaches suited to different stakeholder groups.	1 2 3 4 5
4. I can build and maintain trust with communities and other stakeholders.	1 2 3 4 5
5. I can navigate competing interests and manage disagreement constructively.	1 2 3 4 5
6. I can build coalitions across sectors and across different interests.	1 2 3 4 5
7. I can ensure that the voices of marginalised or less powerful groups are meaningfully included.	1 2 3 4 5

Overall Rating for Stakeholder Navigation: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Competency 5: Ethical Foresight

Definition: The ability to anticipate, examine, and justify ethical choices when public health decisions involve competing values, uncertainty, surveillance, resource allocation, or restrictions on liberty.

Statement	Rating (1-5)
1. I understand the Kass framework and can use it to structure discussion of public health ethical dilemmas.	1 2 3 4 5
2. I can identify the ethical dimensions of a public health decision.	1 2 3 4 5
3. I can reason through tensions between individual rights and collective wellbeing.	1 2 3 4 5
4. I can apply ideas of distributive, procedural, and recognitive justice to public health decisions.	1 2 3 4 5
5. I can develop and justify approaches to resource allocation and triage.	1 2 3 4 5
6. I can involve communities and affected groups in ethical deliberation.	1 2 3 4 5
7. I can communicate difficult ethical decisions honestly and explain the reasons behind them.	1 2 3 4 5

Overall Rating for Ethical Foresight: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Competency 6: Narrative Competence

Definition: The ability to frame health issues clearly and persuasively for different audiences while protecting accuracy, context, dignity, and trust.

Statement	Rating (1-5)
1. I can craft clear and compelling health messages for different audiences.	1 2 3 4 5
2. I can translate complex health evidence into accessible and culturally meaningful stories.	1 2 3 4 5
3. I understand key ideas in narrative persuasion, including transportation and identification.	1 2 3 4 5
4. I can design risk communication that balances transparency, uncertainty, and trust.	1 2 3 4 5
5. I can respond to misinformation through proactive communication and trusted messengers.	1 2 3 4 5
6. I can adapt my communication to different cultural, social, and media contexts.	1 2 3 4 5

7. I can build trust through authentic and ethical storytelling.	1 2 3 4 5

Overall Rating for Narrative Competence: _____

Evidence or Example: Describe one real situation in which you applied, or struggled to apply, this competency.

_____

_____

_____

_____

Scoring and Interpretation

For each competency, you can calculate an average score by adding the seven item ratings and dividing the total by seven. Use the average as a guide rather than a judgement. A lower score identifies an area you may want to develop. A higher score suggests an area where you may already have useful experience, although high self-ratings are still worth testing against evidence from practice.

Average score	Reflective interpretation
1.0-1.9	Novice: substantial development and guided practice may be needed.
2.0-2.9	Developing: some capability is present, but further practice and support would help.
3.0-3.9	Proficient: the competency can generally be applied independently.
4.0-4.5	Advanced: the competency can be applied confidently in complex situations and shared with others.
4.6-5.0	Expert range: strong experience is evident; continued reflection should focus on leadership, teaching, and adaptation.

This scoring approach is intended for reflection and learning. It should not be treated as a validated psychometric instrument, a certification test, or a substitute for supervised assessment of professional practice.

Part 2: Reflective Analysis

Competency Profile

Transfer your six overall ratings or calculated averages into the table below.

Competency	Rating / Average (1-5)	What this score tells me
Systems Mapping	_____	_____ _____

Data Fluency	_____	_____ _____
Implementation Agility	_____	_____ _____
Stakeholder Navigation	_____	_____ _____
Ethical Foresight	_____	_____ _____
Narrative Competence	_____	_____ _____

Visual Profile

Mark one box in each row to create a simple visual profile of your current competencies.

Level	Systems Mapping	Data Fluency	Implementation Agility	Stakeholder Navigation	Ethical Foresight	Narrative Competence
5 - Expert	□	□	□	□	□	□
4 - Advanced	□	□	□	□	□	□
3 - Proficient	□	□	□	□	□	□
2 - Developing	□	□	□	□	□	□
1 - Novice	□	□	□	□	□	□

Strengths Analysis

1. Which competency is currently strongest for you? What makes you say that?

_____
_____

2. What experiences, training, mentoring, or responsibilities contributed to this strength?

_____
_____

3. How have you used this competency in practice? Give one specific example.

_____
_____

4. What do you value or enjoy about using this competency?

_____
_____

Development Areas

1. Which competency is currently weakest or least developed? What may explain this?

_____

2. What gaps in experience, training, confidence, or opportunity have contributed to the gap?

_____

3. How has this limitation affected your work or decision-making?

_____

4. What would greater proficiency in this area allow you to do that you cannot do confidently now?

_____

Patterns and Connections

1. Do you notice a pattern across your ratings? For example, are technical competencies stronger than relational ones?

_____

2. How do your competencies influence one another? Where might strength in one competency support another?

_____

3. Where might a weakness in one competency limit your effectiveness in another?

_____

4. How do your competency patterns relate to your current role, professional identity, or aspirations?

_____

Context and Positionality

1. How might your professional background, experiences, or position shape your competency profile?

_____

2. What opportunities, privileges, constraints, or barriers have influenced your development?

_____

3. How might the same competency profile be interpreted differently in another organisation, community, or country?

_____

_____

4. Which perspectives or forms of knowledge might you be missing when you assess your own competence?

_____

_____

Part 3: Professional Development Plan

Priority Development Areas

Identify two or three areas that would make the greatest difference to your current practice.

Priority	Competency	Why this matters now	First step
1			
2			
3			

Goal 1: SMART Development Goal

Element	Your plan
Specific	What exactly do you want to achieve?
Measurable	How will you know that you are making progress?
Achievable	What resources, time, support, or opportunities do you need?
Relevant	How does this goal connect with your current work or longer-term professional aims?
Time-bound	By when will you achieve or review the goal?

Goal 2: SMART Development Goal

Element	Your plan
Specific	What exactly do you want to achieve?
Measurable	How will you know that you are making progress?
Achievable	What resources, time, support, or opportunities do you need?
Relevant	How does this goal connect with your current work or longer-term professional aims?

Time-bound	By when will you achieve or review the goal?

Goal 3: SMART Development Goal

Element	Your plan
Specific	What exactly do you want to achieve?
Measurable	How will you know that you are making progress?
Achievable	What resources, time, support, or opportunities do you need?
Relevant	How does this goal connect with your current work or longer-term professional aims?
Time-bound	By when will you achieve or review the goal?

Action Plan

Goal	Actions	Resources or support needed	Timeline	Success indicators
1				
2				
3				

Learning Strategies

Competency	Recommended learning strategies
Systems Mapping	• Work through case studies and real public health problems. • Practise causal loop diagramming and other systems mapping approaches. • Use systems maps in a real project and discuss them with colleagues. • Join a systems thinking community of practice or relevant workshop.
Data Fluency	• Question data sources, definitions, assumptions, missingness, and limitations. • Practise explaining uncertainty to non-technical audiences. • Strengthen skills in statistics, data interpretation, and visualisation. • Read analyses critically and identify common interpretation errors.
Implementation Agility	• Apply RE-AIM and CFIR to programmes you know or are involved in. • Participate in implementation work and document

	what changes in practice. • Seek mentoring from experienced implementers. • Review failures as learning opportunities rather than simply as outcomes to hide.
Stakeholder Navigation	• Practise stakeholder mapping in current projects. • Seek opportunities to build coalitions across sectors. • Engage directly with communities and groups affected by decisions. • Develop facilitation, negotiation, and conflict resolution skills.
Ethical Foresight	• Use the Kass framework to examine difficult cases. • Discuss ethical dilemmas with colleagues from different professional perspectives. • Read public health ethics and human rights literature. • Participate in ethics committees, review groups, or structured ethical discussions where appropriate.
Narrative Competence	• Practise turning evidence into clear, accurate health stories. • Seek feedback on messages from people who represent the intended audience. • Study effective communicators and examine why their messages work. • Strengthen skills in health communication, risk communication, and ethical storytelling.

Mentorship and Support

1. Who could support you in your development?

Competency	Potential mentor or supporter	How they could help

2. What communities of practice or professional networks could you join?

_____

_____

3. What institutional support would make your development easier?

_____

_____

Monitoring and Review

Review point	Date	Progress notes	What I will do next
Initial assessment			
3-month review			
6-month review			
1-year review			

Part 4: Competency Development Resources

Book Chapters by Competency

Competency	Relevant chapters and missions
Systems Mapping	Chapter 3: How to Map a System; Chapter 29: Systems Thinking and Complexity Science; relevant missions in Part II.
Data Fluency	Chapter 4: How to Read Data Like a Practitioner; Chapter 11: Epidemiology and Biostatistics; Mission 1 and Mission 3.
Implementation Agility	Chapter 5: How to Implement in the Real World; Chapter 28: Implementation Science; Mission 2 and Mission 6.
Stakeholder Navigation	Chapter 6: How to Navigate Stakeholders; Chapter 13: Health Systems and Policy; Mission 4 and Mission 5.
Ethical Foresight	Chapter 7: How to Think Ethically Under Pressure; Chapter 19: Public Health Law and Ethics; Mission 1 and Mission 3.
Narrative Competence	Chapter 8: How to Tell a Health Story; Chapter 17: Health Communication and Media Literacy; Mission 5.

Further Reading Recommendations

The following readings provide starting points for deeper study. Full bibliographic details belong in the consolidated reference list at the end of the complete book.

Competency	Recommended readings
Systems Mapping	Meadows, D. (2008), Thinking in Systems; Sterman, J. (2000), Business Dynamics.
Data Fluency	Merry, S. E. (2016), The Seductions of Quantification; Rovetta and Mansournia (2025), work on common misconceptions in statistical testing.
Implementation Agility	Damschroder et al. (2009), CFIR framework; Glasgow et al. (1999), RE-AIM framework.

Stakeholder Navigation	Bryson, J. (2004), stakeholder identification and analysis; Wallerstein et al. (2018), community-based participatory research.
Ethical Foresight	Kass, N. (2001), public health ethics framework; Gostin and Wiley (2020), Public Health Law.
Narrative Competence	Hill, A. L. (2024), Telling a Good Story; World Health Organization (2024), work on storytelling for health impact.

Conclusion

Competency development is a continuing process. This assessment gives you a structured way to pause, look at your current practice, and decide where further development would be useful. Your ratings may change as your responsibilities, opportunities, and understanding change.

Return to the tool after completing the book, after a significant professional experience, or when you take on a new role. Compare your ratings with the evidence you can point to from practice. If your rating rises but you cannot identify a corresponding change in behaviour, experience, or results, that is useful information too.

The six competencies are interconnected rather than separate boxes. Systems Mapping can improve how you use data. Data Fluency can strengthen your narratives. Stakeholder Navigation can make implementation more realistic. Ethical Foresight can improve decisions under pressure. Narrative Competence can help people understand and act on evidence. The goal is therefore not simply to become highly rated in every category. It is to become a more capable public health professional who can think, decide, communicate, and act well in complex situations.

Appendix B

Glossary of Key Terms

This glossary provides concise working definitions of key terms used throughout Public Health Reimagined. The definitions reflect the critical and analytical approach of the book. They are intended to help readers interpret the concepts in context rather than to serve as neutral, exhaustive dictionary entries. Where a concept is contested, the definition makes that contest visible or points to the way the term is used in public health practice.

How to use the glossary. Use the entries as quick reference points while reading. For fuller explanations, debates, examples, and applications, return to the relevant chapter or mission in the book. The glossary does not replace the evidence and discussion provided in the main text.

A

Adaptive Systems Framework

A leadership framework that emphasises adaptive, collaborative, and reflexive actions essential for navigating wicked problems in public healthcare. The framework advocates for moving beyond static management models to approaches that are responsive to complexity and uncertainty (de Klerk et al., 2026).

Agent-Based Modelling

A computational method that simulates the behaviour of individual agents and their interactions. Agent-based modelling can capture heterogeneity, adaptation, and emergence in complex systems. It has been used in public health to study infectious disease transmission, health behaviours, and other phenomena (Epstein, 2006).

All-Hazards Approach

An emergency preparedness paradigm that assumes risk reduction, emergency preparedness, response actions, and community recovery activities can be implemented using the same model regardless of the cause of the hazard. The approach has been critiqued for obscuring the specific characteristics of different hazards (WHO, 2024).

Anthropocene

A proposed geological epoch used to describe the profound influence of human activity on Earth systems. The Anthropocene poses fundamental challenges to public health, requiring a transformation of practice and values (Whitmee et al., 2015).

Antimicrobial Resistance (AMR)

The ability of bacteria, viruses, fungi, and parasites to withstand treatments that once killed them. AMR is a One Health problem that requires coordinated action across human, animal, and environmental sectors. The WHO has declared AMR one of the top ten global public health threats (WHO, 2021; GBD AMR Collaborators, 2022).

AWaRe System

A WHO framework for categorising antibiotics into Access, Watch, and Reserve groups to guide prescribing and stewardship. The system aims to promote the use of Access antibiotics (narrow spectrum, lower resistance risk) and restrict the use of Watch and Reserve antibiotics (broader spectrum, higher resistance risk) (WHO, 2019).

B

Behavioural Change Wheel

A comprehensive framework for understanding and changing behaviour, developed by Michie and colleagues (2011). The framework identifies three conditions for behaviour change: capability, opportunity, and motivation. It provides a systematic approach for designing behaviour change interventions.

Behavioural Economics

An approach that integrates insights from psychology into economics. Behavioural economics challenges the traditional economic assumption that people make rational decisions and has identified cognitive biases that affect decision-making, including present bias, loss aversion, and optimism bias (Thaler & Sunstein, 2008).

Beveridge Model

A health system model characterised by universal coverage funded through general taxation and government ownership and operation of health services. The United Kingdom's National Health Service is the classic example (WHO, 2010).

Bias (Epidemiological)

Systematic error in the design, conduct, or analysis of a study that leads to an incorrect estimate of the association between exposure and outcome. The main types are selection bias and information bias (Rothman et al., 2008).

Bismarck Model

A health system model characterised by social health insurance funded through employer and employee contributions. Health services are provided by private providers but financed through regulated insurance funds. Germany is the classic example (WHO, 2010).

Bradford Hill Criteria

A set of nine criteria for assessing whether an observed association is causal. The criteria include strength, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy. They are widely used in epidemiological research but are not a checklist; they are considerations that inform causal judgment (Hill, 1965).

C

Causal Loop Diagram

A visual representation of the feedback loops in a system. Causal loop diagrams show how variables are connected and how changes in one variable affect others over time. They are used in systems

thinking to visualise complex relationships and identify leverage points (Sterman, 2000; Meadows, 2008).

Causal Inference

The process of drawing conclusions about causal relationships from data. Causal inference requires distinguishing association from causation. It involves integrating evidence from multiple sources, assessing the plausibility of different causal explanations, and considering alternative interpretations (Greenland et al., 2008).

Cohort Study

An epidemiological study design that follows a group of people over time, comparing those who are exposed to those who are not exposed, and measuring outcomes as they occur. Cohort studies can establish temporal sequence and are useful for studying rare exposures (Rothman et al., 2008).

Coloniality

The persistence of colonial power relations and ways of thinking after the formal end of colonialism. Coloniality is evident in the dominance of Western knowledge systems, the power relations between researchers and communities, and the structures and institutions of public health (Smith, 2021).

Commercial Determinants of Health

The ways in which commercial actors, including corporations, shape health through their products, marketing, and political influence. The commercial determinants framework challenges the idea that health is simply about individual choice and personal responsibility (Moodie et al., 2013). **Community-Based Participatory Research (CBPR)** A research approach that involves collaboration between researchers and communities throughout the research process. CBPR is based on the principle that communities have knowledge and expertise essential for understanding health and developing interventions (Wallerstein et al., 2018).

Competency

The ability to apply knowledge, skills, and judgment to solve real-world problems. Competencies represent the integration of cognitive, technical, and interpersonal capacities that enable effective practice in complex and uncertain environments (ASPHER, 2020).

Confidence Interval

A range calculated from sample data using a specified statistical procedure, with coverage properties defined by the method used. A 95% confidence interval means that if the study were repeated many times, 95% of the intervals would contain the true value. The interval does not specify the probability that the true effect lies within the interval already calculated (Rovetta & Mansournia, 2025).

Confounding

A situation in which a third variable is associated with both the exposure and the outcome and distorts the association between them. Confounding can be addressed through study design (restriction, matching) or through analysis (stratification, multivariable models) (Rothman et al., 2008). **Consolidated Framework for Implementation Research (CFIR)** A comprehensive framework for understanding implementation, composed of constructs associated with effective

implementation. CFIR has five domains: intervention characteristics, outer setting, inner setting, characteristics of individuals, and process (Damschroder et al., 2009).

Cost-Benefit Analysis

An economic evaluation method that measures both costs and benefits in monetary terms. Cost-benefit analysis calculates the net benefit of an intervention and is used to determine whether an intervention is worth doing (Drummond et al., 2015).

Cost-Effectiveness Analysis

An economic evaluation method that compares the costs and health outcomes of different interventions. Cost-effectiveness analysis measures outcomes in natural units, such as lives saved or cases averted, and calculates the cost per unit of outcome (Drummond et al., 2015).

Cost-Utility Analysis

A type of cost-effectiveness analysis that measures outcomes in quality-adjusted life years (QALYs). QALYs combine quantity and quality of life and are used to compare interventions across different health conditions (Drummond et al., 2015).

Counterfactual Framework

An approach to causal inference that defines causation in terms of counterfactuals: the effect of an exposure is the difference between the outcome that would occur if the exposure were present and the outcome that would occur if the exposure were absent (Greenland et al., 2008).

Critical Health Literacy

An extension of health literacy that includes the ability to critically analyse health information, understand the social, economic, and political determinants of health, and advocate for policies that address these determinants (Nutbeam, 2008).

Critical Matriarchal Framework

A leadership framework that centres relational authority, collective responsibility, intergenerational knowledge, and care-based leadership to address health inequities rooted in fractured systems of care and community relationships (Ponder et al., 2026).

Cross-Sectional Study

An epidemiological study design that measures exposure and outcome at the same point in time. Cross-sectional studies are useful for estimating prevalence and for identifying associations but cannot establish temporal sequence (Rothman et al., 2008).

D

Data Fluency

The ability to interrogate, interpret, and communicate data. Data fluency goes beyond statistical literacy to include the capacity to question assumptions, identify bias, and present uncertainty clearly. It is one of the six core competencies proposed in this book.

Decolonising Public Health

The process of challenging the colonial legacies that shape public health theory, research, and practice. Decolonising public health involves centring Indigenous and non-Western knowledge systems, shifting power to communities, and addressing the structural determinants of health inequities (Smith, 2021).

Dichotomization Fallacy

The misleading and dangerous practice of dividing results into "significant" versus "nonsignificant" based on P values. The fallacy reflects a failure to appreciate the continuum of evidence and the role of judgment in interpretation (Rovetta & Mansournia, 2025).

Diffusion of Innovations

A model that explains how new ideas and practices spread through populations. The model identifies categories of adopters, from innovators to laggards, and factors that influence adoption. It has been applied to health behaviours and interventions (Rogers, 2003).

Disinformation

False information shared with the intent to deceive. Disinformation is a major challenge for public health, particularly during health emergencies (Bak-Coleman et al., 2022).

Distributive Justice

A dimension of justice that focuses on the fairness of outcomes, including the distribution of benefits and burdens in a population. Distributive justice is central to public health ethics (Bekker et al., 2025).

Doctrine of Discovery

A legal and religious concept used to justify European colonisation. The doctrine asserted that European nations had the right to claim lands that were not inhabited by Christians. The doctrine continues to shape Indigenous health inequities (Smith, 2021).

E

Ecological Study

An epidemiological study design that compares disease rates across different populations or geographic areas. Ecological studies are useful for generating hypotheses but are susceptible to the ecological fallacy, where associations at the group level do not hold at the individual level (Rothman et al., 2008).

Ecological Fallacy

An error in interpretation that occurs when associations observed at the group level are wrongly attributed to individuals. The ecological fallacy is a risk in ecological studies (Rothman et al., 2008).

Economic Evaluation

A set of methods for comparing the costs and benefits of different interventions. Economic evaluation includes cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis. It has become central to health policy and decision-making (Drummond et al., 2015).

Effect Modification

A situation in which the association between exposure and outcome differs across levels of a third variable. Effect modification is not a bias to be controlled but a phenomenon to be understood and explained (Rothman et al., 2008).

Empowerment Evaluation

A specific approach to participatory evaluation that emphasises building the capacity of communities to evaluate their own programmes. Empowerment evaluation is based on the principle that communities have the knowledge and expertise to evaluate their own work (Fetterman, 2001).

Environmental Health

The branch of public health that focuses on the relationships between people and their environment. Environmental health addresses physical, chemical, and biological factors external to a person and promotes healthy and safe communities (WHO, 2021).

Environmental Justice

The principle that all people, regardless of race, ethnicity, income, or social status, are entitled to equal protection from environmental hazards and equal access to environmental benefits (Bullard, 2000).

Environmental Racism

The disproportionate exposure of racialised communities to environmental hazards. Environmental racism is produced by systemic racism in housing, land use, and regulatory decisions (Bullard, 2000).

Epidemiological Transition

The shift from infectious to chronic diseases as the leading causes of death. The epidemiological transition has occurred in high-income countries and is occurring in low and middle income countries (Omran, 1971).

Epidemiology

The study of the distribution and determinants of health-related states and events in specified populations and the application of this study to the control of health problems (Last, 2001).

Epistemic Justice

A concept that concerns who is recognised as a knower and what forms of knowledge are recognised as valid. Epistemic injustice occurs when certain groups are systematically excluded from knowledge production or when their knowledge is dismissed as invalid (Fricker, 2007).

Equity-Focused Evaluation

An evaluation approach that centres equity in the evaluation process. It asks not just whether an intervention works but whether it works equitably, attending to the distribution of benefits and burdens across groups (Braveman & Gottlieb, 2014).

Essential Public Health Functions

The core functions that public health systems must perform to protect and promote population health. The functions include surveillance, health promotion, disease prevention, health protection, and health systems strengthening (WHO, 2024).

Ethical Foresight

The ability to anticipate and reason through ethical trade-offs in public health decision-making. Ethical foresight involves identifying ethical dilemmas, applying ethical frameworks, and making justified decisions in a transparent and accountable way. It is one of the six core competencies proposed in this book.

Evidence-Informed Policymaking

An approach to policymaking that emphasises that policy decisions should be informed by the best available evidence and follow a systematic and transparent approach. Evidence-informed policymaking recognises that evidence is one factor among many in policy decisions (Haby et al., 2025).

F

Feedback Loop

A circular chain of cause and effect in a system. Reinforcing loops amplify change, while balancing loops dampen change. Feedback loops are central to systems thinking (Meadows, 2008; Sterman, 2000).

Feminist Health Economics

An approach to health economics that challenges the male-dominated, patriarchal assumptions of mainstream health economics. Feminist health economics centres the experiences of women and marginalised groups and advocates for policies that address gender-based health inequities (Krieger, 2003).

Food Justice

A framework that addresses the structural inequalities in the food system. Food justice recognises that food systems are shaped by systemic racism, economic inequality, and political exclusion, and centres the voices and experiences of those most affected by food injustice (Alkon & Agyeman, 2011).

Food Sovereignty

The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. Food sovereignty challenges the corporate food system (Patel, 2012).

Food System

The entire range of activities involved in the production, processing, distribution, consumption, and disposal of food. Food systems are shaped by power, politics, and economic interests (Clapp, 2021).

G

Gender

A social structure that organises social relations, distributes resources, and shapes opportunities. Gender is not simply an individual attribute but is embedded in institutions and reproduced through everyday practices (Connell, 2002).

Gender Transformative Approach

An approach that seeks to transform gender relations by challenging harmful gender norms, redistributing power, and promoting gender equality. Gender transformative approaches address the root causes of gender-based health inequities (WHO, 2019).

Global Health

An area of study, research, and practice that places a priority on improving health and achieving health equity for all people worldwide. Global health emphasises transnational health issues, determinants, and solutions (Koplan et al., 2009).

Global Health Diplomacy

The negotiation processes that shape the global policy environment for health. Global health diplomacy involves multiple actors, including states, international organisations, NGOs, and private sector entities (Frenk & Moon, 2013).

Global Health Security

The actions and policies required to prevent, detect, and respond to public health threats that have the potential to cross borders and affect populations worldwide (Gostin & Wiley, 2020).

H

Health Equity

The absence of unfair and avoidable differences in health. Health equity requires that everyone has the opportunity to be as healthy as possible and that differences in health are not the result of social disadvantage (WHO, 2008; Marmot, 2015).

Health Impact Assessment (HIA)

A systematic process for assessing the health impacts of policies, programmes, and projects. HIA is used to integrate health into decision-making across sectors (WHO, 2018).

Health Inequality

Differences in health status between groups. The term inequality describes differences, while inequity is used when those differences are judged to be unfair and avoidable (Whitehead & Dahlgren, 2006).

Health Literacy

The ability to access, understand, and use health information to make health decisions. Health literacy is shaped by culture, education, and social context (Nutbeam, 2008).

Health Policy Analysis

A systematic approach to understanding how health policies are developed, implemented, and evaluated. Health policy analysis involves analysing the content of policy, the process of policy development, the actors involved, and the context in which policy is made (Walt & Gilson, 1994).

Health System

All organisations, institutions, resources, and people whose primary purpose is to promote, restore, or maintain health (WHO, 2000). Health systems are complex adaptive systems composed of multiple interacting components.

Health System Resilience

The capacity of a health system to prepare for, withstand, and recover from shocks while maintaining its core functions and sustaining improvement. Resilience involves anticipation, preparation, response, recovery, and growth (Kruk et al., 2015; Mousavinejhad et al., 2025).

Health Systems Strengthening

The process of improving the performance of health systems by strengthening the building blocks: service delivery, health workforce, health information systems, access to essential medicines, financing, and governance (WHO, 2007).

Historical Trauma

The cumulative emotional and psychological wounding over the lifespan and across generations, emanating from massive group trauma. Indigenous peoples have experienced historical trauma through colonisation (Brave Heart, 2003).

Humanitarian Action

Action guided by the principles of humanity, neutrality, impartiality, and independence. Humanitarian action addresses human suffering wherever it is found, without taking sides, based on need alone, and independent of political, economic, or military objectives (ICRC, 2019).

I

Implementation Agility

The ability to adapt evidence-based interventions to real-world constraints, learn from failure, and maintain effectiveness despite contextual challenges. Implementation agility is one of the six core competencies proposed in this book.

Implementation Science

The scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice. Implementation science seeks to understand and address the gap between what is known and what is done in practice (Eccles & Mittman, 2006).

Incidence

A measure of the occurrence of new cases of disease in a population over a specified period. Incidence proportion (cumulative incidence) is the proportion of people who develop the disease. Incidence rate (incidence density) is the number of new cases divided by the total person-time at risk (Rothman et al., 2008).

Incidence Proportion

The proportion of people who develop the disease during a specified period, calculated as the number of new cases divided by the number of people at risk at the beginning of the period (Rothman et al., 2008).

Incidence Rate

The number of new cases divided by the total person-time at risk. Incidence rate is also known as incidence density (Rothman et al., 2008).

Indigenous Knowledge

A holistic way of understanding the world grounded in the relationships between people, land, and all living things. Indigenous knowledge is experiential, oral, and relational, and is passed down through generations (Smith, 2021).

Indigenous Sovereignty

The inherent right of Indigenous peoples to govern themselves and their lands. Sovereignty is a fundamental determinant of Indigenous health (Reading & Wien, 2009).

Infodemic

An overabundance of information, including accurate and false or misleading information, that makes it difficult to identify trustworthy guidance (WHO, 2025).

Infodemic Equity Gap

A patterned disparity in exposure to, resilience against, and recoverability from health misinformation between and within countries. The gap reflects structural digital inequalities, uneven platform governance, gaps in multilingual health literacy, and divergent political information climates (Osborne, 2025).

Information Bias

Bias that occurs when there are errors in measuring exposure or outcome. Examples include recall bias and misclassification bias (Rothman et al., 2008).

International Health

A field that traditionally focused on the health of low- and middle-income countries through bilateral relationships between higher-income and lower-income countries. International health is distinct from global health (Brown et al., 2006).

International Health Regulations (IHR)

A legally binding framework for global health security. The IHR require countries to build core capacities for surveillance, reporting, and response and establish procedures for the WHO to declare a public health emergency of international concern (Gostin & Wiley, 2020).

Intersectionality

A framework that recognises the multiple, intersecting systems of oppression that shape people's lives. Intersectionality recognises that gender is not experienced uniformly; it is shaped by race, class, colonialism, sexuality, and other dimensions of identity and inequality (Crenshaw, 1991).

K

Kass Framework

A six-step public health ethics framework that asks: what are the public health goals? How effective is the program? What are the known or potential burdens? Can burdens be minimised? Is the program implemented fairly? How can benefits and burdens be fairly balanced? (Kass, 2001).

Know-Do Gap

The gap between what is known from research and what is done in practice. The know-do gap is a central concern of implementation science (Eccles & Mittman, 2006).

L

Leverage Point

A place in a system where a small change can produce a large effect. Donella Meadows (2008) identified twelve types of leverage points, from parameters to paradigms. The most powerful leverage points are often rules, goals, and paradigms.

Liberty Restrictions

Public health measures that restrict individual liberty, including quarantine, isolation, mandatory vaccination, and closure of businesses and schools. Liberty restrictions raise ethical questions about the balance between individual autonomy and collective protection (Gostin & Wiley, 2020).

M

Manifesto

A public declaration of principles, intentions, and commitments. In this book, readers are invited to develop their own manifesto for public health, articulating their vision, values, and commitments.

Medicalisation

The process by which non-medical problems become defined and treated as medical problems. Medicalisation has been critiqued for pathologising normal human experiences and for shifting attention from structural to individual solutions (Gutin, 2024; Pfeiffer & Mendez, 2026).

Meta-Analysis

A statistical method for combining the results of multiple studies, producing a single summary estimate of effect. Meta-analysis is used in systematic reviews (Higgins & Green, 2011).

Misinformation

False or misleading information shared without harmful intent. Misinformation is a major challenge for public health, particularly during health emergencies (Bak-Coleman et al., 2022).

Multimorbidity

The co-occurrence of multiple chronic conditions in an individual. Multimorbidity poses significant challenges for health systems that are oriented toward acute, episodic care (Barnett et al., 2012).

Multilateralism

Cooperation among multiple countries through international institutions and agreements. The erosion of multilateralism poses a fundamental threat to global health (Gostin & Wiley, 2020; Horton, 2020).

N

Narrative Competence

The ability to frame health issues persuasively for different audiences, translate technical concepts into accessible language, and counter misinformation effectively. Narrative competence is one of the six core competencies proposed in this book.

Narrative Transportation

The psychological state of being immersed in a story. Narrative transportation increases persuasion by reducing counterarguing and enhancing memory .

National Health Insurance Model

A health system model characterised by universal coverage through a public insurance system but with private provision of services. Canada is the classic example (WHO, 2010).

Neoliberalism

An economic and political ideology that emphasises individual responsibility, market solutions, and limited government intervention. Neoliberalism has shaped public health policy, often prioritising efficiency over equity (Navarro, 2009).

Noncommunicable Diseases (NCDs)

Diseases that are not transmitted from person to person, including cardiovascular disease, cancer, diabetes, and chronic respiratory disease. NCDs account for 74 percent of all deaths globally (WHO, 2023).

Nudge

Any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. Nudges work by influencing the automatic, intuitive system of thinking (Thaler & Sunstein, 2008).

Nutrition Transition

The shift from traditional diets to modern diets characterised by high consumption of ultra-processed foods, animal products, and sugary beverages. The nutrition transition is associated with rising rates of obesity and chronic disease (Popkin, 2006).

O

Observational Interpretation Fallacy

The erroneous interpretation of coincidental observational data as indicative of causality. The fallacy reflects a failure to distinguish between association and causation (D'Amico et al., 2025).

Odds Ratio

The ratio of the odds of exposure among cases to the odds of exposure among controls. The odds ratio is the measure of association used in case-control studies. When the disease is rare, the odds ratio approximates the risk ratio (Rothman et al., 2008).

One Health

An approach that recognises the interconnection between people, animals, plants, and their shared environment. One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems (WHO, 2021; Zinsstag et al., 2015).

P

P Value

The probability of obtaining results as extreme as those observed, assuming the null hypothesis is true. The P value is not the probability that the null hypothesis is true or the probability that the result is due to chance (Rovetta & Mansournia, 2025).

Participatory Evaluation

An evaluation approach that involves stakeholders, including community members, in the evaluation process. Participatory evaluation is based on the principle that those affected by programmes should have a voice in evaluating them (Cousins & Whitmore, 1998).

Patriarchy

A system of social relations in which men hold power and women are subordinated. Patriarchy shapes health through the distribution of resources, the organisation of healthcare, and the production of health knowledge (Connell, 2002).

Planetary Health

A concept that places human health within the context of the Earth's natural systems. Planetary health recognises that human health is ultimately dependent on the health of the planet, including its climate, ecosystems, and biodiversity (Whitmee et al., 2015).

Political Economy of Health

An approach that examines how political and economic systems shape health and health inequities. The political economy of health recognises that health is shaped by the distribution of power and resources (Navarro, 2009).

Population Attributable Fraction

The proportion of disease in the population that is attributable to the exposure. The population attributable fraction depends on both the strength of the association and the prevalence of the exposure (Rothman et al., 2008).

Prebunking

A strategy for countering misinformation that involves exposing people to a weakened form of misinformation before they encounter it, building resistance to future exposure. Prebunking is also known as inoculation (Lewandowsky et al., 2012).

Prevalence

The proportion of people in a population who have the disease at a specific point in time. Prevalence is a measure of disease burden, not disease occurrence (Rothman et al., 2008).

PRESCRIBES Framework

A framework for integrated antimicrobial stewardship that organises interventions into ten domains: Policy, Resource integration, Education, Surveillance, Culture, Rational antimicrobial use, Information, Behavioural modification, Engagement, and Sustainability (Mohapatra et al., 2026).

Procedural Justice

A dimension of justice that focuses on the fairness of the process leading up to certain outcomes. Procedural justice involves stakeholder engagement and the inclusion of those directly affected by decisions (Bekker et al., 2025).

Protection Motivation Theory

A health behaviour theory that predicts participation in health protection and risk behaviours. The theory posits that protection motivation mediates the effects of threat appraisals and coping appraisals on behaviour (Ballaa & Hagger, 2025).

Q

Quality-Adjusted Life Year (QALY)

A measure of health outcome that combines quantity and quality of life. QALYs are used in cost-utility analysis to compare interventions across different health conditions. QALYs have been critiqued for reflecting preferences shaped by social and cultural factors and for discriminating against certain groups (Drummond et al., 2015).

Quality Improvement

A systematic approach to improving the quality of healthcare and public health services. Quality improvement involves identifying problems, developing solutions, implementing changes, and assessing outcomes (Berwick, 1996).

R

Randomized Controlled Trial (RCT)

An experimental study design in which participants are randomly assigned to receive an intervention or a control, and outcomes are measured over time. RCTs are often treated as the strongest design for estimating causal effects under appropriate conditions, but they are not always feasible or ethical (Rothman et al., 2008).

RE-AIM Framework

A framework for planning and evaluating implementation that includes five dimensions: Reach, Effectiveness, Adoption, Implementation, and Maintenance. RE-AIM has been used extensively in public health (Glasgow et al., 1999).

Recognitive Justice

A dimension of justice that emphasises recognition, human dignity, and equal social participation. Recognitive justice includes need-based care, equality-based respect, and achievement-based social esteem (Bekker et al., 2025).

Resilience

The capacity of a system to withstand, adapt to, and recover from shocks. In public health, resilience applies to health systems, communities, and individuals (Kruk et al., 2015).

Risk Communication

The communication of information about risks to enable informed decision-making. Risk communication has become an essential pillar of emergency preparedness and response (Diers-Lawson, 2025; WHO, 2024).

Risk Difference

The absolute difference in risk between the exposed and the unexposed. The risk difference is calculated as the incidence proportion in the exposed minus the incidence proportion in the unexposed. It provides a measure of the public health impact of the exposure (Rothman et al., 2008).

Risk Ratio

The ratio of the risk of disease among the exposed to the risk among the unexposed. The risk ratio is calculated as the incidence proportion in the exposed divided by the incidence proportion in the unexposed (Rothman et al., 2008).

S

Selection Bias

Bias that occurs when the selection of participants into a study is related to both the exposure and the outcome. Examples include healthy worker effect and nonresponse bias (Rothman et al., 2008).

Self-Determination

The right of peoples to make decisions about their own lives and futures. For Indigenous peoples, self-determination includes the right to make decisions about health and wellbeing (UN General Assembly, 2007).

Social Determinants of Health

The conditions in which people are born, grow, live, work, and age, together with the wider systems that shape those conditions. These circumstances are shaped by the distribution of money, power, and resources at global, national, and local levels (WHO, 2008).

Social Gradient in Health

The consistent finding that health improves with each step up the socioeconomic hierarchy. The social gradient is observed for a wide range of health outcomes and in all countries where it has been studied (Marmot, 2015).

Social Marketing

The application of commercial marketing techniques to social issues. Social marketing involves identifying target audiences, understanding their motivations, and designing messages and interventions that appeal to them. Social marketing has been critiqued for treating people as consumers rather than citizens (Tones & Green, 2004).

Stakeholder Analysis

A systematic process for identifying and understanding the actors who have an interest in or influence over an issue. Stakeholder analysis involves identifying stakeholders, analysing their interests and influence, and determining engagement strategies (Bryson, 2004).

Stakeholder Navigation

The ability to identify, engage, and build coalitions across diverse interests and sectors. Stakeholder navigation is one of the six core competencies proposed in this book.

Statistical Power

The probability of detecting a true effect when it exists. Statistical power is not the probability of obtaining a statistically significant result; it depends on the effect size and sample size (Rovetta & Mansournia, 2025).

Structural Racism

A system in which racial inequality is embedded in the laws, policies, and institutions that shape health. Structural racism operates through multiple pathways, including housing segregation, environmental injustice, and the criminal justice system (Bailey et al., 2017).

Surge Capacity

The ability of healthcare systems to respond to a sudden increase in demand for services. Surge capacity includes the ability to increase bed capacity, staff, and supplies (Congress.gov, 2019).

Sustainable Development Goals (SDGs)

A set of 17 goals adopted by the United Nations in 2015. Goal 3 focuses on health, but health is relevant to many other goals. The SDGs are intended to be achieved by 2030 (United Nations, 2015).

System Dynamics Modelling

A computational method that uses computer simulation to understand the behaviour of complex systems over time. System dynamics modelling involves developing a mathematical model of a system, simulating its behaviour, and testing interventions (Sterman, 2000).

Systems Mapping

The ability to visualise and analyse the interconnected elements of a health problem, including feedback loops, delays, and leverage points. Systems mapping is one of the six core competencies proposed in this book.

Systems Thinking

A way of understanding the world that emphasises the interconnections between parts, the patterns that emerge from these interconnections, and the dynamic behaviour of systems over time (Meadows, 2008; Sterman, 2000).

Systematic Review

A method for synthesising the findings of multiple studies on a specific topic. Systematic reviews use explicit, transparent methods to identify, appraise, and synthesise evidence (Higgins & Green, 2011).

T

Table 2 Fallacy

The erroneous interpretation of regression models as showing causal effects for each predictor. In a multivariable regression model, it is incorrect to interpret the coefficients of each predictor as estimates of causal effects (Carlin & Moreno-Betancur, 2025).

Theory of Planned Behaviour

A health behaviour theory that identifies three determinants of behavioural intention: attitudes, subjective norms, and perceived behavioural control. The theory has been used extensively in public health (Ajzen, 1991).

Transformational Leadership

A leadership theory that emphasises the role of leaders in inspiring followers, articulating a vision, and motivating change. Transformational leadership has been critiqued for being hero-centric and manipulative . **Transtheoretical Model (Stages of Change)** A health behaviour model that describes behaviour change as a process that occurs through stages: precontemplation, contemplation, preparation, action, and maintenance. The model has been critiqued for failing to reflect how people actually change (Prochaska & DiClemente, 1983).

U

Universal Health Coverage

The goal of ensuring that all people have access to the health services they need without suffering financial hardship. Universal health coverage is a goal of health systems worldwide and is included in the SDGs (WHO, 2010).

W

Wicked Problem

A problem that is complex, ambiguous, and resistant to traditional solutions. Wicked problems are characterised by uncertainty, multiple stakeholders, and competing values. Many public health challenges have characteristics of wicked problems (de Klerk et al., 2026).

World Health Organization (WHO)

The directing and coordinating authority on international health within the United Nations system. The WHO was established in 1948 with the objective of the attainment by all peoples of the highest possible level of health (WHO, 1948).

Z

Zoonotic Disease

A disease that can be transmitted from animals to humans. Approximately 75 percent of emerging infectious diseases are zoonotic. Zoonotic diseases include Ebola, avian influenza, rabies, and COVID-19 (WHO, 2021).

Appendix C

Further Reading and Resources

This appendix offers an annotated reading and resource guide organised around the six competencies and the major thematic areas covered in the book. It is designed for readers who want to deepen their understanding, explore critical perspectives, and continue developing their practice beyond the book.

The selections include books, journal articles, policy and professional resources, websites, and other materials. They have been chosen to support the book's emphasis on critical analysis, equity, justice, context, and the distribution of power in public health. The list is selective rather than exhaustive.

Further Reading by Competency

Systems Mapping

Essential Texts

Meadows, D. (2008). Thinking in systems: A primer. Chelsea Green Publishing.

This is the most accessible introduction to systems thinking available. Meadows, a pioneer of the field, explains key concepts including feedback loops, leverage points, and system dynamics with clarity and practical examples. The book is essential reading for anyone seeking to understand the foundational ideas of systems thinking.

Sterman, J. D. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. McGraw Hill.

This is the comprehensive textbook on system dynamics modelling. While more technical than Meadows, it provides the methodological depth needed for rigorous systems analysis. The book includes detailed guidance on constructing and validating system dynamics models.

Midgley, G. (2000). Systemic intervention: Philosophy, methodology, and practice. Kluwer Academic Publishers.

This book provides a critical perspective on systems thinking, emphasising the importance of boundaries, perspectives, and power. Midgley argues that systems thinking must be reflexive about its own assumptions and attentive to the political dimensions of intervention.

Critical Perspectives

Krieger, N. (2011). Epidemiology and the people's health: Theory and context. Oxford University Press.

Krieger develops an ecosocial framework that integrates systems thinking with a critical analysis of power and social determinants. The book challenges reductionist approaches to epidemiology and argues for a more holistic, contextually grounded understanding of health.

Practical Guides

Williams, B., & Hummelbrunner, R. (2010). *Systems concepts in action: A practitioner's toolkit*. Stanford University Press.

This practical guide provides tools and methods for applying systems thinking in real-world settings. It includes case studies, exercises, and guidance on facilitating systems analysis with diverse stakeholders.

Online Resources

The Donella Meadows Project. https://donellameadows.org

This website provides access to Meadows' writings, including her seminal work on systems thinking and leverage points. It also includes resources for teaching and learning systems thinking.

Data Fluency

Essential Texts

Merry, S. E. (2016). *The seductions of quantification: Measuring human rights, gender violence, and sex trafficking*. University of Chicago Press.

Merry provides a critical analysis of quantification and its effects on policy and practice. She argues that indicators and metrics are not neutral tools but reflect power relations and can obscure as much as they reveal. The book is essential for understanding the politics of data.

Rothman, K. J., Greenland, S., & Lash, T. L. (2008). *Modern epidemiology* (3rd ed.). Lippincott Williams & Wilkins.

This is the standard textbook on epidemiological methods. It provides comprehensive coverage of study design, measures of association, bias, confounding, and causal inference. While technical, it is essential for developing methodological rigour.

Greenland, S., Pearl, J., & Robins, J. M. (1999). Causal diagrams for epidemiologic research. Epidemiology, 10(1), 37-48. https://doi.org/10.1097/00001648-199901000-00008

This article introduces causal diagrams as a tool for understanding confounding and causal inference. It is a foundational text for those seeking to understand the relationship between association and causation.

Critical Perspectives

D'Amico, F., Marmiere, M., Fonti, M., Battaglia, M., & Belletti, A. (2025). Association does not mean causation: When observational data were misinterpreted as causal, the observational interpretation fallacy. *Journal of Evaluation in Clinical Practice*, 31(1).

This article documents cases where observational data were misinterpreted as causal, with harmful consequences for patient care and public health. It is a cautionary tale about the limits of observational research.

Rovetta, A., & Mansournia, M. A. (2025). Common wrong beliefs about statistical testing: Recent trends in biomedical sciences. *Current Opinion in Epidemiology and Public Health*, 4(3), 23-29.

This article identifies and corrects common misconceptions about statistical testing, including misunderstandings of P values, confidence intervals, and statistical power. It is essential for developing statistical literacy.

Ring, B. J. (2024). A tangled web of association: The infamous Table 2. Respiratory Care, 69(2), 263-267. https://doi.org/10.4187/respcare.11620

This article explains the Table 2 fallacy and provides examples of its consequences. It is a useful resource for understanding the limits of multivariable regression models.

Practical Guides

Barna, M. (2025). When shared the right way, data can grab attention. The Nation's Health, 55(4), 4.

This article provides practical guidance on communicating data to diverse audiences. It emphasises the importance of understanding your audience, balancing quantitative and qualitative data, and engaging communities in data interpretation.

Wiggins, M., Varughese, M., Rafferty, E., van Katwyk, S., McCabe, C., Round, J., & Kirwin, E. (2025). The decision uncertainty toolkit: Risk measures and visual outputs to support decision-making during public health crises. *PLoS ONE*, 20(10), e0332522.

This article introduces a toolkit for communicating uncertainty in public health decision-making. It provides practical guidance on visualising risk and uncertainty.

Online Resources

The Alan Turing Institute. (n.d.). Data science for public health. https://www.turing.ac.uk

This research institute provides resources and training on data science applications in public health, including guidance on ethical data use and algorithmic fairness.

Implementation Agility

Essential Texts

Brownson, R. C., Colditz, G. A., & Proctor, E. K. (Eds.). (2018). *Dissemination and implementation research in health: Translating science to practice* (2nd ed.). Oxford University Press.

This is the comprehensive textbook on dissemination and implementation research. It covers frameworks, methods, and applications across health settings. The book is essential for anyone seeking to understand the foundations of implementation science.

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4, 50.

This article introduces the Consolidated Framework for Implementation Research, one of the most widely used frameworks in the field. It provides detailed guidance on applying the framework to identify barriers and facilitators to implementation.

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89(9), 1322-1327.

This article introduces the RE-AIM framework for planning and evaluating implementation. It provides guidance on assessing Reach, Effectiveness, Adoption, Implementation, and Maintenance.

Critical Perspectives

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82(4), 581-629.

This systematic review challenges the assumptions of the diffusion of innovations model and argues for a more contextually grounded understanding of implementation. It is essential reading for understanding the limits of traditional implementation approaches.

Veltri, G. (2025). Implementation science and the iron law of evaluation. In Oxford research encyclopedia of public health. Oxford University Press.

This article examines the relationship between implementation science and evaluation, arguing that implementation is essential for achieving meaningful outcomes. It addresses the challenges of translating evidence into practice.

Practical Guides

Peters, D. H., Adam, T., Alonge, O., Agyepong, I. A., & Tran, N. (2013). Implementation research: What it is and how to do it. *BMJ*, 347, f6753.

This article provides a practical introduction to implementation research, including guidance on study design, methods, and reporting.

Online Resources

The Implementation Science Exchange. https://implementationscienceexchange.org

This website provides resources, tools, and training for implementation science, including frameworks, measures, and case studies.

Stakeholder Navigation

Essential Texts

Bryson, J. M. (2004). What to do when stakeholders matter: Stakeholder identification and analysis techniques. *Public Management Review*, 6(1), 21-53.

This article provides a comprehensive framework for stakeholder identification and analysis. It is essential reading for anyone seeking to understand stakeholder power dynamics.

Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (Eds.). (2018). *Community based participatory research for health: Advancing social and health equity* (3rd ed.). Jossey Bass.

This book provides a comprehensive introduction to community based participatory research, including principles, methods, and case studies. It is essential for understanding how to engage communities as partners in research and practice.

Critical Perspectives

Enria, L., Loffreda, G., Tengbeh, A. F., Diaconu, K., Witter, S., Kamara, A. S., & Timbo, A. D. (2026). Mapping power in community engagement: Methodological reflections from health emergencies. *BMC Medical Research Methodology*, 26.

This article examines the role of power in community engagement and provides practical guidance on power mapping. It is essential for understanding how to engage communities effectively in health emergencies.

Powell, K., Thurston, M., & Bloyce, D. (2026). Using theories of power and place to evaluate community health promotion. Evaluation and Program Planning, 115, 102745. https://doi.org/10.1016/j.evalprogplan.2025.102745

This article demonstrates the value of attending to power dynamics in community health promotion. It argues that evaluations must attend to how power affects people's health and engagement with programmes.

Practical Guides

Gobat, N., Slack, C., Hannah, S., Salzwedel, J., Bladon, G., Garcia Burgos, J., Purvis, B., Molony-Oates, B., Siegfried, N., Cheah, P. Y., Conway, M., Kamuya, D., Davies, A., Johnson, T., Tholanah, M., Mugamba, S., Mutengu, N. L., Machingaidze, S., Schwartz, L., Rägo, L., & von Harbou, K. (2025). Better engagement, better evidence: Working in partnership with patients, the public, and communities in clinical trials with involvement and good participatory practice. The Lancet Global Health, 13(4), e716-e731. https://doi.org/10.1016/S2214-109X(24)00521-7

This guide provides practical guidance on stakeholder engagement in clinical trials, including principles, methods, and case studies.

Online Resources

The Community Tool Box. https://ctb.ku.edu

This website provides practical guidance on community engagement, coalition building, and stakeholder analysis. It includes templates, checklists, and case studies.

Ethical Foresight

Essential Texts

Gostin, L. O., & Wiley, L. F. (2020). *Public health law: Power, duty, restraint* (3rd ed.). University of California Press.

This is the definitive textbook on public health law. It covers the legal foundations of public health, the limits of state power, and the role of law in promoting health equity. The book is essential for understanding the legal and ethical dimensions of public health practice.

Kass, N. E. (2001). An ethics framework for public health. *American Journal of Public Health*, 91(11), 1776-1782.

This article introduces the Kass framework, one of the most widely used public health ethics frameworks. It provides a systematic approach to identifying and analysing ethical issues in public health.

Childress, J. F., Faden, R. R., Gaare, R. D., Gostin, L. O., Kahn, J., Bonnie, R. J., Kass, N. E., Mastroianni, A. C., Moreno, J. D., & Nieburg, P. (2002). Public health ethics: Mapping the terrain. *Journal of Law, Medicine & Ethics*, 30(2), 170-178.

This article maps the terrain of public health ethics, identifying the key principles and considerations that should guide ethical decision-making.

Critical Perspectives

van Berkel, J., & Bal, M. (2025). Socio-economic health inequalities through the lens of social justice theory, an innovative perspective. Public Health in Practice, 10, 100630. https://doi.org/10.1016/j.puhip.2025.100630

This article applies social justice theory to health inequalities, emphasising the importance of distributive, procedural, and recognitive justice. It is essential for understanding the justice dimensions of health inequities.

Savulescu, J. (2023). Ethics of selective restriction of liberty in a pandemic. In J. Savulescu & D. Wilkinson (Eds.), Pandemic ethics: From COVID 19 to disease X (pp. 158 186). Oxford University Press.

This chapter examines the ethics of liberty restrictions during pandemics, arguing for a nuanced approach that attends to both population level and individual level considerations.

Practical Guides

McLean, M. R. (2007). *The coming pandemic: Ethical preparedness*. Santa Clara University.

This guide provides practical guidance on ethical preparedness for pandemics, including triage, resource allocation, and liberty restrictions.

Online Resources

The Hastings Center. https://www.thehastingscenter.org

The Hastings Center provides resources on bioethics and public health ethics, including reports, articles, and educational materials.

Narrative Competence

Essential Texts

Hill, A. L. (2024). Telling a good story. National Foundation for Infectious Diseases.

This guide provides practical principles for effective health storytelling, drawing on the experience of StoryCenter, an organisation that helps people share their personal stories to build a healthy world.

Tones, K., & Green, J. (2004). *Health promotion: Planning and strategies*. SAGE Publications.

This textbook provides comprehensive coverage of health communication and health promotion, including models of behaviour change and strategies for effective communication.

Critical Perspectives

Dorfman, L., Wallack, L., & Woodruff, K. (2005). More than a message: Framing public health advocacy to change corporate practices. *Health Education & Behavior*, 32(3), 320-336.

This article challenges the idea that health communication is simply about delivering messages and argues for a broader understanding of framing and advocacy.

Airhihenbuwa, C. O. (2007). *Healing our differences: The crisis of global health and the politics of identity*. Rowman & Littlefield.

This book examines the role of culture and identity in health communication, arguing that effective communication must be grounded in cultural understanding and respect.

Practical Guides

Lakhan, S. E. (2025). Entertainment as intervention: A strategic blueprint for public health in media. Cureus, 17(5), e85101. https://doi.org/10.7759/cureus.85101

This article provides a framework for embedding health messages in media, including guidance on symbolic embedding, behavioural modelling, conversational integration, and plotline centrality.

World Health Organization. (2024). The power of storytelling for health impact. World Health Organization.

This WHO feature article provides examples of effective health storytelling and practical guidance for communicators.

Online Resources

StoryCenter. https://www.storycenter.org

StoryCenter provides resources and training on digital storytelling for health and social change. Their website includes examples, guides, and workshop information.

Further Reading by Thematic Area

Climate Change and Planetary Health

Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Beagley, J., Belesova, K., ... & Costello, A. (2021). The 2020 report of the Lancet Countdown on health and climate change: Responding to converging crises. *The Lancet*, 397(10269), 129-170.

This annual report tracks the health impacts of climate change and provides recommendations for action. It is essential reading for understanding the health consequences of climate change.

Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., de Souza Dias, B. F., Ezeh, A., Frumkin, H., Gong, P., Head, P., Horton, R., Mace, G. M., Marten, R., Myers, S. S., Nishtar, S., Osofsky, S. A., Pattanayak, S. K., Pongsiri, M. J., Romanelli, C., ... & Horton, R. (2015). Safeguarding human health in the Anthropocene epoch: Report of The Rockefeller Foundation Lancet Commission on planetary health. *The Lancet*, 386(10007), 1973-2028.

This landmark report introduced the concept of planetary health and established its importance for public health. It is essential reading for understanding the relationship between human health and natural systems.

Anton, B., Cuevas, S., Hanson, M., Bhutta, Z. A., Langlois, E. V., Iaia, D. G., Gasparri, G., & Borghi, J. (2024). Opportunities and challenges for financing women's, children's and adolescents' health in the context of climate change. *BMJ Global Health*, 9(4), e014596.

This article examines the financing of health in the context of climate change, with a focus on the needs of women, children, and adolescents.

Antimicrobial Resistance

O'Neill, J. (2016). Tackling drug resistant infections globally: Final report and recommendations. Review on Antimicrobial Resistance.

This landmark report documented the scale of the AMR crisis and proposed recommendations for action. It is essential reading for understanding the AMR challenge.

Antimicrobial Resistance Collaborators. (2022). Global burden of bacterial antimicrobial resistance in 2019: A systematic analysis. The Lancet, 399(10325), 629-655. https://doi.org/10.1016/S0140-6736(21)02724-0

This study provides the most comprehensive estimate of the global burden of AMR, documenting 1.27 million deaths directly attributable to AMR in 2019.

Laxminarayan, R., Duse, A., Wattal, C., Zaidi, A. K. M., Wertheim, H. F. L., Sumpradit, N., Vlieghe, E., Hara, G. L., Gould, I. M., Goossens, H., Greko, C., So, A. D., Bigdeli, M., Tomson, G., Woodhouse, W., Ombaka, E., Peralta, A. Q., Qamar, F. N., Mir, F., ... & Cars, O. (2013). Antibiotic resistance: The need for global solutions. *The Lancet Infectious Diseases*, 13(12), 1057-1098.

This article provides a comprehensive overview of the AMR crisis and proposes global solutions.

Indigenous Health and Decolonising Public Health

Smith, L. T. (2021). *Decolonizing methodologies: Research and Indigenous peoples* (3rd ed.). Zed Books.

This is the foundational text on decolonising research methodologies. Smith argues that research has been a tool of colonialism and that decolonising research requires centring Indigenous knowledge and shifting power to communities.

Reading, C. L., & Wien, F. (2009). *Health inequalities and social determinants of Aboriginal peoples' health*. National Collaborating Centre for Aboriginal Health.

This report provides a comprehensive overview of the social determinants of Indigenous health and the role of colonialism in producing health inequities.

Truth and Reconciliation Commission of Canada. (2015). Honouring the truth, reconciling for the future: Summary of the final report of the Truth and Reconciliation Commission of Canada. Truth and Reconciliation Commission of Canada.

This report documents the history and legacy of residential schools in Canada and provides recommendations for reconciliation. It is essential reading for understanding the colonial legacy in Indigenous health.

Oré, C. E., Loerzel, E., Marziale, E., & Parker, M. (2025). Developing Indigenous-centered healing, health, and wellness frameworks to strengthen Indigenous health systems, decolonize public health, and achieve health equity. American Journal of Public Health, 115(5), 726-731. https://doi.org/10.2105/AJPH.2024.307958

This article presents Indigenous centred frameworks for healing, health, and wellness, developed by Seven Directions, an Indigenous public health institute.

Kwete, X., Tang, K., Chen, L., Ren, R., Chen, Q., Wu, Z., Cai, Y., & Li, H. (2022). Decolonizing global health: What should be the target of this movement and where does it lead us? *Global Health Research and Policy*, 7, 3.

This article examines the decolonising global health movement and argues for fundamental changes in funding, governance, and knowledge production.

Health Systems and Policy

Gilson, L. (2012). Health policy and systems research: A methodology reader. World Health Organization.

This reader provides a comprehensive introduction to health policy and systems research, including methods, frameworks, and case studies.

Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., ... & Pate, M. (2018). High-quality health systems in the Sustainable Development Goals era: Time for a revolution. *The Lancet Global Health*, 6(11), e1196-e1252.

This article argues for a revolution in health systems, emphasising the importance of quality alongside coverage and financial protection.

Marmot, M. (2015). The health gap: The challenge of an unequal world. Bloomsbury.

This book synthesises the evidence on health inequalities and argues for action on the social determinants of health. It is essential reading for understanding health equity.

Navarro, V. (2009). What we mean by social determinants of health. International Journal of Health Services, 39(3), 423-441.

This article challenges the dominant framing of social determinants and argues for a political economy approach to understanding health inequities.

Global Health and Development

Frenk, J., & Moon, S. (2013). Governance challenges in global health. *New England Journal of Medicine*, 368(10), 936-942.

This article examines the governance challenges of global health, including fragmentation, coordination, and accountability.

Gostin, L. O., & Wiley, L. F. (2020). *Public health law: Power, duty, restraint* (3rd ed.). University of California Press.

This comprehensive textbook covers the legal foundations of global health governance, including the WHO, the International Health Regulations, and the role of law in promoting health.

Horton, R. (2020). The COVID-19 catastrophe: What's gone wrong and how to stop it happening again. The Lancet, 396(10249), 499-502.

This article examines the failures of global health governance revealed by the COVID-19 pandemic and proposes reforms.

Pai, M. (2022). Disrupting global health: From allyship to collective liberation. Forbes.

This article examines the power dynamics of global health and argues for a shift from allyship to collective liberation.

Research Methods and Evidence Synthesis

Greenhalgh, T., & Wieringa, S. (2011). Is it time to drop the 'knowledge translation' metaphor? A critical literature review. *Journal of the Royal Society of Medicine*, 104(12), 501-509.

This article critiques the knowledge translation metaphor and argues for a more nuanced understanding of evidence use.

Higgins, J. P. T., & Green, S. (Eds.). (2011). *Cochrane handbook for systematic reviews of interventions* (Version 5.1.0). The Cochrane Collaboration.

This is the definitive handbook for conducting systematic reviews. It provides detailed guidance on all aspects of the review process.

Krieger, N. (2011). Epidemiology and the people's health: Theory and context. Oxford University Press.

This book provides a critical perspective on epidemiological methods and argues for the integration of social theory into epidemiological research.

Health Communication and Media Literacy

Bak-Coleman, J. B., Kennedy, B., Wack, M., Beers, A., Eckles, D., & Fowler, J. H. (2022). Combining interventions to reduce the spread of viral misinformation. *Nature Human Behaviour*, 6(10), 1372-1380.

This article examines strategies for countering misinformation, including prebunking, debunking, and trusted messengers.

Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological Science in the Public Interest*, 13(3), 106-131.

This article provides a comprehensive review of misinformation and its correction, including the backfire effect and strategies for effective debunking.

Livingstone, S. (2004). Media literacy and the challenge of new information and communication technologies. The Communication Review, 7(1), 3-14.

This article examines the concept of media literacy and its implications for health communication.

Leadership and Management

Han, H. (2026, May 5). The missing leadership skill to deliver health systems transformation. BMJ Leader. https://blogs.bmj.com/bmjleader/2026/05/05/the-missing-leadership-skill-to-deliver-health-systems-transformation-by-hahrie-han/

This article identifies the missing skills in health leadership and argues for the importance of attending to power dynamics.

Sallam, M. (2025). The fragility of public health in the face of controversial leadership. BMJ Global Health, 10, e018536.

This article examines the consequences of controversial leadership for public health, including the erosion of trust and the politicisation of science.

Rodríguez-Feria, P., Paric, M., Hernández Flórez, L. J., Babich, S., & Czabanowska, K. (2024). Critical route for development of medical student leadership competencies in 35 Pan American Health Organization member states: A scoping review and thematic analysis. *International Journal of Health Planning and Management*, 39(3), 844-859.

This scoping review examines leadership competencies for medical students and proposes a critical route for leadership development.

Mental Health and Wellbeing

Bracken, P., & Thomas, P. (2005). *Postpsychiatry: Mental health in a postmodern world*. Oxford University Press.

This book challenges the biomedical model of mental health and argues for a more socially informed approach.

Lund, C., Breen, A., Flisher, A. J., Kakuma, R., Corrigall, J., Joska, J. A., Swartz, L., & Patel, V. (2010). Poverty and common mental disorders in low- and middle-income countries: A systematic review. *Social Science & Medicine*, 71(3), 517-528.

This systematic review examines the relationship between poverty and mental health in low- and middle-income countries.

Wilkinson, R., & Pickett, K. (2009). *The spirit level: Why more equal societies almost always do better*. Allen Lane.

This book presents evidence that inequality is a fundamental determinant of health, including mental health.

Gender and Health

Connell, R. W. (2002). *Gender*. Polity Press.

This book provides a comprehensive introduction to gender as a social structure, including its implications for health.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. Stanford Law Review, 43(6), 1241-1299.

This article introduces intersectionality as a framework for understanding the multiple, intersecting systems of oppression that shape people's lives.

Krieger, N. (2003). Genders, sexes, and health: What are the connections and why does it matter? International Journal of Epidemiology, 32(4), 652-657.

This article examines the relationship between gender, sex, and health and argues for a critical approach.

Health Economics

Braveman, P., Gruskin, S., & Tarimo, E. (2005). *Health equity and health systems: Conceptual and methodological issues*. World Health Organization.

This report examines the relationship between health equity and health systems and argues for integrating equity into health economic analysis.

Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., & Torrance, G. W. (2015). *Methods for the economic evaluation of health care programmes* (4th ed.). Oxford University Press.

This is the standard textbook on health economic evaluation. It provides detailed guidance on all aspects of economic evaluation.

Navarro, V. (2009). What we mean by social determinants of health. International Journal of Health Services, 39(3), 423-441.

This article argues for a political economy approach to health, challenging the assumptions of neoclassical economics.

Implementation Science

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4, 50.

This article introduces the Consolidated Framework for Implementation Research, one of the most widely used frameworks in the field.

Eccles, M. P., & Mittman, B. S. (2006). Welcome to implementation science. *Implementation Science*, 1, 1.

This article introduces the field of implementation science and its aims.

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89(9), 1322-1327.

This article introduces the RE-AIM framework for planning and evaluating implementation.

Systems Thinking and Complexity Science

Meadows, D. (2008). Thinking in systems: A primer. Chelsea Green Publishing.

This is the most accessible introduction to systems thinking available. It explains key concepts including feedback loops, leverage points, and system dynamics.

Midgley, G. (2000). Systemic intervention: Philosophy, methodology, and practice. Kluwer Academic Publishers.

This book provides a critical perspective on systems thinking, emphasising the importance of boundaries, perspectives, and power.

Rutter, H., Savona, N., Glonti, K., Bibby, J., Cummins, S., Finegood, D. T., Greaves, F., Harper, L., Hawe, P., Moore, L., Petticrew, M., Rehfuess, E., Shiell, A., Thomas, J., & White, M. (2017). The need for a complex systems model of evidence for public health. *The Lancet*, 390(10112), 2602-2604.

This article argues for a complex systems model of evidence for public health, challenging linear approaches.

Global Health Diplomacy

Frenk, J., & Moon, S. (2013). Governance challenges in global health. *New England Journal of Medicine*, 368(10), 936-942.

This article examines the governance challenges of global health, including fragmentation, coordination, and accountability.

Gostin, L. O., & Wiley, L. F. (2020). *Public health law: Power, duty, restraint* (3rd ed.). University of California Press.

This comprehensive textbook covers the legal foundations of global health governance, including the WHO, the International Health Regulations, and the role of law in promoting health.

King, N. B. (2002). Security, disease, commerce: Ideologies of postcolonial global health. *Social Studies of Science*, 32(5-6), 763-789.

This article examines the ideologies that have shaped postcolonial global health, including security, disease, and commerce.

Organisational and Professional Resources

Public Health Organisations

World Health Organization (https://www.who.int)

The WHO provides global guidance, data, and resources on all aspects of public health. Their website includes reports, guidelines, and data on a wide range of health issues.

Centers for Disease Control and Prevention (https://www.cdc.gov)

The CDC provides data, guidance, and resources on public health practice. Their website includes training materials, toolkits, and data on a wide range of health issues.

Pan American Health Organization (https://www.paho.org)

PAHO provides resources and guidance on public health in the Americas.

African Centre for Disease Control and Prevention (https://africacdc.org)

The Africa CDC provides resources and guidance on public health in Africa.

European Centre for Disease Prevention and Control (https://www.ecdc.europa.eu)

ECDC provides resources and guidance on public health in Europe.

Professional Associations

American Public Health Association (https://www.apha.org)

APHA provides resources, advocacy, and professional development for public health professionals.

World Federation of Public Health Associations (https://www.wfpha.org)

WFPHA provides a global network for public health professionals.

Association of Schools of Public Health in the European Region (https://www.aspher.org)

ASPHER provides resources and guidance on public health education in Europe.

Gavi, The Vaccine Alliance (https://www.gavi.org)

Gavi provides resources and information on global vaccination efforts.

The Global Fund to Fight AIDS, Tuberculosis and Malaria (https://www.theglobalfund.org)

The Global Fund provides resources and information on global health financing.

Journals

The Lancet

This leading medical journal publishes research and commentary on global health.

The Lancet Global Health

This open access journal focuses on global health research.

American Journal of Public Health

This journal publishes research and commentary on public health practice and policy.

BMJ Global Health

This open access journal publishes research on global health.

Health Policy and Planning

This journal publishes research on health policy and systems.

Implementation Science

This journal publishes research on implementation science.

Social Science & Medicine

This journal publishes research on the social determinants of health.

Conclusion

This reading list reflects the book's commitment to critical, analytical approaches to public health. The resources selected challenge dominant assumptions, expose power relations, and centre the voices and experiences of marginalised communities. They are intended to support readers in deepening their understanding of the competencies developed throughout the book and in applying these competencies to the complex, contested, and uncertain problems of public health practice.

We encourage readers to approach these resources critically, asking the same questions we have asked throughout this book: Whose knowledge counts? Who benefits and who is harmed? How can we challenge oppression and advance justice? These questions should guide not only your reading but also your practice as a public health professional.

APPENDIX D

Templates and Checklists

Practical worksheets for applying the six public health competencies

This appendix provides practical worksheets and checklists for applying the six competencies developed throughout Public Health Reimagined. The tools are designed to help you slow down, make assumptions visible, organise evidence, engage people thoughtfully, and document decisions. They can be adapted to different settings, populations, organisations, and levels of practice.

These are working tools, not prescriptive scripts. A good template should make thinking easier without replacing judgement. Use the prompts selectively, add questions when your context requires them, and revisit your notes as circumstances change.

Where a framework is named, the worksheet is intended as a practical aid rather than a substitute for learning the framework itself. In particular, RE-AIM, CFIR, the Kass framework, and systems mapping approaches should be applied with attention to context, power, equity, and unintended consequences.

Template 1: Systems Mapping

Causal Loop Diagram Worksheet

Instructions: Use this worksheet to explore how factors interact in a public health problem. Start with the problem, identify important variables, map relationships, then look for feedback loops and leverage points. Keep the first map simple and expand it only when needed.

Step 1: Define the Problem

What public health problem are you analysing?

Problem statement	Context or population	Time horizon

Step 2: Identify Key Variables

List the factors that influence or are influenced by the problem. Start with 5 to 10 variables and add others only when they help explain the system.

Variable	Description	Level or domain

Step 3: Map Relationships

For each important relationship, identify the direction, polarity, and reasoning behind the connection.

Relationship	Direction	Polarity (+ or -)	Explanation

Step 4: Identify Feedback Loops

Identify circular chains of cause and effect. Label each as reinforcing (R) or balancing (B), and explain why.

Loop	Variables involved	Type (R or B)	Explanation

Step 5: Identify Leverage Points

Using a leverage point approach, identify places where a relatively small change might alter the behaviour of the wider system.

Leverage point	Possible intervention	Expected impact	Possible unintended effect

Step 6: Draw the Diagram

Sketch your causal loop diagram here. Include variables, arrows, polarities, and feedback loop labels. If the map becomes too large, create a second version showing only the most important relationships.

Causal loop diagram space

Template 2: Stakeholder Mapping

Stakeholder Analysis Worksheet

Instructions: Use this worksheet to identify who is affected by an issue, who has influence over it, what different stakeholders want, and how power may shape participation and decisions.

Step 1: Identify Stakeholders

Stakeholder	Sector	Level (Macro/Meso/Micro)	Affected, influential, or both

Step 2: Analyse Interests

Stakeholder	Interests	Concerns	What they want

Step 3: Analyse Influence

Stakeholder	Influence (H/M/L)	Sources of influence	How influence is exercised

Step 4: Map Power and Interest

Place each stakeholder on the power-interest grid. Remember that formal authority is only one form of power. Consider knowledge, resources, social position, networks, legitimacy, and control of information.

High influence / High interest	High influence / Low interest	Low influence / High interest	Low influence / Low interest

Step 5: Determine Engagement Strategy

Stakeholder	Quadrant	Engagement strategy	Desired outcome

Step 6: Identify Power Dynamics

Power imbalance	How it affects the process	Strategy to address it	Who should be involved

Template 3: Implementation Planning

RE-AIM Planning Worksheet

Instructions: Use the RE-AIM dimensions to plan an intervention while considering reach, effectiveness, adoption, implementation, and maintenance. Pay particular attention to who may be missed and whether benefits are distributed fairly.

Reach

What is your target population?

How will you reach them?

What barriers might prevent participation?

How will you ensure reach to those most in need, including marginalised populations?

How will you measure reach?

Response	Evidence or assumptions	Action needed

Effectiveness

What outcomes do you expect?

How will you measure them?

What are the potential negative effects?

How will you measure effectiveness across subgroups?

What is your plan for monitoring and evaluation?

Response	Evidence or assumptions	Action needed

Adoption

Which organisations or settings need to adopt the intervention?

What will motivate them to adopt it?

What barriers might prevent adoption?

How will you support adoption?

How will you measure adoption?

Response	Evidence or assumptions	Action needed

Implementation

Can you deliver the intervention consistently?

What adaptations are needed for your context?

What are the core components that must be preserved?

What are the costs and resource requirements?

How will you measure implementation fidelity?

Response	Evidence or assumptions	Action needed

Maintenance

How will you sustain the intervention after initial funding?

What institutional structures are needed?

What is the plan for ongoing training and support?

How will you measure maintenance?

What is the long-term sustainability plan?

Response	Evidence or assumptions	Action needed

CFIR Diagnosis Worksheet

Instructions: Use the Consolidated Framework for Implementation Research to diagnose barriers and facilitators. Record evidence rather than relying only on impressions.

Intervention Characteristics

Construct	Assessment	Barriers	Facilitators

Outer Setting

Construct	Assessment	Barriers	Facilitators

Inner Setting

Construct	Assessment	Barriers	Facilitators

Characteristics of Individuals

Construct	Assessment	Barriers	Facilitators

Process

Construct	Assessment	Barriers	Facilitators

Template 4: Implementation Strategy Development

Fidelity and Adaptation Decision Tool

Instructions: Use this worksheet when deciding what must remain stable and what can be adapted. The aim is to protect the mechanisms that make an intervention work while allowing appropriate local adaptation.

Core Functions

What are the essential mechanisms or functions that the intervention must achieve?

Core function	Description	Why it is essential	How it will be protected

Adaptable Forms

Which components can be modified without undermining the core functions?

Component	Adaptations possible	Rationale for adaptation	Who should approve or review

Adaptation Decisions

For each proposed adaptation, consider benefits, risks, and safeguards.

Adaptation	Expected impact	Risks	Mitigation	Decision

Template 5: Ethical Decision Making

Kass Framework Worksheet

Instructions: Use the questions below to examine a public health programme or policy systematically. Do not treat the framework as a checklist that produces an automatic answer. Make competing values, assumptions, and distributional effects visible.

Step 1: What are the public health goals?

What is the programme or policy intended to achieve? Who defines success?

Goal	Intended benefit	Whose priorities are reflected?

Step 2: How effective is the programme in achieving its goals?

What evidence supports effectiveness? What assumptions are being made? What is uncertain?

Evidence	Strength or limitation	Assumption	Uncertainty

Step 3: What are the known or potential burdens?

Type of burden	Description	Who bears the burden?	How significant is it?

Privacy

Autonomy

Liberty

Justice

Health

Step 4: Can burdens be minimised? Are there alternative approaches?

Alternative	Description	Benefits	Burdens	Equity implications

Step 5: Is the programme implemented fairly?

Consideration	Assessment	Evidence	Action needed

Distribution of benefits

Distribution of burdens

Increase or decrease in inequalities

Risk of stigma or stereotyping

Step 6: How can benefits and burdens be balanced fairly?

What procedural mechanisms are needed to make the decision legitimate, transparent, and accountable?

Decision	Rationale	Who was consulted?	How will the decision be reviewed?

Template 6: Communication Planning

Health Message Development Worksheet

Instructions: Use this worksheet to develop a health message that is accurate, relevant, understandable, and appropriate for its audience. Build the message around what people need to know and do, not simply what the organisation wants to say.

Audience Analysis

Question	Response	Evidence or source

Who is your audience?

What do they already believe about the issue?

What are their concerns and values?

What are their preferred information sources?

Who do they trust?

Message Development

Element	Description	Draft

Key message

Supporting facts

Emotional appeal

Call to action

Channel Selection

Audience	Channel	Rationale	Access or equity concern

Storytelling Approach

Element	Description	Draft or notes

Character

Setting

Conflict

Resolution

Sensory details

Countering Misinformation

Misinformation or claim	Response strategy	Trusted messenger	Potential unintended effect

Testing and Refining

Method	Timeline	Success indicator	Change made

Pre testing with audience

Pilot implementation

Feedback collection

Refinement

Template 7: Risk Communication

Crisis and Emergency Risk Communication Worksheet

Instructions: Use this worksheet to plan communication across the life of an emergency. Distinguish what is known from what is uncertain, communicate uncertainty honestly, and identify who should speak and when.

Phase Analysis

Phase	Current status	Communication focus	Priority actions

Pre crisis

Initial

Maintenance

Resolution

Evaluation

Recovery

Key Messages by Audience

Audience	Key message	Channel	Messenger	Timing

General public

Affected communities

Healthcare workers

Political leaders

Media

Addressing Uncertainty

What is known	What is not known	How to communicate it	When to update

Rumour Management

Rumour	Response strategy	Responsible party	Status

Template 8: Monitoring and Evaluation

Evaluation Planning Checklist

Instructions: Use this checklist before data collection begins. A strong evaluation starts with clear questions, appropriate measures, ethical safeguards, and a plan for using the findings.

Pre Evaluation Planning

Task	Status	Notes or decision

Define evaluation questions

Identify stakeholders

Develop logic model or theory of change

Select evaluation design

Identify data sources

Develop data collection instruments

Plan for data analysis

Plan for dissemination

Evaluation Design

Element	Description	Decision or justification

Evaluation questions

Design type

Comparison group

Timeline

Data Collection

Data source	Method	Timeline	Responsibility	Quality concern

Ethical Considerations

Consideration	Plan	Responsible person

Informed consent

Confidentiality

Community engagement

Benefit sharing

Data Analysis Plan

Question	Analysis method	Software or tool	Interpretation plan

Dissemination Plan

Audience	Format	Timeline	Action expected

Template 9: Competency Development Plan

Personal Professional Development Plan

Instructions: Use this worksheet to turn self-assessment into a practical development plan. Focus on a small number of priorities, define evidence of progress, and review the plan regularly.

Current Competency Profile

Competency	Rating (1 to 5)	Strengths	Areas for development

Systems Mapping

Data Fluency

Implementation Agility

Stakeholder Navigation

Ethical Foresight

Narrative Competence

Development Goals

Goal	Actions	Resources needed	Timeline	Success indicators

Learning Strategies

Competency	Learning activities	Frequency	Evidence of learning

Support and Accountability

Type of support	Person or resource	How they will help	Review point

Mentor

Peer learning group

Professional network

Course or training

Review Schedule

Review point	Date	Progress notes	Next action

Initial

3 month review

6 month review

1 year review

Template 10: Meeting and Facilitation Tools

Stakeholder Meeting Agenda and Notes

Instructions: Use these tools to prepare purposeful meetings, create space for different perspectives, and document decisions and follow up clearly.

Stakeholder Meeting Agenda Template

Meeting Details

Element	Description

Date and time

Location

Facilitator

Participants

Purpose

Agenda

Item	Duration	Lead	Objective

Welcome and introductions

Review of agenda

Context and background

Discussion topic 1

Discussion topic 2

Discussion topic 3

Next steps

Evaluation

Ground Rules

Rule	Rationale

Discussion Questions

Question	Purpose	Key points

Meeting Notes Template

Topic	Discussion	Decisions	Action items	Responsible person / date

Template 11: Community Engagement

Community Engagement Planning Checklist

Instructions: Use this checklist before and during community engagement. Treat communities as partners in shaping decisions, not simply as sources of information or recipients of interventions.

Pre Engagement Planning

Task	Status	Notes

Identify communities to engage

Map community structures and leaders

Understand community history and context

Identify potential barriers to participation

Identify trusted messengers

Develop engagement plan

Identify resources needed

Engagement Strategy

Element	Description	Decision

Purpose of engagement

Level of engagement (inform, consult, involve, collaborate, empower)

Methods and approaches

Timeline

Communication plan

Power Analysis

Question	Response	Evidence or example

Who holds power in this community?

Who is marginalised?

What are the power dynamics?

How can power imbalances be addressed?

Trust Building

Strategy	Actions	Evidence of progress

Acknowledge historical context

Demonstrate respect

Share power

Follow through on commitments

Be transparent

Engagement Activities

Activity	Date	Participants	Success indicators	Follow up

Feedback and Accountability

Mechanism	Description	Timeline	How feedback will influence decisions

Template 12: Partnerships and Coalition Building

Partnership Development Worksheet

Instructions: Use this worksheet to clarify why a partnership is needed, what each partner contributes, how decisions will be made, and how the relationship will evolve over time.

Partnership Purpose

Element	Description

Why is the partnership needed?

What are the partnership goals?

Who are the potential partners?

Partner Assessment

Partner	Strengths	Resources	Potential contribution	Potential challenges

Partnership Structure

Element	Description	Decision

Governance structure

Decision making process

Roles and responsibilities

Communication plan

Conflict resolution mechanism

Partnership Agreement

Element	Description	Who is responsible?

Shared vision and goals

Roles and responsibilities

Resource commitments

Timeline

Monitoring and evaluation

Exit strategy

Coalition Development

Stage	Activities	Timeline	Evidence of progress

Initiation

Formation

Implementation

Maintenance

Evolution

Template 13: Policy Brief

Policy Brief Development Worksheet

Instructions: Use this worksheet to move from a defined policy problem to a concise, evidence informed recommendation. Keep the audience, decision point, evidence, feasibility, and equity implications in view throughout.

Policy Context

Element	Description	Evidence/source

Policy issue

Why is this issue important?

Who is affected?

What is the current policy context?

Evidence Summary

Key finding	Source	Strength of evidence	Limitation or uncertainty

Policy Options

Option	Description	Pros	Cons	Feasibility	Equity implications

Recommendations

Recommendation	Rationale	Stakeholder support	Timeline	Implementation consideration

Stakeholder Analysis

Stakeholder	Position	Influence	Engagement strategy

Key Messages

Audience	Key message	Channel	Call to action

Template 14: Decision Making Under Uncertainty

Decision Analysis Worksheet

Instructions: Use this worksheet when a decision must be made before all relevant information is available. Make uncertainty explicit, compare options, consider downside risks, and define how the decision will be revisited as evidence changes.

Decision Context

Element	Description

Decision to be made

Who is making the decision?

Who is affected?

What is the timeline?

Available Information

What is known	What is unknown	Confidence level	How the uncertainty affects the decision

Decision Options

Option	Description	Best case	Worst case	Most likely

Criteria for Decision

Criterion	Weight	Description	Evidence

Risk Assessment

Risk	Probability	Impact	Mitigation	Residual risk

Decision

Element	Description	Owner / timing

Decision

Rationale

Trade offs

Implementation plan

Communication strategy

Monitoring plan

Template 15: After Action Review

After Action Review Worksheet

Instructions: Use this worksheet after a public health intervention, programme, meeting, or emergency response. The purpose is learning, not blame. Compare what was planned with what happened and identify changes that should be carried into future practice.

Context

Element	Description

What was the intervention or response?

What were the objectives?

What was the timeline?

Who was involved?

What Was Planned vs What Happened

Planned	Actual	Difference	Explanation

What Went Well

Success	Why it worked	What can be learned

What Did Not Go Well

Challenge	Why it happened	What can be learned

What Could Be Done Differently

Change	Rationale	Implementation

Competency Reflection

Competency	How was it applied?	What was learned?	What needs further development?

Systems Mapping

Data Fluency

Implementation Agility

Stakeholder Navigation

Ethical Foresight

Narrative Competence

Key Lessons

Lesson	Application	Who needs to know?	By when?

Using These Tools Well

These templates are most useful when they improve the quality of thinking rather than simply increase the amount of paperwork. In practice, you may need only a few of them for a particular problem. Choose the tools that match the decision in front of you, adapt them to the setting, and return to them when circumstances change.

Before closing a planning or decision process, ask four questions: What have we assumed? Whose perspective is missing? Who may benefit or be burdened by this decision? What will tell us that we need to change course? These questions keep the six competencies connected to real public health practice.

Adapt the templates to your specific context and needs.

Add questions that reflect local knowledge, priorities, and constraints.

Share and discuss the tools with colleagues and communities.

Record what you learn and revise the tools as your practice develops.

Reference List

Compiled from the references appearing throughout the manuscript. Entries are alphabetized and lightly normalized toward APA 7 style. This is an editorial compilation, not an independent bibliographic verification. Entries using "et al." in the manuscript require author-list verification before publication.

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