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| Global Health |
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# Learning Objectives

This course, **Global Health**, introduces the stakeholders, concepts, and implications of health as both a global context and phenomenon. We will begin with a consideration of global epidemiology and burden of disease. This will be framed with the identification of different actors and stakeholders working in and impacted by global health, with focus on the interdisciplinary determinants that provide the context for health in general. Amongst these determinants, special consideration will be given to economic and technological factors, as these are significant areas of growth, as well as to the growing science connecting human health, environmental factors, and climate change. The concluding units will consider the issue of security through the lens of global health.

In general, our global health discussion in this course will be framed in the context of public health theory in establishing the “who, what, when, where, and why.” To balance this, we will consider the health science evidence to establish the “how” of global health stakeholders, processes, and tools. It is these factors and tools that public health professionals and healthcare managers must navigate in order to maximize equity and effectiveness in the interdisciplinary milieu that is modern healthcare around the globe.

# Unit 1 – Systems of Classification

**Study Goals**

Upon the completion of this unit, you will be able to …

* Define and consider the global burden of disease.
* Define and distinguish the types of disease (e.g., infectious and chronic).
* Consider the impact of mental health issues globally.
* Define and consider the impact of epidemiological transitions.

# 1. Population Health

**Health**

One definition is that health is a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948, p. 1)

## Introduction

Whether one is a community member-at-large or a public-policy decision maker, the concept of **health** as presented by the World Health Organization (WHO) still persists in the face of the multi-factoral, interdisciplinary reality of modern healthcare (WHO, 1948).

In this modern context of interconnectedness through technology (e.g., the democratization of air travel through relatively affordable flights and the democratization of information through relatively easy access to the internet), many of the boundaries that form the structure of communities continue to be challenged. Whether these boundaries are geopolitical, national, or cultural, the rise of global events (e.g., World War I, World War II, the HIV/AIDS pandemic, the COVID-19 pandemic) provided *in vivo* examples of the commonalities and vulnerabilities of human health across a range of contexts, despite actual or constructed borders. Within this global context, the study of global health seeks to improve human health for everyone, thus placing a priority on equity (Merson et al., 2020).

In this unit, we will begin to set a foundation for global health by defining the concept of “the burden of disease” across a range of contexts, including globally, through the lens of population health. Within this exposition, it is critical to differentiate the types of disease, including but not limited to infectious, chronic, and mental health issues. We will conclude with a discussion of the impact of the epidemiological transition on global health and disease trends.

## 1.1 Measuring the Global Burden of Disease

In identifying, preventing, and managing global health issues, a critical first step is to clearly define the impact of the targeted health status or disease. If healthcare delivery and management professionals are to move beyond the theory and ideology of the WHO’s definition of “health” to equitable and practical tools, protocols, and systems of modern healthcare, these same professionals must be able to identify, define, and measure the impact of these diseases. As healthcare is not delivered in a economic or social vacuum, there are constant pressures (e.g., social, economic, national, and political) to make healthcare systems more evidence-based and equitable in the long term.

The impact of health status and/or disease can be organized into intuitive classifications, according to Merson et al. (2020):

* frequency (e.g., incidence, prevalence, and measures of central tendency)
* severity (e.g., morbidity and mortality)
* consequence (e.g., causal changes and/or impact in health, social, community, economic, and political norms)
* affected demographic (e.g., gender, sex, age, social position, and economic status)

Considered cumulatively, these factors frame the concept of the importance or impact of the disease, sometimes referred to as the disease burden. Just as the effective management of public health and healthcare delivery is multifaceted, an effective consideration of the global burden of disease requires measures across a wide range of disciplines (e.g., health science, epidemiology, sociology, and economics).

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| **Factors Used to Define the Global Burden of Disease** | |
| Frequency | Disease frequency is studied through the count and calculation of cases of a specific disease in a specific population. The wide range of theories and tools that can be used to analyze these counts encompass the field of biostatistics. From the analysis and findings yielded in biostatistics, the field of epidemiology further examines the distribution and causes of the health status/disease in the target population. Some critical measures of disease are incidence and prevalence, and composite and summary variations thereof. |
| Severity | The burden and impact of a disease in a population is also framed in the measure and study of the disease severity. This is framed in the concepts of morbidity (especially premature morbidity) and mortality. |
| Consequences | The burden of disease can also be framed in terms of the immediate, mid-, and long-term consequences. These consequences are systemic in nature and closely tied to the critical public health concept of social determinants of health. |
| Affected demographic | The consideration of global burden of disease and global health in general is systemic in nature. In order to understand these systems, it is important to focus initially on the population most affected by the disease, with a particular focus on the “who, what, when, and where” of the disease, in addition to “how” the disease progresses (which can be framed through the use of descriptive and analytic epidemiology). |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020), Jacobsen (2008), and Markle et al. (2007).

**Public health**

This is the science applied to and practice of improving the health status of a defined population, using a cross-section of disciplines including medicine, economics, sociology, and anthropology. A key framing of public health is on a health status/issue or disease in an identified community or population in a specific context, all of which has in impact on health outcomes. In short, public health is the public’s health.

The art and science of studying and managing modern healthcare in the context of global health issues requires a systems-focused approach. The first step in this approach is defining and further investigating the global health burden of disease. This burden can be framed quantitatively (through such disciplines of biostatistics and epidemiology) and qualitatively (through other related disciplines, such as sociology and anthropology), though it would be a mistake to consider this a strict dichotomy. Global health, like **public health**, is a field that, by definition, is interdisciplinary and must draw effectively from these disciplines and many more in order to inform modern healthcare systems, which are also interdisciplinary.

### Self-Check Questions

**Infectious**

An infectious disease is defined by the WHO as those that are caused by communicable and/or infectious agents including but not limited to parasites, fungi, helminths, bacterial, and viruses that can be passed from an infected vector to a susceptible host (Jacobsen, 2008).

1. What are the four classifications of the burden of disease according to Merson et al. (2020)?

*frequency, severity, consequence, and affected demographic*

### 1.2 Infectious Diseases

Even a cursory examination of health and disease burden metrics reveals an intuitive classification of health status and disease into either **infectious** or chronic disease. Though intuitive, this classification is not comprehensive. For example, this bifurcation presents a gap for health status/disease related to injuries.

Consequently, the classification of disease has been a critical issue for healthcare professionals, exhibited currently in the global use of the WHO’s International Classification of Disease (ICD) system, which uses the grouping shown in the table below.

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| Classification Groups in ICD-11 | |
| Group | **Examples** |
| I | Communicable diseases, maternal conditions, prenatal conditions, and nutritional deficiencies, which are often characteristic of low- and middle-income countries (LMICs) |
| II | Non-communicable diseases and chronic diseases, which are often characteristic of high-income countries (HIC) and those countries experiencing the epidemiological transition |
| III | Injuries and violence |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

Evidence suggests that infectious diseases have had the greatest impact on human health (measured in morbidity and mortality) throughout most of human history (Merson et al., 2020). Since the nineteenth century, advances in health science have contributed to changes in the identification, detection, diagnosis, treatment, curation, and rehabilitation of human health in the context of infectious disease to the point that there are clear, well-evidenced epidemiological trends that currently link social determinants and economics to the impact of infectious disease on the public health. Though there are still debates as to the relative impact of factors such as the social determinants of health (e.g., poverty, gender, and minority status) on the vulnerability of a population to infectious disease, the burden of infectious disease remains a key influence on the global burden of disease, often shaping health policy and behavior for decades.

### Self-Check

1. What is the difference between groups I and II in the ICD-11 system?

*ICD-11 Group I consists of communicable diseases, maternal conditions, prenatal conditions, and nutritional deficiencies, which are often characteristic of low- and middle-income countries (LMICs).*

*ICD-11 Group II consists of non-communicable diseases and chronic diseases, which are often characteristic of high-income countries (HIC) and those countries experiencing the epidemiological transition*

### 1.3 Chronic Diseases and Risks

The context of the global disease burden during the late 1940s as the WHO framed their definition of health clearly attributed most human morbidity and mortality to infectious disease (Merson et al., 2020; Markle et al., 2007). In the interim, the evidence suggests that the current context of global disease burden has shifted definitively in the context of high-income countries (HIC) and slowly, yet deliberately, in some LMIC contexts toward chronic disease becoming a leading cause of morbidity and mortality (Merson et al., 2020). Chronic disease is often defined as a health condition that is the cause of illness that gradually develops over a mid- to long- term timeframe (e.g., months to years). As chronic diseases are not communicable, this classification of disease has also been referred to as non-communicable or degenerative. The latter is associated with the trend in HICs that observe chronic disease impacts present in middle-aged patients after prolonged exposure to unfavorable health determinants, lifestyle, and environmental factors; it is notable that in the last 20 years there is evidence to suggest that more chronic disease morbidities and mortalities can be found in younger populations in HICs, as well as

across all demographics in LMICs (e.g., cardiovascular disease, metabolic syndrome/ obesity, and diabetes; Merson et al., 2020; Merkle et al., 2007).

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| Top Three Causes of Mortality Globally, HICs, MICs, LICs | |
| Context | **Causes of mortality** |
| Global | 1. Cardiovascular disease 2. Neoplasms 3. Diarrhea/lower respiratory infections/other |
| HICs | 1. Ischemic heart disease 2. Alzheimer’s disease 3. Ischemic stroke |
| MICs | 1. Cardiovascular diseases 2. Neoplasms 3. Chronic respiratory |
| LICs | 1. Lower respiratory infections 2. Malaria 3. Diarrheal diseases |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

The findings in the table above are a sample of epidemiological findings that are indicative of trends since the beginning of the twentieth century: the global burden of disease with chronic diseases (in addition to select non-communicable diseases) have surpassed that of infectious diseases. This trend begins to frame what is classified as the epidemiological transition, specifically describing the change over time of the disease burden for a particular population from predominantly infectious/communicable to chronic/non-communicable. This trend in the global health burden epidemiology has been attributed to advances in health science, as well as improvement across the spectrum of social determinants. In addition, this change has also impacted health policy and economics at a global level.

### Self-Check

1. What are the top two greatest sources of morbidity across global, HICs, MICs, and LICs?

*Global: cardiovascular disease and neoplasms*

**Sustainable Development Goals**

These were adopted in September 2015 by the United Nations General Assembly as part of the 2030 Agenda for Sustainable Development. The SDGs were intended to be an evolution of the Millenium Development Goals (MDGs) as the standard for social, environmental, and economic development with the goal of setting a “broad and inclusive framework for ending poverty worldwide” (Merson et al., 2020, p. 910). The SDGs present 17 specific goals and 169 targets.

*HICs: ischemic heart disease and Alzheimer’s disease*

*MICs: cardiovascular diseases and neoplasms*

*LICs: lower respiratory infection and malaria*

### 1.4 Global Mental Health

Historically, across LMIC and HIC contexts, there is an identified gap of unmet need in addressing the disease burden of mental health (Markle et al., 2007). Through decades of public health research and advocacy, mental health was recognized as a critical source of the global disease burden to be addressed in the 2015 United Nation’s **Sustainable Development Goals** (SDG; Merson et al., 2020).

Despite mental health being targeted in several SDGs, decades of interdisciplinary research and advocacy was required to raise awareness of the health burden of mental health illness, as this issue was often either masked by infectious and chronic disease burdens, as well as the impacts of violence. Thus, there was a significant gap in services for unmet mental health need. The latter part of the twentieth century saw growth in research, especially in LMICs, that produced compelling evidence of the importance of broad advocacy for mental healthcare in a range of contexts across the globe. For example, mental health issues are directly noted in SDG targets 3.4, 3.5, and 3.8.

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| Examples of Mental Health in the UN SDGs | |
| Goal/Target | **Example of target (Accomplished by 2030)** |
| SDG 3 | Ensure healthy lives and well-being for all at all ages. |
| SDG target 3.4 | “Reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being” (p. 424). |
| SDG target 3.5 | “Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol” (p. 424). For example, indicators track metadata that may show links between alcohol consumption and social costs for individuals and families. |
| SDG target 3.8 | “Achieve universal health coverage, including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all” (p. 424). For example, indicators track metadata that may show links between the percentage of family spending on healthcare and access to mental healthcare services. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020) and Merkle et al. (2007).

The development of global mental health that led to its inclusion required decades of interdisciplinary collaboration and research, and is now represented by organizations such as the Movement for Global Mental Health (MGMH; n.d.). MGMH began in 2007 in association with the Lancet journal and is currently a cohort of over 200 institutions and 10,000 members. In general, for such collaborations, a common definition of mental health includes all conditions that affect the nervous system, including “intellectual disability, epilepsy, anxiety and mood disorders, psychoses, substance use disorders, and dementia” (Merson et al., 2020, p. 423). To be clear, the etiologies of these expressions of mental illness may be found in infectious or chronic/non-communicable disease. In addition to this, a stigma persists across all global contexts around the diagnosis and treatment of mental illness and disease, requiring healthcare managers and other public health stakeholders to further rely on cross-cultural and interdisciplinary skills to manage the wide range of risks (e.g., biological, psychological, and social) before, during, and after mental health diagnoses (Merson et al., 2020). In addressing these risks, engagement across several domains (e.g., environmental, economic, social, demographic, and neighborhood/community) is needed to effectively frame the diagnosis and treatment.

### Self-Check

1. What does MGMH stand for?

*Movement for Global Mental Health*

### 1.5 Epidemiological Transitions

Since the nineteenth century, a combination of health science and economic progress, even in the context of regional and global conflict and epidemics, has facilitated a gradual change in disease burden patterns that have occurred in these contexts (Lindstrand et al., 2006). This health transition has been framed as a combination of changes in the interaction between demographics and disease burden. This demographic transition describes the changes in measures such as birth and death rates as we follow populations through what Merson et al. (2020) describe as “the shift from traditional society to modern society” (p. 6). Omran specifically described this transition to explain the factors that frame a dramatic drop in child mortality (e.g., under-five mortality) in terms of a parallel drop in malnutrition and infectious/communicable disease (Merson et al., 2020). Another framing describes this transition as the shift from population stability because of a high birth rate balanced by a high death rate to population stability because of a low birth rate balanced by low death rates (Merson et al., 2020).

In the interim, the disease burden measures often go through a similar pattern of stages in the context of improving health science, economics, and other social determinants (e.g., food security/nutrition, housing, education/literacy, and potable water/sanitation) as noted in the following table.

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| Descriptive Stages of the Epidemiologic Transition | |
| Stage | **Characteristics/Metrics** |
| Pestilence/Famine | High rates of fertility; infectious disease; and mortality (especially maternal, prenatal, perinatal, and nutritional) |
| Receding pandemics | High rates of fertility, decreasing rates of mortality, rise of population, increase in life expectancy, impacts of the demographic transition are most significant |
| Chronic/Non-communicable (CNC) disease increase | Fertility begins to decline, population distribution ages, CNC disease increase, injuries increase, mortality declines, life expectancy increases, and aging population presents new disease burdens. |
| Lifestyle/Degenerative diseases | Disease burden is mostly CNC; mortality is further decreased, even in some CNC; emergent diseases and epidemics appear. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020) and Lindstrand (2006).

### Self-Check Questions

1. Please name the descriptive stages of the epidemiological transition.

*pestilence/famine, receding pandemics, CNC, and lifestyle/degenerative disease*

Summary

Global health as a field within international healthcare management is, by definition, interdisciplinary and comprehensive. To systemically approach this field (i.e., to frame the who, what, when, where, why, and how of global health), the first unit frames and provides exposition on population health. The intersection between population health as a science and the field of global health is framed around the impact of negative disease outcomes on populations, also known as the burden of disease. The measurement and study of population health uses the public health sciences of biostatistics and epidemiology and focuses on population-based outcomes, such as frequency, severity, consequences, and affected demographic. Within this framing, it is also critical to discuss the disease classification systems used by the World Health Organizations, as these have become the standards for the communications about the health impacts of disease globally.

As we begin to expand on these global burden of disease impacts, we further discuss classifications such as mental health/illness, infectious, and chronic diseases. Finally, we define how these health impacts have changed over time, affecting different populations in unique ways, leading to what is referred to as the demographic and epidemiologic transitions. These trends will figure prominently in analyzing the impact of global burden of disease.

# Unit 2 – Social Determinants of Health, and Health Equity

**Study Goals**

Upon the completion of this unit, you will be able to

* Identify and define the concepts of global health, human rights, and ethics.
* Consider the connections between global health, human rights, and ethics.
* Define and discuss the importance of the social determinants of health in public health.
* Define the concept of health equity, especially in the global context.

# 2. Social Determinants of Health, and Health Equity

## Introduction

Globalization has expanded markets across borders, cultures, and social constructs (Kickbusch et al., 2012; Merson et al., 2020). For modern healthcare managers, this can further complicate the facilitation of ethical, efficient, and effective care across borders, cultures, and social constructs, needing to resolve these different symptoms as they become more interdependent.

As the global healthcare markets have expanded, a compelling body of evidence suggests that there are significant and growing health inequalities that often increase negative health outcomes for communities that are already vulnerable (Merson et al., 2020; Jacobson, 2008). One of the strongest positions to advocate for the health of all takes, at its core, the value of a human-rights- and **ethics**-based approach to the delivery of care through modern healthcare systems. In order to develop these systems, one approach has been to identify and study those factors that have impact on health at the community level across a range of contexts. These factors, often referred to as the social determinants of health, are critical to defining the metrics and relationships between human behavior, the social context of disease, and the cultural and geographic factors affecting the target communities. This unit will begin to frame these determinants in the context of human rights and ethics required to establish and execute healthcare systems across global health parameters.

**Ethics**

An ethicsframework focuses on moral practices at the core of human rules of conduct and behavior for a particular group, with a comprehensive view of population, culture, and context (Merson et al., 2020).

## 2.1 Global Health, Human Rights, and Ethics

The utility of a comprehensive definition of global health becomes valuable when applied through conceptual filters. Global health, generally framed as “phenomenon whereby the determinants of health or health outcomes supersede the territorial boundaries of any given state” (Merson et al., 2020, p. 75), by definition requires collaboration across a range of disciplines applied to health status, issues, and disease that impact across territorial, regional, political, community, and social barriers. That is, these health issues can be dramatically exemplified as an infectious viral pandemic (e.g., SARS COVID-19) or chronic/non-communicable health issue (e.g., obesity) that is experienced across physical and/or psycho-social boundaries by communities, families, and individuals, even in contexts that differ (e.g., lower-middle income and high-income countries).

With the universality of these global health issues, a focus on the common human experience of disease requires a consideration of general human rights in the context of disease morbidity and mortality. Global health as a discipline rooted in a public health approach has intuitive connections to applying human rights and ethics foci. The discipline of public health can focus on systemic inequities and inequalities in vulnerability or the impact of “what we, as a society, do collectively to assure the conditions for people to be healthy” (Merson et al., 2020, p. 77). Likewise, the acceptance of health as a human right and therefore as a prerequisite to a person’s ability to access and benefit from the resources that the society defines and protects the individual’s rights as well as those of the collective (Kickbusch et al., 2012).

A human rights framework for global health holds “equal dignity of the human person” as a foundational value for an individual’s freedom to access society’s resources and opportunities (sometime framed as entitlements) that improve a person’s health and wellbeing (Merson et al., 2020). As these rights are subject to all the forces, market and otherwise, that influence human behaviors, the advantage of including an ethics focus as part of global health’s comprehensive approach is once again clear.

An operable example is the framing by the WHO in 1946 of the core concept of the right to health for every person: “The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic, or social condition” (Merson et al., 2020, p. 103).

The common ground for global health, human rights, and ethics is that they all share a focus on the elements (whether biological, nutritional, social, legal, political, etc.), meaning it is “necessary for people to be healthy, and the means and considerations necessary to enable these conditions” (Merson et al., 2020, p. 76). Thus, the application of human rights and ethics can be complex and requires a multi-step, comprehensive approach, often framed by guiding principles and questions.

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| **Example of a System of Applying Public Health Ethics** | |
| Step | Guiding question |
| 1 | What are the public health goals for the proposed intervention, policy, or program? |
| 2 | How effective is the intervention or proposed program at achieving its stated goals? |
| 3 | What are the known or potential burdens of the program? |
| 4 | How can burdens be minimized? Is the least burdensome approach being implemented? |
| 5 | Is the program implemented fairly? |
| 6 | How can the public health benefits and the accompanying burdens be balanced? |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

### Right to Health

As the human rights and ethical analysis approach is critical to the effective management of healthcare systems it can be helpful to consider the right to health through the lens of the following questions that are common many global health interventions:

1. Are fundamental human rights (e.g., the right to be born free and equal in dignity and rights; the right to life, liberty, and security of person; and the right to health) interrelated and inseparable? Why?
2. When considering the unequal disease burden and its impact across a range of populations, how can we make a thorough analysis that considers health in the context of human rights and ethics?
3. How can we identify discrimination, especially systemic and structural, that leads to further vulnerability of marginalized and/or underserved populations?
4. How can we evaluate a human rights framework as presented by public sector or government stakeholders in order to determine the benefits, obligations, and duties of both the individual and the state?

These questions taken cumulatively begin to triangulate and provide exposition to a systemic dynamic where health is a human right and thus entitles all people to the access to effective and equitable healthcare systems and products (Jacobson, 2008).

As this is a social and community construct (at a national, regional, international, and global scope), a consideration of rights must take into account the responsibilities and systems of governments at all of these levels, especially if the right to health is considered “universal (available to everyone) and irrevocable (something that cannot be taken away)” (Jacobson, 2008, p. 273). As healthcare systems vary globally in both structure, execution, and equity, the right to health becomes an ethical pressure on systems that value health and healthcare as something other than a human right. This dichotomy is captured by noting that health and healthcare “can be considered a commodity to be sold, or it can be a basic social right. It cannot comfortably be considered both of these at the same time” (Jacobson, 2008, p. 275).

The practical application of the right to health at the point of care will be significantly impacted by the position of the national healthcare system on the question of whether healthcare is a right, a privilege, a commodity, or some combination thereof. Even within G7 countries, there is wide range of prioritization of healthcare as a right, from systems that directly state that healthcare is a right and prioritize universal coverage at the center of the systems (e.g., the Beveridge system; the Bismarck system), to systems that prioritize a combination of access to healthcare and commerce (e.g., the U.S. system). It is important to reflect on how the healthcare systems of various countries reflect the implicit and explicit value of health as a right. For healthcare managers, a thorough exposition of the right to health in a global health context must reconcile this dichotomy through identifying the who, what, when, where, and how of the healthcare system.

### Self-Check Questions

1. Please define a human rights and ethics framework in the context of the right to health.

*A human rights framework for global health holds “equal dignity of the human person”" as a foundational value for an individual’s freedom to access society’s resources and opportunities (sometime framed as entitlements) that improve a person’s health and well-being. An ethics framework focuses on moral practices at the core of human rules of conduct and behavior for a particular group, with a comprehensive view of population, culture, and context*

## 2.2 Identifying and Acting on the Social Determinants of Health

One of the core challenges for healthcare professionals in addressing the rights-based approach to providing care in a global context is wide range of factors that influence both health and healthcare delivery across an equally wide range of environments. There is a compelling body of evidence to suggest that one effective approach to effectively manage this range is to focus on foundational, underlying causes of negative health outcomes, especially those that are directly related to social difference (and commonalities) across populations (Merson et al., 2020; Lindstrand et al., 2006). These factors, which Merson et al. (2020) describe as “social, economic, political, legal, and material” (p. 95), are cumulatively referred to as the Social Determinants of Health (SDH). Focus on SDH helps ensure that comprehensive global health analysis goes beyond the inclusion human biology and health sciences to identify the core causes of disease. Identifying, observing, measuring, and studying these SDHs allow healthcare professionals to also consider human behavior, either individually or as expressed in a society/community, as impactful to health. The inclusion of SDH in global health analysis is particularly useful in managing health inequalities, which the WHO defines as systemic characteristics that are often framed as biased and inequitable and are often directly related to poor health outcomes (Merson et al., 2020). Thus, these differences are often studied to design interventions to prevent or mitigate the impact of these inequalities. Within this context of collective human behavior, this analysis of culture and social structure is not limited to disciplines such as economics, but it must also effectively consider the political, historical, religious, and globalization impacts (Markle et al., 2007

### SDH and Health Systems

One global health level perspective that is particularly challenging because of its broad focus is the consideration of health services, including but not limited to healthcare delivery and technology systems. Though the goals and metrics (e.g., reducing mortality, reducing morbidity, and increasing life expectancy), as well as the tools (e.g., economic stewardship, resource mobilization optimization, supply chain mobilization, equitable financing, and equitable service delivery) may be similar across national and international contexts, healthcare systems are so context-specific that they require reliable tools to examine SDH (Merson et al., 2020).

Health systems, especially those that are directly providing care (e.g., primary healthcare), must simultaneously address diseases and underlying determinants. It is worth noting that this dynamic can become even more complex as the healthcare system itself is, in fact, an SDH that has an impact on the individual and population health of the community. As an example, please consider the wide variety of SDH factors on a primary healthcare system, as noted in the following table.

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| Conceptual Example of SDH in a PHC System | | |
| Context  Political/Economic | **Context**  **Social** | **Context: Access/Supplies** |
| Governance  Policy  Enforcement | Cultural, social norms, and values  Social cohesion  Education  Occupation  Income  Gender  Ethnicity/Race | Education  Occupation  Income |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

It is worth noting that some of the factors in the table above are listed in multiple contexts. Though this may be a potential source of confusion, it further exemplifies how SDH can impact different communities and demographics in different ways, which speaks to the importance of SDH across a wide range of contexts.

In practical terms, how healthcare professionals and systems develop and execute policy must also take into account these multiple factors and contexts, in addition to their own legal, socio-cultural, and economic constraints. This is further complicated by the fact that SDH interventions often require inputs that fall outside of the traditional sphere of healthcare delivery, thus complicating the justification of such interventions in a private sector context, where quarterly profit is a driving force. Consequently, it is often the case that SDH interventions fall to public and non-profit sector actors, often resembling activities found in community and social work. This is what Merson et al. (2020) frames as a Health in All Policies (HiAP) approach, including (but not limited to) health education interventions (e.g., newsletters, health fairs, and learning groups); community development work, such as community mapping; monitoring and evaluations; and personal and community preferences (e.g., in markets, schools, and places of worship) concerning integrating community mapping, monitoring, and preferences in health planning (pp. 104–108).

### Self- Check Questions

1. Please list five SDH concepts that are common in public healthcare systems.

*governance, policy, enforcement, cultural, social norms and values, social cohesion,*

*education, occupation, income, gender, ethnicity/race, and education*

## 2.3 Health Equity: The Global Dimension

The concept of health equity, defined as the absence “of systemic and remediable differences between population groups that are not freely chosen and which may be considered unfair or unjust” (Merson et al., 2020, p. 96), has been at the forefront of global health concepts since at least the 1978 Alma Ata Conference, which proposed a goal of “Health for All by 2000” by reducing barriers to healthcare, especially for those impacted by poverty and poor access (e.g., in rural areas; Kickbusch et al., 2012; Jacobson, 2008). This concept is not only meant to consider inequalities but also human behavior and the context around human health choices. Despite its universality, this concept shares the challenge of multiple and interdisciplinary factors that impact health equity on the global stage. For example, Merson et al. (2020) note that the goal of “health for all” can change from context to context, as the “all” is variable according to community perceptions of gender equality and equity. Per context, gender-related differences are defined systemically by tradition, culture, economics, and religion, just to name a few factors. These norms interact with SHD to further complicate the delivery of equitable systems, even in the face of universal healthcare systems.

Though the evidence suggests that the presence of universal healthcare systems is certainly a boon to health equity, it does not guarantee it (Merson et al., 2020; Jacobson, 2008). Concepts such as free access at point of care or cross-cultural services for underserved and high-need populations have been used to address gaps in these services. Some concepts, like social cohesion, which is defined as “the mechanisms and perceptions that exist in a society regarding social integration across various differentials and confronting discrimination” (Merson et al., 2020, p. 112), further complicate the dynamic by being simultaneously supportive and socially restrictive in accessing healthcare (Merson et al., 2020). For example, the public sector response to addressing social exclusion barriers often comes in one of three types:

1. Universalist policies
2. Policies targeting specific social groups
3. Market approaches

It is not uncommon to see combinations of approaches. The success and sustainability of all of these approaches depends greatly on both evidence and the community and political will to continue such systems. This consequently brings us back to the SDH (i.e, political, legal, and implementation) factors that impact the decision-makers of both health policy and healthcare delivery, whether in the public or private sector (Merson et al., 2020, p. 110).

### Self-Check Questions

1. What is the definition of health equity?

*Health equity is defined as the absence “of systemic and remediable differences between population groups that are not freely chosen and which may be considered unfair or unjust (Merson et al., 2020, p. 96)”.*

Summary

In the context of a more globalized markets, of which healthcare is both critical and expanding, there continues to be pressure on healthcare managers to effectively resolve the challenges of global health systems. If the goal of health managers is to design, implement, monitor, and evaluate healthcare systems that are ethical, efficient, and effective, the impacts of globalization must be studied and managed. One approach to this consideration is to use prioritize health as a universal and irrevocable right as well as basis on the ethics of such a prioritization. Another, related, perspective seeks to frame global health interactions through social, cultural, and behavioral factors that impact health known as the social determinants of health. In this unit we have considered these factors, especially with regards to how healthcare managers can engage them in the context of systems within global health towards more effective and equitable outcomes

# 3. Global Health Governance and International Health Policy

**Study Goals**

Upon the completion of this unit, you will be able to …

* define and explain the functional roles (e.g., agenda setting, rulemaking, financing, and capacity building) in the broad context of global health (GH) governance and international health (IH) policy.
* describe the function of the World Health Organization (WHO) and other GH/IH stakeholders.
* describe international and international non-governmental organizations in global health.
* understand what regional development banks are.
* define and discuss “the 3Gs” (e.g., Global Fund to Fight AIDS, Malaria, and Tuberculosis; and GAVI, the Global Financing Facility).

# 3. Global Health Governance and International Health Policy

## Introduction

In the context of international healthcare management, the compelling evidence of the impact of globalization requires not only an understanding of the social determinants of health across borders, cultures, and social constructs but also of the collection of stakeholders across a globalized world (Kickbusch et al., 2012; Merson et al., 2020). As many interventions in a global context are in the form of collections of stakeholders working in cooperation, especially at the national, institutional, and decision-making levels, this unit will consider the systems of governance and policy making in the context of stakeholders and frameworks of healthcare in a globalized world.

Despite using Merson et al.’s (2020) framing of “globalization” as referring to phenomenon that transcend, circumvent, or make irrelevant national/territorial boundaries (i.e., eliminating the difference between a contextual “us” and “them”), there persists a challenge when considering health from a “global” perspective, as many definitions become too broad. To address this, especially in the modern context of collective stakeholder responses, Merson et al. (2020) propose that global health falls into four categories, as noted in the following table.

|  |  |
| --- | --- |
| **Application Categories for Global Health** | |
| Category | Description |
| Cross-border/Transborder problems | Disease/illness/health status cases originate in a specific geographic point, with widening impacts in a broader and growing geographic. |
| Commons problems | Issues around availability and access to common resources (i.e., the commons) arise, especially if these resources are from across communities and societies. |
| Shared problems | Inequities and challenges are experienced across geographies, often stemming from social and natural contexts impacted by globalization. |
| Planetary problems | Inequities and challenges stem from the summative impact of individual, communities, and populations-at-large on global climate. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

**Global health governance**

This can be defined as the values, strategies, tools, and rules (including legal frameworks) that frame the protocols and interactions that impact the health issues and inequities in a unique social or community context, i.e., “characterized by collective action less focused on national borders” (Merson et al., 2020, p. 898).

## A consequence of resolving the challenge of these broad concepts is the necessity for systems of assurance and controlled global health collaborations. These systems of **global health governance** (GHG) are critical to addressing effective global health issues.

## 3.1 Roles: Agenda Setting, Rulemaking, Financing, and Capacity Building

Though the concept of GHG was not coined and popularized until the late twentieth century, this field was also a beneficiary of the wave of globalization that surged in the same period (Merson et al., 2020). One way to consider how and why GHG became critical in the consideration of international healthcare management issues is to classify GHG according to the challenge/context intervention, as described in the table below.

|  |  |
| --- | --- |
| **GHG Characterizations According to Threats and Challenges** | |
| Threats and challenges | Examples of GHG |
| Scale and scope of transborder health risks (i.e., as markets facilitate more transborder exchange, disease and morbidities can also be exchanges) | * Health screenings at ports of entry * Quarantine measures * National disease surveillance/reporting |
| Growth of number, influence of non-state actors (i.e., as the number of healthcare provision stakeholders increases, the complexity and risk of misinformation and confusion also increases) | Registration and licensing of either for-profit (e.g., privately-owned business/industry, industry associations, consultancy firms) or not-for-profit organizations (e.g., community-member groups, charities, and healthcare cooperatives) outside the state/governmental sphere |
| Binding and non-binding instruments (i.e., the increase in the number and complexity of these agreements further complicates how healthcare and supplies can be delivered) | Treaties or conventions that are written agreements by two or more states that are monitored and regulated/governed by international law, e.g., the United Nations (UN) Convention Relating to the Status of Refugees and WHO/UNICEF Declaration of Alma Ata on Primary Healthcare |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

As noted, there can be a wide variety of stakeholders that are critical to the GHG process including but not limited to state and non-state actors. In this context, state actors are those operating within an official governmental capacity or sphere. In contrast, non-state actors are those outside of the state sphere, and they are often further classified as for-profit or not-for-profit organizations. To further complicate matters, there are also numerous creative collaborations of all of the aforementioned actors across a range of partnerships, alliances, coalitions, and joint ventures,allowing for innovative interventions. All of these stakeholders interact and cross-influence one another’s impact, but essentially fulfill varying roles and functions within the GHG paradigm, as noted in the following table.

|  |  |
| --- | --- |
| **Examples of GHG Roles** | |
| Role or function | Stakeholders |
| Agenda setting | * National/state actor organizations * International organizations and NGOs * Scientific/research community * Media |
| Rulemaking | * International organizations and NGOs * National/state actor organizations * Private sector/industry community (i.e., political lobbying) |
| Financing | * National/state actor organizations * Development banks (e.g., international and regional) * Private sector/industry community |
| Capacity building  (Organizational and management skills) | * International organizations and NGOs * Scientific/research community * Private sector/industry community |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

These four roles or functions are critical to the management cycle that is specific to the general framework of GHG, i.e., who, what, when, where, and how of the process of governance. For example, stakeholders involved with the agenda-settingfunction help guide the involved parties in the identification and subsequent prioritization of global health strategies and interventions. A significant and continuous role in agenda setting (and throughout management of GHG) is the function that focuses on the acquisition and distribution of resources (e.g., monetary, human, and political will) to support the GHG agenda established. In order to ensure the efficacy, equality, and equity of these strategies and interventions, the function of rulemaking focuses on establishing standards and methods of feedback to ensure that all the stakeholders understand their respective roles and responsibilities in these cooperative endeavors, especially if valuable resources (i.e., financing) are shared, to make it possible for the parties to meet the consensus-established goals. Finally, to ensure that the benefits of GH interventions (which are supported by GHG) reach those at the community level, the function of capacity building focuses on the value of effective transfer of skills, knowledge, and tools across disciplines, sectors, borders, and communities to support decentralized learning and utility.

### Self-Check

1. Please name at least three functions of GHG.

*agenda setting, rulemaking, financing, and capacity building*

## 3.2 The World Health Organization (WHO)

Upon its formation in 1945, the diplomats that formed the delegates of the United Nations (UN) noted that an organizational body was necessary to coordinate the health strategies and collective actions within the UN system (Bekedam et al., n.d.; McCarthy, 2002; WHO, n.d.-b). This global health body became a reality in 1948 with the WHO Constitution coming into force. In serving as the coordinating authority of health initiatives in the UN system, the WHO works through a headquarter office in Geneva, as well as regional offices in the following (WHO, n.d.-b):

* Washington, D.C (i.e., Pan American Health Organization [PAHO])
* Copenhagen (i.e., Regional Office for Europe [EURO])
* Manila (i.e., Regional Office for the Western Pacific [WPRO])
* New Delhi (i.e., Regional Office for South-East Asia [SEAPRO])
* Cairo (i.e., Regional Office for the Eastern Mediterranean [EMRO])
* Brazzaville (i.e., Regional Office for Africa [AFRO])

In the context of GHG, the WHO is both a signatory and change agent, especially when it comes to the broad-reaching stakeholder agreements known as binding and non-binding agreements. Binding agreements, especially in the form of treaties and conventions, are written and codified agreements finalized and mutually consented to by two or more state actors under the auspices of international law (Merson et al., 2020). The signatories to binding agreements have a legal responsibility to their commitments and are also subject to the protections of those laws (Merson et al., 2020). Non-binding instruments (e.g., principles, resolutions, codes, declarations, communiques) can help shape the political will necessary to compel support and compliance at the state-actor and decision-maker level. While non-binding instruments do not have force of law, they can make political and moral progress toward effective GHG (Merson et al., 2020).

### Self- Check

1. What is the difference between binding and non-binding instruments?

*Binding agreements (e.g., treaties, conventions) are written and codified agreements that are finalized and mutually consented to by two or more state actors under the auspices of international law. The signatories have a legal responsibility to their commitments and are also subject to the protections under those laws.*

*Non-binding instruments (e.g., principles, resolutions, codes, declarations, communiques) can shape the political will necessary to compel support and compliance at the state-actor and decision-maker level. They do not have force of law, but they can make political and moral progress toward effective GHG.*

## 3.3 Intergovernmental and International Non-Governmental Organization in Global Health

One of the complexities of GHG, not unlike a key characteristic of global health as a field of practice, is breadth and scope of the range of stakeholders involved. Because of their relative activity and impact on GHG at the decision- and policy making level, two types of organizations that merit focused considerations are intergovernmental organizations (IOs) and non-governmental organizations (NGOs). In this context, IOs are bodies within sovereign states or governments that have chosen to become members and/or signatories of agreements (e.g., treaties and conventions) between said governments. This often forms the basis for member states to host and support the design and implementation of international legal strategies and instruments (Merson et al., 2020). Some examples of IOs are the United Nations (including the WHO), the European Unions (EU), the World Trade Organization (WTO), the G8, and G20.

Conversely, international non-governmental organizations (INGOs) are not-for-profit bodies that are independent from state and governmental actors, receiving funding from both public and private sources (Jacobsen, 2008). Though INGOs may have varying foci thematically (e.g., relief, disease, development, and microcredit/finance) or demographically (e.g., women, children, and communities living in poverty) a common factor is that their geographic and regional scope crosses borders in both strategy and intervention. Some examples of INGOs are The International Committee of the Red Cross, The International Federation of Red Cross and Red Crescent Socieities, Medicin San Frontieres, Save the Children, Oxfam, and Brot für die Welt.

Though these terms may be used interchangeably, healthcare managers should avoid these mistakes, as the differences between the two classifications are significant and impactful.

The contribution of both IOs and INGOs to GHC in particular and global health law in general can be in both process and product (Merson et al., 2020). In most cases, the GHG products from the IO and INGO participation are not only the binding and non-binding instruments that help shape policy, it can also be in the processes developed and the organizational systems it supports. A key strength of both IOs and INGOs is that both types of organizations can approach the GHG process with the mandate of their constituent stakeholders. This mandate, which is rooted in the consensus and trust that is built within their respective communities, allows IOs and INGOs to leverage political and social will to their respective state or government representative to advocate for their priorities. In addition, as IOs and especially INGOs are not directly representative of member states or governments, they are able to take positions that state or government actors are unable to take because of potential political consequences. Given enough political or social momentum, IOs (and especially INGOs) can further use this to contribute to the GHG process to further align with their respective values towards improving public health.

### Self-Check Questions

1. What are the differences between IOs and INGOs?

*IOs are bodies within sovereign states or governments that have chosen to become members and/or signatories of agreements (e.g., treaties and conventions) between said governments. They are a basis for member states to host and support the design and implementation of international legal strategies and instruments (Merson et al., 2020).*

*INGOs are not-for-profit bodies that are independent from state and governmental actors, receiving funding from both public and private sources (Jacobsen, 2008). They have varying foci thematically (e.g., relief, disease, development, microcredit, and finance) or demographically (e.g., women, children, and communities living in poverty). Their geographic and regional scope crosses borders in both strategy and intervention.*

## 3.3. Regional Development Banks

A key stakeholder in the financing role/function of GHG is the **regional development banks** (RDBs). Though these RDGs often cooperate with the WHO regional offices (e.g., PAHO, EURO, and WPRO), these banks play a critical role in GHG through leveraging their resources (financial and otherwise) by including the improvement of public health in their financing portfolios to influence decision-making (Kickbusch et al., 2012).

**Regional development banks**

These are “multilateral financial institutions that provide financial and technical assistance” for multi-sectoral development, often in lower- and middle-income countries (LMICs) defined in a specific geographic or political area (Ottenhoff, 2011, p. 1).

Though there can be some debate as to which organizations are RDBs, the following are some examples:

* African Development Bank (AfDB)
* Asian Development Bank Group (ADB)
* European Bank for Reconstruction and Development (EBRD)
* Inter-American Development Bank (IADB)

These bodies also often cooperate with institutions such as the World Bank and the International Monetary Fund, which have similar mandates but are not limited in their charters by geography. These inter- and intra-institutional collaborations have similar directives in their charters necessitating cooperation, and their financial resources are the direct result of this. This is worth noting, as the funding may be contingent on the terms of collaboration, which can have the effect of unbalancing the relationship between donor organizations and recipient organizations.

In the context of GHG, it is notable that the internal mechanism of strategy and decision-making in RBGs is very similar to that of the other GHG stakeholders, with a notable exception of the governing boards (the executive decision body of RBGs) having at least one governor from the treasury or finance ministry of a member state (Ottenhof, 2011). The source of funding managed by these governing boards comes from direct contributions from wealthier donor bodies (e.g., state actors, non-profit organizations, and the private/industry sector). The main activity governed by these RDB boards are the distribution of financial resources through instruments, such as lending or grants. In general, these instruments/funds can be classified as hard lending windows (e.g., non-/low-/mid-concessional loans, using market-based terms) and soft lending windows (e.g., grants and high-concessional grants). It is worth noting that, for the latter, the specific instrument may be a loan that requires repayment or even a grant that does not need to be repaid. As noted by Ottenhoff (2011), the majority of RBG loans are “interest free and have a maturity of 25 to 40 years” (p. 2).

### Self-Check Questions

1. What are RDBs?

*These are “multilateral financial institutions that provide financial and technical assistance” for multi-sectoral development, often in lower- and middle-income countries (LMICs) defined in a specific geographic or political area (Ottenhoff, 2011, p. 1).*

## 3.5 The 3Gs (The Global Fund; GAVI; GFF)

In addition to and in cooperation with globally focused stakeholders (e.g., the WHO and the World Bank), there are issue-focused GHG institutions. such as the Global Fund to Fight AIDS, Malaria, and Tuberculosis (i.e., the Global Fund), the Global Alliance for Vaccines and Immunizations (GAVI), and the Global Financing Facility for Women, Children, and Adolescents (GFF), collectively known as the “3 Gs” (Merson et al., 2022; Global Financing Facility for Women, Children and Adolescents , n.d.). The 3 Gs, considered together, are the three largest global health initiatives, and they collectively work to improve access to quality and equitable healthcare (Cordaid, 2021).

|  |  |  |
| --- | --- | --- |
| **General Information about the 3 Gs** | | |
| Name | Year established | Mission |
| Global Fund to Fight AIDS, Malaria, and Tuberculosis (i.e., the Global Fund) | 2002 | “. . . to raise, manage and invest the world’s money to respond to three of the deadliest infectious diseases the world has ever known. The mission of the Global Fund is to invest the world’s money to defeat these three diseases” (The Global Fund, n.d., para 3) |
| Global Alliance for Vaccines and Immunizations (GAVI) | 2000 | “Gavi’s mission is to save lives and protect’s people’s health by increasing equitable and sustainable use of vaccines” (GAVI, n.d., para 2) |
| Global Financing Facility for Women, Children, and Adolescents (GFF) | 2015 | “. . . to accelerate global efforts to end preventable maternal and child deaths and improve the health and quality of life of women, children and adolescents by 2030.” (Global Financing Facility for Women, Children and Adolescents, 2016, p. 2) |
|  |  |  |

Source: Gerardo Fernandez (2022), based on The Global Fund (n.d.), GAVI (n.d.), and The Global Financing Facility for Women, Children and Adolescents (2016).

### Self-Check Questions

1. What global health initiative are part of the 3 Gs?

*Global Fund to Fight AIDS, Malaria, and Tuberculosis (i.e., the Global Fund); the Global Alliance for Vaccines and Immunizations (GAVI); and the Global Financing Facility for Women, Children and Adolescents (GFF)*

## 3.6 Other Stakeholders

The nature of GHG and policy making in the context of modern healthcare requires an understanding of a wide variety of stakeholders. We have considered states and governments, as well as non-state actors. The latter can further be divided broadly into global focused bodies, intergovernmental organizations, international NGOs, regional development banks, and the 3 Gs. Beyond this sample, there are also other critical stakeholders to consider, as the engagement of aligning of interests and resources across this spectrum is critical for GHG to be sustainable, impactful, and equitable (Kickbusch et al., 2012).

If the improvement of global health is the goal of GHG, the strategic alignment of organizations with an interest in the same goal can be an asset. This “alignment of interests,” as noted by Kickbusch et al. (2012, p. 101), requires that stakeholders beyond the sample of organizations with a global, regional, or national foci be engaged. This can include public and/or private interest groups (which can be further divided into sectoral groups and cause groups), local NGOs, faith-based organizations, and civil-society groups.

The comparative advantage of these groups is that they have can have a high level of trust in their communities and are therefore able to organize a potentially significant level of positive political will, as well as social pressure for GHG, though the amount of effective will or pressure will be related to the relative size of the group, which can be small at a local level. The advantage for these groups in partnering with larger stakeholders is a multiplying effect towards its goals. The advantage for the larger stakeholders in partnering with these local stakeholders is a closer relationship to the “point of service/end-user” that will experience the impact of GHG decisions, which, from a management perspective, will be useful in the monitoring and evaluation of said decisions’ impacts. Thus, for healthcare managers, the management of stakeholders will be critical to effectively engage the entire spectrum of stakeholders involved in GHG and policy making.

### Self-Check Questions

1. Please name at least three other types of stakeholders involved with GHG.

*sectoral interest groups, cause interest groups, local NGOs, faith-based organizations, and civil-society groups*

Summary

For healthcare managers working in the modern context of global health, it will be necessary to navigate the framework and details of global health governance and policy making, i.e., the who, what, when, where, and how of GHG. In this unit, we have continued to build on the concepts of globalization, but in the context of how this concept impacts the decision- and strategy-making of governance, as well as policy making in global health. We also examined the wide spectrum of stakeholders, including but not limited to the WHO, intergovernmental organizations, international NGOs, regional development banks, the 3 Gs, interest groups, and local NGOs. In examining each of their roles and responsibilities, we can begin to understand the complexity of their functions, which the healthcare manager will need to understand to best navigate GHG.

# Unit 4 – Global Health, Trade, and Innovation

**Study Goals**

Upon the completion of this unit, you will be able to …

* define and discuss the trade-related aspects of global health.
* identify and discuss information and communication systems in the context of global health.
* define the organizational systems that impact global health trade and innovation.
* identify and classify how pharmaceuticals and medical devices impact global health systems.
* consider other global health innovation fields and their impact on the burden of disease.

# Unit 4 – Global Health, Trade, and Innovation

## Introduction

As global health markets and cooperation grow and become more interdependent in the context of globalization, an interdisciplinary discussion of the impact of trade and innovation on these interactions becomes important. What is required to support the effective and equitable delivery of healthcare goes beyond the general consideration of trade. It encompasses the movement between parties of goods; services and/or resources (e.g., raw materials, products, human resources, and ideas); and innovation as “an idea, practice, service, or other object that is perceived as new by an individual group” (Merson et al., 2020, p. 91).

This discussion hinges on an even broader question: Does technology (and its equitable distribution) have the potential to solve global health challenges? In this unit, we will begin to consider the stakeholders, process, and distribution of health technology in the context of innovation development. This will include mobile health, point-of-care diagnostics, and access technologies, but more importantly, this unit considers these technologies and others in the light of equitable health outcomes (Merson et al., 2020). It is here that trade, the “movement of goods, services, people and capital between countries” becomes critical, as this movement can have a direct effect both “positively and negatively” on the social determinants of health (Merson et al., 2020, p. 892). As trade is a critical feature and a source of globalization, it has a macroeconomic effect on both the supply and demand of healthcare products and services. Thus, the impact of trade liberalization must have an impact on the global burden of disease. Part of the discussion in this unit is to see whether this impact makes global communities more resilient or more vulnerable to the global burden of disease.

## 4.1 Trade-Related Aspects of Global Health

In the context of the globalization of healthcare, the impact of trade on population health cannot be underestimated. Merson et al. (2020) goes so far as to note that trade is a defining characteristic “that directly and indirectly affects the health of the global population with an unrivalled reach and depth” (p. 892). The impact of the trend on liberalizing trade and all that this entails (e.g., trade agreements/treaties, national import/export laws, and policies) not only opens markets to new products and services, but also presents communities with new ideas and social/cultural influences. The reality is that these mechanisms can have a direct effect on population health, presenting conditions that can make populations healthier and more resilient (e.g., broader access to pharmaceuticals and tele-healthcare), as well as more vulnerable to communicable and chronic diseases (e.g., HIV/AIDS and obesity). Even at the level of global health governance (GHG), increased trade can impact decisions at national and governmental levels by affecting public expenditures on imported and exported healthcare technologies (Merson et al., 2020). Thus, in this unit, we will consider the comprehensive and multi-sectoral relationships between trade, innovation, and global health.

The relationship between trade and population health goes well beyond increased access at the point of service to a greater variety of goods, services, people, and capital. Though this increased access can certainly be beneficial, it also presents increased access across borders for communicable diseases, the marketing of unhealthy lifestyle choices, professional migration of healthcare providers, and less-regulated control of medical devices and pharmaceutical quality (Merson et al., 2020, p. 893). Considered broadly, factors that are both the cause and result of the increased trade (e.g., increased economic opening and increased cross-border flow) can have a direct effect on the liberalization of international rules and institutions. This effect requires a strategic focus on equitable care to be prioritized and balanced against market forces, so it puts pressure on the factors noted in the following table.

|  |  |
| --- | --- |
| **Factors Of Increased Trade That Can Impact Health** | |
| Factor | Framework of impact on health |
| 1. Economy   (e.g., macro-, micro-, and sectoral) | * International rules, institutions, and laws * National rules, institutions, and laws * Risk factors |
| 1. Risk factors   (e.g., social determinants of health) | * International rules, institutions, and laws * National economy and health-related sectors |
| 1. Health device/Pharmaceutical markets | * Household economy * National economy and health-related sectors |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

As you can see, the relationships between these factors are both complicated and integrated. In this context, the factor is the classification that links impacts, with the latter as the examples of influence both on disease burden and healthcare system viability and equity. Specifically, the noted sources of influence and pressure are often repeated per factor, which is indicative of a system that is re-iterative and interconnected. This complexity, inherent in modern healthcare in general, is clearly indicative of the global health impact of trade. It is also worth noting that the above framing refers to the national level. There is evidence to suggest that this also holds for international and local/community contexts as well (Merson et al., 2020).

Key GHG tools in the context of trade are national, international, and bi-/multi-lateral trade agreements. A key stakeholder in this dynamic is the **World Trade Organization** (WTO), of which there are currently 164 member nations, with the aim of stimulating and promoting economic activity and development through progressive trade liberalization.

**World Trade Organization**

The World Trade Organizationis “a global agency that sets the rules for international trade (including trade in services, good, and intellectual property (Merson et al., 2022, p. 895).”

This liberalization of markets through trade agreements is often negotiated between member and observer countries on a regional basis, or at least with stakeholders with shared values and interests, such as “geographic proximity, cultural ties, and similar levels of economic development” (Merson et al., 2022, p. 896).

One significant challenge of most of the decision-makers being at the national/governmental state level is that low- and middle-income countries (LMICs) and other communities that are not directly and/or impactfully connected to these state stakeholders are vulnerable, usually because of a lack of resources. For example, the World Health Organization (2022) notes that access to and equitable distribution of personal protection equipment (PPE) during the COVID-19 pandemic was significantly challenging in resource-poor contexts, especially LMICs, due to a lack of supply and equitable policy on how to distribute supplies. Thus, if the priority of these decisions is rooted in liberalization in the private sector for marginal profit, those that are already vulnerable because of impacts from the social determinants of health will remain vulnerable. Thus, as noted by Merson et al. (2020), it is useful to note the broad impacts that trade can have on population health, as presented in the following table.

|  |  |
| --- | --- |
| **Examples of Pathways of Trade Impacts on Population Health** | |
| Pathway | Impact |
| 1. Trade on economy | The economic goal of trade is to promote growth, but each party involved will have different resources available, needs, and strategy. As trade liberalization breaks barriers, this openness can also make communities more vulnerable to further disease burden if health equity focused systems are not in place, especially in the form of novel disease epidemics. Equitable systems will be the difference between whether trade-related growth contributes to a “vicious” or “virtuous” cycle of population health. |
| 1. Trade on governance   (e.g., trade laws, taxes/tariffs) | Trade liberalization can put pressure on governmental structures to further support trade in order to further increase public sector revenue (usually through taxes), even at the risk of potential increased inequality. This inequality can be deepened by the mixture of tax and tariff burden carried by the government. The key governmental mechanisms to address this are the trade laws and agreements engaged by the state. |
| 1. Trade on disease risk | Trade can have a potential growth effect on both communicable (both human and agricultural, e.g., H1N1 and Ebola) and non-communicable (e.g., lung disease related to tobacco use, metabolic disease related to unhealthy food, and alcoholism). |
| 1. Trade on health systems/services | Expansion and liberalization of trade contributes to the increased availability of technology (e.g., medical devices, pharmaceuticals, and procedures), though inequity may limit the access of populations, especially in LMICs. Though systems such as e-health can be designed to increase both, there can be a challenge of initial investment to ensure equity. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

Thus, a persistent challenge at the core of most of the pathways noted above is the issue of equitable distribution of healthcare, especially in LMICs (Merson et al., 2020, p. 893).

### Self-Check Questions

1. Please give three factors of trade that can impact population health.

*economy, risk factors, and health device/pharmaceutical markets*

## 4.2 Information and Communication

A key initial challenge due to the complexity of effectively and equitably integrating innovation toward addressing global health issues is the delivery and exchange of information across distance and borders (whether these are physical/geographic, political, economic, socio-cultural, or technical). The delivery and exchange are addressed primarily through **technical innovations** (which, in this context, is the use of science to meet a social need in the face of economic restraints) in information and communication technology (ICT).

As these technical innovations make their way from discovery through development and distribution, the technology around information and communication is often not as ubiquitously classified as medical and health innovation. If improvements in global health are placed at the center of innovation, a dedication to “improving equitable access to technical progress is just as important as the technical progress itself” (Merson et al., 2020, p. 770). That noted, there are generally three barriers to the development of technical innovations in information and communications in global health, as noted in the table below.

|  |  |
| --- | --- |
| **Barriers to Effective and Equitable Health Technology and Innovations** | |
| Barrier | Examples |
| 1. The technology/tool does not exist. | * Financing/Funding issues (e.g., push factors and pull factors) * Scientific issues (i.e., the idea has not matured or the problem has not been identified) |
| 1. The technology exists but is not accessible (i.e., availability versus accessibility). | * Cost (i.e., the innovation is too expensive for public, equitable use) * Distribution challenges (e.g., inadequate infrastructure) * Insufficient/Unreliable resources (e.g., human, infrastructure, raw materials, and energy) |
| 1. The technology is accessible, but not adopted (i.e., accessibility versus adoption). | Social/Cultural resistance (e.g., religion and tradition)  Historical/Cultural inertia (e.g., human/tradition inertia)  Competing interests (e.g., market forces) |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

Yet again, the challenge of inequity features prominently in these noted barriers. Even in the context of these barriers, there are some innovations that have achieved some levels of adoption, even in LMICs and low-resource contexts in high-income countries (HICs). Some examples of information and communications innovations can be found in the following table.

|  |  |
| --- | --- |
| **Examples of Global Health Technology Platforms** | |
| Platform | Utility and examples |
| 1. Mobile health technologies | Use the ubiquity of mobile phone technology, even in LMICs and resource poor contexts, to address health issues and disease burden  Examples include   * mPower app for Parkinson’s, * wearable sensors, and * smartphone based microscopy. |
| 1. Point-of-care diagnostics | Reduce the transition time from diagnosis to treatment using less resources (i.e., even fewer trained technicians)  Examples include   * lateral flow tests, * rapid HIV tests, and * molecular diagnostics. |
| 1. Access-improving technologies | Reduce the impediments and delays between accessibility and adoption of a technology  Examples include   * vaccine vial monitor, * Pratt pouch, and * foldscope. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

It is notable that in all these examples, the process of innovation kept a focus on equity and going beyond access to adoption during all the steps of the innovation development process (i.e., from identifying needs to solution development, business plan creation, and scaling up). Thus, while it is undeniable that information and communication technology has impacted global health to date, there is still significant unmet need and untapped resources for further development. The challenge in this expansion will be to balance the pressure from market forces and the development cycle with the persistent inequities in the wide array of global contexts.

### Self- Check Questions

1. Please identify two platforms of information and/or communication innovations and describe their general approach to improving health.

*Mobile health technologies use the ubiquity of mobile phone technology, even in LMICs and resource-poor contexts, to address health issues and disease burden. Point-of-care diagnostics reduce the transition time from diagnosis to treatment using less resources (i.e., even fewer trained technicians). Access-improving technologies reduce the impediments and delays between accessibility and adoption of a technology.*

## 4.3 Organizational Systems

With a wide range of stakeholders, roles, and functions impacting the trade of healthcare technologies, it is of little surprise that there are complex systems of organization for all of these. In addition to some of the global and regional bodies that monitor critical aspects of trade and innovation, such as the WTO (e.g., for trade); the World Bank; the International Monetary Fund (IMF), and regional development banks (RDBs; e.g., for financing), it is also critical to consider the context of the relevant national healthcare systems and the typology and characteristics of the system (e.g., Bismarck, Beveridge, free-market/private, mixed) at the point of service where the technology will be used. In LMICs and resource-poor contexts, a consideration of the public health infrastructure should also be included. Of particular concern regarding these health systems are the variables of distribution, price, and quality of care, all of which are paralleled in the control of innovation and technology.

Organizational structure for innovation, not unlike a general organizational framing for global health, can also be framed (Merson et al., 2020) as

* point-of-service
* end user focused
* provider/vender focused
* processes focused on the transfer of technology to or from stakeholders

Within this context, we are also taking into consideration Merson et al.’s (2020) framing of global health innovation as the use of science and research to meet social and community needs, especially in the face of economic inequality and constraints. This helps us organize how innovation is focused and exemplified in healthcare systems and with stakeholders. Finally, just as with health system organizational structure, it may be helpful to consider the following classification of dimensions and focus of the systems developing the innovations, as noted in the table below.

|  |  |
| --- | --- |
| **Organizational Dimensions/Foci for Global Health Innovations** | |
| Dimension/Foci | Examples |
| Center-periphery relations | Ministry of Health (MoH), decentralization, purchaser-provider relations, and delegated semi-autonomy |
| Interrelational between stakeholders | The MOH in conjunction with public–private partnerships, joint ventures, and molecular diagnostics |
| Internal stakeholder/structures (especially for interaction between state actors) | Hierarchy and span of control, relations of authority, and horizontal grouping |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

### Self-Check Questions

1. Please identify three organizational foci for global health innovations.

center-periphery relations, interrelational between stakeholders, and internal stakeholder/structures

## 4.4 Pharmaceuticals and Medical Devices

Of the broad range of technical innovations that can impact global public health (e.g., biological products, organizational systems, medical/surgical procedures, care support systems, road construction/expansion, sanitation/hygiene, and agricultural improvement), pharmaceuticals and medical devices often come to mind in the public-at-large when discussing health innovations (Merson et al., 2020). The impact of the collaboration between pharmaceutical and medical technology interests on driving global health innovation should not be ignored; for example, IQVIA (2022) notes that in contrast to the pre-COVID-19 context of expected reductions in vaccine investment, evidence suggests that global spending on just COVID-19 vaccines are estimated to be over $250 billion USD through 2026.

From a regulatory perspective, pharmaceuticals have been regulated in national contexts as early as the nineteenth century, though it was not until 2007 that the World Health Organization (WHO) issued its first guidelines and frameworks on medical devices (Merson et al., 2020). There are some aspects of the innovation process that are notable for medical devices, often framed within demands unique to this technology. For example, though automation has had an impact on the design and manufacture of medical devices, labor costs are still a significant factor in medical device production.

Pharmaceuticals and medical devices share challenges in navigating the regulatory processes in order to scale up distribution, especially in emerging markets (Merson et al., 2020). For example, pharmaceuticals are rigorously vetted regarding medical safety. A key field in this process is **pharmacovigilance**, which helps regulators identify the impacts on human health. This due diligence is critical when one considers that pharmaceutical alone can comprise up to 25 percent of a health system’s expenditures (Merson et al., 2020). Both pharmaceuticals and medical devices are subject to the same pressures framed by health system design, including but not limited to quality of service delivery, information system resilience/flexibility, sufficient/sustainable financing, and effective governance.

**Pharmacovigilance**

The scientific processes and stakeholders known as pharmacovigilanceseek to identify, examine, test, and facilitate evidence-based recommendations to prevent adverse and/or negative effects of medical-related issues linked to the pharmacological agent.

A major consideration in bringing pharmaceuticals to market is the necessarily rigorous process for researching and developing pharmaceuticals. The key stages of this process are presented in the table below

|  |  |
| --- | --- |
| **Research and Development of Pharmaceuticals** | |
| Stage | Characteristics |
| Discovery/Pre-clinical | Years one to five involves   * identification of effective biomedical mechanisms, * development/synthesis of agent molecules, and * animal testing. |
| Phase 1: Safety (Volunteers) | Years two to ten involve clinical trials and animal testing. |
| Phase 2: Efficacy (Patients) | Years two to ten involve clinical trials and animal testing. |
| Phase 3: Efficacy (Patients at a Population Scale) | Years two to ten involve clinical trials and animal testing. |
| National review (executed by state/government stakeholder) | Years one to six result in completion, submission, or process report through an advisory committee. |
| Marketing and surveillance | Years: Periodical Monitoring & Evaluation  Continuous monitoring and feedback from state and stakeholder surveillance systems |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

It should be noted that this process is similar for medical devices. In addition, though the initial read may give the impression of a linear process, there is a continuous cyclical nature to this vetting that supports continued development and safeguarding. It is worth noting that this process, which is resource intensive, may add pressure to low- and middle-income countries (LMICs) and resource-poor contexts. This resource pressure may be so significant for LMICs that, as a policy, they may decide to use reference markets (e.g., the Food and Drug Administration [FDA] for the U.S. and the European Medicines Agency [EMA] for the European Union) and their affiliated systems to streamline their decision-making process. This challenge supports some political will and momentum for alternative processes that “Delink R&D investment” from a strict profit motive, allowing for more equity at the end market (Merson et al., 2020, p. 736).

### Self-Check Questions

1. Please name the phases of pharmaceutical and/or medical device research and development?

*phase 1: safety (volunteers) , phase 2: efficacy (patients), phase 3: efficacy (patients at a population scale), phase 4: national review (executed by state/government stakeholder), and marketing and surveillance*

## 4.5 Other Fields of Innovation with an Impact on Global Health

The impact of innovation on global health goes beyond the strict designations of pharmaceuticals and medical devices. As noted earlier in this unit, the collective impact of novel technologies in the following can yield improvements in the health status of populations:

* infrastructure (e.g., sanitation systems, roads, and public transportation);
* finances (e.g., community-based banking/financing and social entrepreneurship);
* mass media (e.g., social media);
* food production/science, (e.g., agricultural technology and bioengineered food); and
* social/cultural ideas (e.g., empowerment interventions)

From the wide spectrum of innovations noted, it is clear that this is an example of the multidisciplinary aspect of global health, requiring consideration of community development across borders.

### Self-Check Questions

1. Please give three examples of novel technologies that can have an impact on improvements in global health.

*infrastructure (e.g., sanitation systems, roads, and public transportation); finances (e.g., community-based banking/financing and social entrepreneurship); mass media (e.g., social media); food production/science, (e.g., agricultural technology and bioengineered food); and social/cultural ideas (e.g., empowerment interventions)*

Summary

As markets expand due to the increase in stakeholder cooperation and growing markets of globalization, evidence suggests that the impacts of innovation and trade on global health are significant (Merson et al., 2020; Kickbusch et al., 2012). This impact becomes clearer when we dive into the processes and stakeholders that are engaged in the development of innovations. There are even more factors to consider in getting the technology to market and navigating the differences and relationships between availability, accessibility, and adoption of said technology. Finally, with safety in mind, we discussed the research and development process of vetting pharmaceuticals and medical devices. Yet again, all of these occur in a delicate balance of context, as no process can eliminate the challenge of equity and equality, especially in LMICs and resource-poor communities.

# Unit 5 – One Health – Planetary Health

**Study Goals**

Upon the completion of this unit, you will be able to

* define the concepts of one health and planetary health.
* identify the concepts and connections of health in the sustainable development goals (SDGs).
* consider the connection between human and animal health.
* consider the connection between climate change and human health.
* frame and consider the central impact of water and nutrition.
* Identify and define the impact of migration and urbanization on global health.

# Unit 5 – One Health – Planetary Health

## Introduction

In the context of globalization, there have been significant improvements in population health in the past 100 years, especially in lower- and middle-income countries (LMICs). This can be attributed to an improved understanding and execution of interventions of factors such as the social determinants of health (SDH), for example, human behavior, social/community, economic/financial, and environmental, which have arguably had a greater impact than advances in health/medical science, communication technology, and international trade (Merson et al., 2020). That noted, there are persistent inequalities in health outcomes that exist across a range of SDHs and geographies (e.g., maternal/child health, novel infectious disease, and obesity). As healthcare managers focus on healthcare systems and trends (in this case with regards to globalization), the combination of globalized impacts and threats has given rise to two disciplines that seek to describe the relationship between health (both human and animal) and environments (both local and globally; Merson et al., 2020).

One health as a discipline seeks to approach the health effects arising at the nexus of human and animal interaction with environments. This has both direct and indirect connections to the discipline of planetary health, which is focused on the study human health in the context of civilization and systems (e.g., social/communal, political, and economic) for which there is both dependence and interdependence. Our discussion in this unit will consider these disciplines in the context of the pressures of climate change, water accessibility, nutrition, migration, and urbanization on population health.

## 5.1 Health in the Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) were adopted by the United Nations (UN) in 2015 as an extension of monitoring development progress after the Millennium Development Goals (MDGs). It is notable that the SDGs expanded the scope to include new areas of focus (e.g., peace and justice, consumption, innovation, inequality, and climate change) in order to measure well-being and sustainability more accurately in current and future contexts (Merson et al., 2020).

Not all of the SDGs have a direct health focus. Of the 17 SDGs (with a total of 169 quantitative targets comprised of 230 measurable indicators), only 21 targets and 39 indicators directly focus on health (Merson et al., 2020). These indicators correspond to standard measures in population health, relative to the target populations measured (e.g., incidence/prevalence rates, mortality/morbidity rates and ratios, and birth rates). Please consider a sample of health-focused SDG indicators as provided in the following table.

|  |  |
| --- | --- |
| **Selected Health-Focused SDG Targets and Indicators** | |
| Target | Indicator |
| “2.1: By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious, and sufficient food all year round (Merson et al., 2020, p. 38).” | “2.1.1: Prevalence of undernourishment (Merson et al., 2020, p. 38)” |
| “3.1: By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births (Merson et al., 2020, p. 38).” | “3.1.1 Maternal mortality ratio  3.1.2 Proportion of births attended by skilled health personnel (Merson et al., 2020, p. 38)” |
| “4.2: By 2030, ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education (Merson et al., 2020, p. 39).” | “4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex (Merson et al., 2020, p. 39).” |
| “5.2: Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation (Merson et al., 2020, p. 39).” | “5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons and other than an intimate partner in the previous 12 month, by age and place of occurrence (Merson et al., 2020, p. 39).” |
| “8.8 Protect the labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment (Merson et al., 2020, p. 39).” | “8.8.1 Frequency rates of fatal and nonfatal occupational injuries, by sex and migrant status. (Merson et al., 2020, p. 39)” |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

It is worth noting that not unlike the interdisciplinary nature of modern healthcare management, all SDGs by design have some impact on health, as they are comprehensive in nature.

### Self-Check

1. How many SDGs have a specific health focus?

*There are 21 SDG targets, and 39 indicators directly focus on health.*

## 5.2 Human Health and Animal Health

One critical aspect of the one health strategy is recognition of the dependence, independence, and interdependence between human and animal health with respect to environment, keeping in mind the range of sectors and collaborations necessary to improve health for all. This is in the context of globalization, which has expanded the possibilities for expanded trade and exchange. This can also result in the incursion of species into sensitive habitats and/or the introduction of novel disease agents into new communities. The risk this presents is significant enough that many national and international public health contexts link their laboratory networks in order to manage related human and animal health pathologies, especially in the case of communicable and infectious diseases. Of particular concern in the latter case are **zoonotic infections**, of which there are over 200 variations (Merson et al., 2020).

**Zoonotic infections** These are a range of pathologies that are transmitted between vertebrate animals and humans. Zoonotic agents can include viruses, bacteria, protozoa, and helminths with the range of non-human hosts including animals, birds, food and farming animals, and pets.

The transmission routes for most zoonotic pathogens are as follows:

* inhalation. Infectious material is aerosolized and inhaled.
* ingestion. Contaminated food/products from infected animals are ingested.
* nontraumatic contact. Pathogens enter through protective tissue (e.g., skin, mucosa, and conjunctivae) as a result of contact with animal biologicals (e.g., skin, hide, hair, excretions, fluids, and carcasses).
* traumatic contact. Pathogens enter via animal attack injury (e.g., lacerations from bites or scratches).
* arthropod. Pathogens are introduced by biting arthropods that feed on both animals and humans.

### Self- Check

1. Please define zoonotic infections.

*They are a range of pathologies that are transmitted between vertebrate animals and humans. They can include viruses, bacteria, protozoa, and helminths with the range of non-human hosts including animals, birds, food and farming animals, and pets.*

## 5.3 Climate Change and Health

**Climate change**

Thisis a complex phenomenon of significant and long-term transitions in factors (e.g., temperature, air flow patterns, and heat radiation) that directly climate homeostasis, often resulting in shifts that can have major impact on healthcare outcomes and disease burden (Kirkbusch et al., 2013, p. 519).

In the spring of 2020, the European Commission was working on determining its role in global health, during which **climate change** (especially anthropomorphic) was a policy field that was deemed as requiring increased coherence and focus. Further, the role and in/direct impact of climate change on all the **determinants of global health** is significant and subject to the same pressures of globalization (Kirkbusch et al., 2013).

There is a compelling body of evidence that the global health risk presented by climate change is very significant and continues to grow (Merson et al., 2013). Though it is rooted in systemic changes at a global level, the local climate changes (e.g., extreme high and lower temperatures, extreme/insufficient humidity, cloud coverage, extreme rainfall, and extreme windspeed) are also significant. Given enough time and intensity, climate change can result in a wide range of effects that increase global disease burden, including but not limited to the following:

**Determinants of global health**

These are a complex range of factors (e.g., biological, social, environmental, and political) that transcend national boundaries, governments, and state actors and impact the health and human security (Kirkbusch et al., 2013, p. 240).

* glacier degradation/disappearance
* loss of river ecosystems
* loss of biodiversity (i.e., flora and fauna)
* rising sea levels
* extreme weather patterns
* increase in air pollution and exposure to chemicals
* crop failures
* draught/lack of potable water
* increase of disease vectors

As these effects continue impacting all human demographics, the population health outcomes (e.g., increased population health status, increased health inequality, loss of economic production, and increased poverty; social/community instability) are serious and potentially permanent (Merson et al., 2013). To be specific, just from exposure to increased heat evidence, a sample of outcomes presented are confirmed to have increased negative healthcare outcomes, such as heat stroke death, heat stroke morbidity, heat exhaustion (which also increases work capacity loss), undernutrition, draught, increase infections, mental stress, and injuries. It is also notable that many of these may trigger forced migration, which creates the potential for even more morbidities (Merson et al, 2013). These outcomes are even more pronounced in contexts with limited resources (e.g., LMICs and communities with high levels of poverty).

### Self-Check Questions

1. Define the terms climate change and the determinants of global health.

*Climate Change**is a complex phenomenon of significant and long term transitions in factors (e.g.., temperature, air flow patters, heat radiation) that directly climate homeostasis, often resulting in shifts that can have major impact on healthcare outcomes and disease burden (Kirkbusch et al., 2013, p 519).*

*The Determinants of Global Health**are a complex range of factors (e.g., biological, social, environmental, political, etc.) that transcend national boundaries, governments, and state actors which have impact on the health and human security (Kirkbusch et al., 2013, p 240).*

## 5.4 Water and Nutrition

Both the MGDs and SDGs note the importance of access to potable water and food security to a population health concept of global health security (Kickbusch et al., 2012). For some stakeholders, it is a primary focus, supported at the highest organizational levels such as the International Human Rights Framework (which is periodically reviewed by the United Nations Human Rights Committee for oversight), noting that “safe and potable water and adequate sanitation, an adequate supply of safe food” is a key underlying health determinant (Kickbusch et al., 2012, p. 97). This speaks to a relative political and decision-making will toward protecting access to these to improve global health, but the persistent challenge is more towards the HOW. Approaches range from market-based solutions to the creation/designation of water and food as a global public good for health, with no clear consensus yet as to a universally effective approach. A global public goodis an economics concept that characterizes global public goods as those that are non-excludable and non-rival in consumption in a global market/context. If once the good is produced, benefits are available and accessible to all, the good is considered non-excludable. If the consumption of the good has no effects on the amount available to others, the good is considered a non-rivalry. Pure public goods would have both properties (Kirkbusch et al., 2013, p. 346).

As dietary diversity and potable water accessibility are critical to human health, the extreme and/or sustained deprivation of either at the population level directly yields disease burdens at every level of global health (Merson et al., 2020). Furthermore, especially with conditions such as diarrheal disease, which is related to both factors either in etiology or symptomology, there can be an increase in the risk of contraction (where applicable) and morbidity of other infectious or congenital diseases. While water management solution, though complex, can provide some mitigation to loss of access to potable water in the long run, emergent, acute malnutrition (whether **kwashiorkor** or **marasmus**) and, on occasion, pathological undernutrition (e.g., anemia, iodine deficiency, and zinc deficiency) is often managed though the provision of macro- and micro-nutrients often at a population level (Merson et al., 2020), once other pathologies have been controlled and/or mitigated.

**Kwashiorkor**

This is a condition of acute malnutrition with edema.

**Marasmus**

This is the condition of acute malnutrition without edema, also known as wasting. On rare occasion, both kwashiorkor and marasmus may occur in the same patient, dependent on other pathology exposures.

The entire context around water and nutrition is further complicated by the pressures and prevalence of communicable disease, natural/man-made disasters, and/or complex emergencies, especially because the latter can have a devastating effect on the provision of supplies to hard-hit areas, such as active combat zones (in the case of military actions). Given a long enough timeline, these conditions can have a profound negative effect on the mental and reproductive health of a community.

Most interventions, especially for undernutrition and malnutrition, operate on a range from the immediate casual level (i.e., dealing with the quality and quantity of foods accessible to the population, in addition to looking at care protocols, and other disease risk) to addressing SDH risks that lead to food insecurity (also looking at feeding and caregiving patterns). At best, programming can be nutrition-specific in strategy, which evidence suggests to be effective in addressing cases of stunting, wasting, nutritional deficiencies (macro- and micro-), and obesity.

### Self-Check Questions

1. Please define Kwashiorkor and Marasmus.

*Kwashiorkor is a condition of acute malnutrition with edema and marasmus is the condition of acute malnutrition without edema, also known as wasting.*

## 5.5 Migration and Urbanization

**Refugees**

Under international convention, refugees are defined as those who flee their country of origin as a result of a well-evidenced fear of persecution and/or oppression based on class, race, religion, politics, etc., but not for economic reasons.

In the face of the aforementioned population-level disease burdens, a common response from the communities most affected (e.g., by civil conflict, localized natural disaster, or active combat) is to flee the source of mortality and morbidity. Such mass migration can also be due to fear of persecution (e.g., political, ethnic, or religious) and even economic opportunity (e.g., labor and professional migration). In the vast majority of cases, the intensity and urgency of migration is such that it is in the context of disease incidence and shortages, which are the largest source of morbidity connected with civil conflicts in Africa and Asia, especially for **refugees** and **internally displaced persons** (IDPs; Merson et al., 2020).

**Internally displaced persons**

These are people that flee their community and home but remain internally displaced in their countries of origin.

Related to migration in the context of globalization, urbanization presents yet another challenge for healthcare managers. Evidence suggests that in the last century, the city has achieved predominance as a human habitat as a result of globalization’s acceleration of “production, consumption, burden on natural resources, and increase in pollution on a local to global scale” (Merson et al., 2020, p. 516). Urbanization is expected to further impact income, gender relations, and technological development by 2030 (Merson et al., 2020).

Thus, whether in the context of sustainable development or emergency response, there has been progress in the provision of effective and equitable humanitarian and development aid. That noted, in the context of ongoing and emergent migration further complicated by increasing trends of urbanization, the health needs and disease burdens of these factors require even specific information on both the migrant population, the indigenous population, and the broad range of context factors (e.g., socio/cultural, economic, infrastructure, gender dynamics, etc.). As emergencies can be local to countries or global in context (e.g., COVID-19), this requires that healthcare managers from a range of stakeholders intentionally and continually cooperate, especially in the context of primary prevention and preparation (Merson et al., 2020).

### Self-Check Questions

1. What is the difference between Refugees and IDPs?

*Refugees, under international convention, are defined as those who flee their country of origin as a result of a well-evidenced fear of persecution and/or oppression based on class, race, religion, or politics. Internally displaced persons**are people that flee their community and home but remain internally displaced in their countries of origin.*

Summary

The effective management of healthcare systems in a modern context requires strategies and tools for the evidence-based consideration of all the sectors (e.g., legal, technological, social, cultural, financial, environmental/ecological, ethical, and political), especially in a global context that is becoming increasingly interdependent. The concepts of one health and planetary health are lenses through which the effect of globalization can be managed and mitigated. These are further complicated by interactions between humans, animals, and their environments. For a comprehensive understanding of this dynamic, the study of impacts of climate change, water accessibility, nutrition, migration, and urbanization are critical, especially in resource-challenged contexts (e.g., LMICs, post-conflict, and natural disasters). In the management of these challenges, the Sustainable Development Goals are critical, especially when considering the persistent inequalities that continue to challenge the managers of healthcare systems globally. The interaction between human and animal health is also critical as both a source of potentially novel infections, and a complex dynamic that engages many factors (e.g., economic, agricultural, social/communal, cultural). The interaction between climate, climate change, and human health must be considered, and a comprehensive consideration must also take into account the health challenges and burdens around access to potable water and sufficient nutrition. Finally, in this unit, we considered how all of the issues mentioned have impacted the phenomena of migration, especially to urban centers, and how this impacts human health.

# Unit 6 – Global Health Security

**Study Goals**

Upon the completion of this unit, you will be able to

* define and consider the politics of health security.
* define emerging infections, pandemics, and security.
* identify and explain antimicrobial resistance in one health.
* consider conflict, instability, and health security.
* consider preparedness and resilience.

# Unit 6 – Global Health Security

## Introduction

The concept of health security has also been expanded in the context of globalization, as is the case with most factors that impact global health. With markets, cultures, communities, families, and individuals becoming increasingly linked, the concept of **global health security** (GHS) has also expanded beyond the mere absence of military/conflict threat from another state actor, as it was originally defined in the 1700s (Kickbusch et al., 2012). With the shared impacts of pandemics and armed conflict (in the case of emergent events), there is a clear expansion of risk linked to market expansion (e.g., distribution of counterfeit medicines, security threats over resources, and armed conflict between state actors).

**Global health security**

GHS is the protection, prevention, and management of health threats on a global scope taking into consideration the sustainable development goals, as well as other factors that go beyond geopolitical conventions, thus requiring cooperation from a wide range of stakeholders.

GHS can have both a societal and individual aspect (Kickbusch et al., 2012). For the former, the societal aspect of GHS focuses on the collective vulnerabilities and strengths of potential global health threats. Whether the threats stem from communicable or non-communicable disease, natural disaster, human/state conflict, man-made disaster, or any combination thereof, the reduction of these threats requires systematic cooperation with a clear focus on addressing vulnerable social determinants of health (SDH). All the threats in this case are trans-border and trans-cultural, and they often go beyond the control mechanisms of trade and economics (though they can be influenced by them). For example, if you have an emergent armed conflict, the resultant refugee population which will be crossing both political and cultural borders in seeking safety will inevitably test the supply chains and resource availability in the new host countries/contexts. The control mechanism of trade and economics in these countries such as the regulations set up and enforced by the local ministries of trade and economy will both impact the humanitarian response and be impacted by the increased demand of the refugees to the system. Much of what we will cover in this unit falls into the social aspect of GHS (e.g., politics, emerging infections, pandemics, antimicrobial resistance, conflict, instability, preparedness, and resilience).

The second aspect of GHS, the individual, is equally important, especially for the healthcare manager, as this is where the impact of all the systems become operational, i.e., this is the point of service. Thus, in improving the healthcare outcomes of the individual, healthcare managers have the most important metric for measuring the security of the system.

## 6.1 The Politics of Health Security

Since 2010, the WHO has urged members to promote a comprehensive framing of healthcare systems to include universal healthcare and global health security. For the latter, the United Nations (UN) General Assembly adopted a resolution for member states to strengthen national health emergency capacities in addition to health system resilience (Merson et al., 2020). As the modern context of health emergencies, as well as human-made and natural disasters, impact communities across borders, effective responses must also include state and non-state actors across those same borders.

Strengthening these health systems to contribute to GHS becomes political, as these state and non-state resources must be allocated to the development and maintenance of these systems. Such allocations can be a challenge, especially for lower- and middle-income countries (LMICs), as noted in the following table.

|  |
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| **Examples of Challenges of Forming Resilient Healthcare Systems for GHS** |
| In many LMICs, resources are already stressed, prohibiting further structure. They are therefore inadequate for even a basic level of population care. |
| Healthcare outcomes and levels presented by national health systems are often lower than what is possible due to technological limitations. |
| In many LMICs, public sector activities are often ineffective per cost and coverage, making another high-cost initiative impossible. This is especially the case when hospital care comprises an excessive share of the national budget. |
| GHS interventions place an increasing demand on already limited funds, requiring governments and decision-makers to set priorities. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

### Self-Check Questions

1. Please define at least two challenges for local governments in supporting GHS.

*In many LMICs, resources are already stressed, prohibiting further structure. They are therefore inadequate for even a basic level of population care.*

*Healthcare outcomes and levels presented by national health systems are often lower than what is possible due to technological limitations.*

*In many LMICs, public sector activities are often ineffective per cost and coverage, making another high-cost initiative impossible. This is especially the case when hospital care comprises an excessive share of the national budget.*

*GHS interventions place an increasing demand on already limited funds, requiring governments and decision-makers to set priorities.*

## 6.2 Emerging Infections, Pandemics, and Security

One clear example in GHS is the defining and framing of emerging infections through improvements and regulation across a broad range of health-related industries (e.g., animal husbandry, potable water sources, veterinary nutrient, slaughtering/animal processing, and distribution/trade sources; Kickbusch et al., 2012). Emerging infections present a significant public health challenge that can destabilize health security, as well as economic stability. Many emerging infections occur at a human/animal behavioral interface, usually an infectious agent in an animal species is able to infect another species (“breaches the species barrier”) with a final infection in humans (Kickbusch et al., 2012, p. 127). With globalization’s opening of markets through rapid transcontinental transportation, the spread of such infections need not remain in a limited geography. In addition to the global disease burden, a significant consideration is the economic fallout of a global spread of such an infection (e.g., SARS, H1N1, COVID-19). Surveillance and research to determine the cause of emergent disease is also resource dependent, as it requires monitoring of both potential domestic and free-range animals and their interactions to determine the source.

In the case that such an infection is able to spread and cause infectious disease across continents, this disease burden can be labeled as a pandemic. Specifically, this status must declared by the WHO, after a comprehensive six-level indication vetting process (Merson et al., 2020). In order for stakeholders to support GHS systemized cooperation, not unlike the International Severe Acute Respiratory and Emerging Infection Consortium, there must be a uniform protocol developed in order to standardize data collection and analysis of novel disease progression and management (Merson et al., 2020, p. 669). This data and analysis sharing forms the principles of public health surveillance in the service of GHS with the following benefits:

* building trust
* articulating the value
* planning for data sharing
* achieving quality data
* understanding the legal context
* creating data sharing agreements
* monitoring and evaluation

### Self- Check

1. What is a pandemic?

*In the case that such an infection is able to spread and cause infectious disease across continents, this disease burden can be labeled as a Pandemic. Specifically, this status* *must be declared by the WHO, after a comprehensive six-level indication vetting process.*

## 6.3 Antimicrobial Resistance in One Health

Global health security can also be pressured by the challenge of antimicrobial resistance, which, if not managed, can threaten the antibiotic efficacy central to many modern medical protocols (especially if the latter is to be considered a global public good, albeit overused; Merson et al., 2020). The general role of antibiotics in improved health in modern care is considered a positive contribution by most. Unfortunately, this effectiveness has lead to the prescription of this class of medicines too frequently with poor dosage control and patience education. This has lead to the development *in vivo* of antimicrobial resistant (AMR) strains of disease, which can spread almost undeterred, as the standard of care is no longer effective with these strains. Antimicrobial agents often come in three classifications: disinfectants, antiseptics, and antibiotics. Antibiotics, though initially only referring to antibacterial agents, can also include antivirals, antiparasitics, and antifungals, depending on context (Merson et al., 2020).

Antimicrobial resistance persists and continues to contribute to the burden of infectious disease morbidity and mortality, with unique challenges in morbidity and mortality metrics. Much of the public health response, especially from a one health perspective, centers around prevention through vaccination and sanitation. For one health, these responses are still applicable at the human/animal interface to prevent overuse and misuse of anti-biotics in animal food production. It is worth noting that the use of antimicrobial agents in food production far exceeds its use in humans (Merson et al., 2020). To that end, the WHO proposes the following strategic objectives (Merson et al., 2020, p. 759):

* “improve awareness and understanding of AMR
* strengthen knowledge through surveillance and research
* reduce the incidence of infections
* optimize the use of antimicrobial agents
* develop the case for sustainable investment and increase investment in the development of new antimicrobial agents”

### Self-Check Questions

1. Name 3 potential strategies for improving AMR.

*strengthen knowledge through surveillance and research, reduce the incidence of infections, optimize the use of antimicrobial agents, and develop the case for sustainable investment and increase investment in the* *development of new antimicrobial agents*

## 6.4 Conflict, Instability, and Health Security

Of the spectrum of types of violence or intentional injuries that become significant public health issues (e.g., self-directed, violence, interpersonal violence, child and youth violence, child abuse/maltreatment, gender-based violence, partner-based violence, physical/sexual violence, and violence against seniors), the problem of **collective violence** is one of particular concern when it comes to GHS (Merson et al., 2020, p. 390). Collective violence is a concept that Merson et al. (2020) is defined as “violence committed by larger groups of individuals that can be further subdivided into social, political, and economic […] all forms and ranges of armed conflict […] between state and non-state actors, but only counts morbidity caused directly by war/combat” (pp. 381 –382).

It is worth noting that though morbidities and mortalities are not strictly attributed to war/combat, for example, it is this very destabilization of civil structures such as healthcare systems and rule of law that is the cause. There is compelling evidence that collective violence in the presence of a range of factors may precipitate societal, economic, and political instability (e.g., degradation of democratic processes, power inequality, resource distribution inequality, and inequality control of natural resources), in addition to the disease burden of violence. Thus, though the global burden of disease and mortality attributed to violence is significant, the impact is even broader, as the potential for further instability in the cross-sectional systems that support and maintain health can also be compromised.

### Self-Check Questions

1. Please define collective violence.

*committed by larger groups of individuals that can be further subdivided into social, political, and economic violence*

## 6.5 Preparedness and Resilience

The WHO Joint External Evaluation tool, used in the monitoring and evaluation process of international humanitarian response, identifies preparedness at a systemic level as critical for health systems to remain resilient in the context of GHS. Though this preparedness is often for responses to natural disasters, there can also be a generalized utility for responses for communicable disease pandemics. That noted, in order for systemic preparedness to be effective, it must also be combined with risk assessment and preventative actions in order to be actionable at the onset of said event, whether an earthquake or outbreak. Ironically, the infrequency of these dramatic events poses a challenge to preparedness because it requires that these systems be tested periodically to ensure utility.

At a global level, preparedness requires that several systems cooperate in order for GHS to be resilient to events at a global level. These systems must plan for actions at every level preparation as defined in the following table.

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| **Classification of Prevention** | |
| Primary prevention | This phase focuses on the prevention before the event happens and aims to stop conditions that may trigger the event. |
| Secondary prevention | This phase focuses on the early detection of the event and initial mitigation to limit the impacts of the event. |
| Tertiary prevention | This phase focuses on the prevention and mitigation of mortality and morbidity once the event has occurred. |

Source: Gerardo Fernandez (2022), based on Merson et al. (2020).

### Self-Check Questions

1. What are the three phases of prevention?

*primary, secondary, and tertiary*

Summary

The expansion of global markets also comes with the shared negative impacts of global emergencies. To manage and mitigate this the concept of global health, security seeks to protect systems of markets, cultures, communities, families, and individuals from threats, even beyond war. GHS seeks to address the aspects of social and individual resilience, paying particular attention to a wide range of important factors and contexts. GHS operates in the frame of national health systems, which must consider both domestic and national politics and its impact on health security. These systems must then consider the impact of emerging infections, novel pandemics, and antimicrobial resistance. In addition to these pathological conditions, GHS must also consider systemic instability caused by national and international conflict’s impact on health security. Finally, the way that health systems (e.g., local, national, regional, and global) are prepared for such pressures and how these preparations build institutional and systemic resilience must be considered.