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SECTION

GLOBAL HEALTH ISSUES, POLICY, AND HEALTHCARE DELIVERY

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Global Health: An Introduction

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Objectives

After completing this chapter, the reader will be able to:

1. Define global health.
2. Identify global health terminology, agencies, and significant historical events.
3. Relate the state of the world's population growth and relevance to world health.
4. Discuss the Millennium Developmental Goals and the latest progress made toward their attainment.
5. Relate reasons for health and healthcare disparities worldwide.
6. Define indices of health.
7. Compare and contrast the universal "right to health care" and realistic global healthcare access.
8. Relate global health and healthcare priorities.
9. Discuss the issues related to global migration of healthcare workers.

WHAT IS GLOBAL HEALTH?

Global health is an area of study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide. It is determined by problems, issues, and concerns that transcend national boundaries. These problems, issues, and concerns emphasize transnational health issues, determinants, and solutions, and involve many disciplines within and beyond the health sciences and promote interdisciplinary collaboration (Beaglehole & Bonita, 2010; De Cock, Simone, Davison, & Slutsker, 2013; Koplan et al., 2009; Macfarlane, Jacobs, & Kaaya, 2008).

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Globalization

Globalization is the increased interconnectedness and interdependence of people and countries (WHO, 2014a). In the 1960s, the World Bank first advocated global thinking in regard to health issues with the phrase, "Think globally and act locally" (Beaglehole & Yach, 2003). There are negative aspects to globalization, which include global warming, cross-border pollution, financial crises, international crime, and the spread of human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) and the Ebola virus.

The globalization of disease began with the European explorers and conquerors who came to the Americas and spread smallpox, measles, and yellow fever among the various indigenous populations. They also brought typhus, influenza, and the plague. The poorest were the most vulnerable, whereas the small group of elite, wealthy groups had better nutrition, better health care, and better sanitary (hygienic) conditions. More recently, the spread of HIV/AIDS, tuberculosis (TB), severe acute respiratory syndrome (SARS), West Nile virus, Ebola virus, and other infectious diseases have emerged as a global concern. The rapid movement of people and food products as a result of travel has also resulted in new health problems such as mad cow disease (bovine spongiform encephalopathy or BSE) and avian influenza. Globalization has recently changed the lifestyles of developing countries resulting in new chronic diseases from the importation of high-sodium, high-fat fast foods, along with the more sedentary lifestyles promoted by technologies (e.g., TV, appliances). Moreover, in developing countries today, populations are rapidly acquiring chronic diseases (such as heart disease, cancer, stroke, and obesity leading to diabetes), which are adding a *double burden of disease* given the still challenging acute infectious diseases (Beaglehole & Yach, 2003).

HISTORY OF GLOBAL HEALTH

World Health Organization

The **World Health Organization (WHO)** was established just after World War II as an intergovernmental agency for the purpose of leading and coordinating worldwide health activities. Its activities are initiated when consensus regarding world health priorities is reached. Today's world health is elevated when the economic development of nations is improved via the cooperation of governmental and nongovernmental agencies. In the last decade, numerous efforts directed at global health have been initiated, including the Global Alliance for Vaccines and Immunizations, the Global Tuberculosis Partnership, and the Global Fund on HIV/AIDS (Ruger, 2005).

The World Bank began operations in 1946. Although it was originally established to finance European reconstruction after World War II, today it serves as a major resource for the health, nutrition, and population (HNP) of developing countries. A few examples of the historical activities of the World Bank include the 1968 appointment of Robert McNamara as president of the organization. His term as president resulted in the initiation of a population control program, which provided funding for family planning. In 1971, McNamara emphasized the need to

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combat malnutrition. Additionally, in 1974, the Onchocerciasis Control Program was developed in cooperation with the United Nations Development Program, the Food and Agriculture Organization, and WHO. This program was created to eliminate river blindness in West Africa. After 30 years, the onchocerciasis program has protected an estimated 34 million people and also has cleared an estimated 25 million hectares of land for agricultural use (Ruger, 2005).

In 1985, WHO gave $3 million in grants for the World Food Program for emergency food supplies to Sub-Saharan Africa. This effort was followed in 1987 by WHO and the United Nations cosponsoring a Safe Motherhood Project in the same region—the first of a series of global initiatives for this area. In addition, in 1998, WHO lent $300 million to India's Women and Child Development Program (Ruger, 2005).

At present, the World Bank is the largest financial contributor to health projects throughout the world. When making loans, it allows repayment periods up to 35 to 40 years and gives a 10-year grace period. Although one of the main purposes of the World Bank is to generate and disseminate knowledge, its main advantage over other global healthcare agencies is its ability to generate and mobilize healthcare resources. One of the criticisms of the World Bank is its reliance on user fees, which are said to cause a disproportionate burden on the poor and sick people of the world. For the poorest developing countries the bank's assistance plans are based on poverty reduction strategies. The World Bank develops a strategy pertaining uniquely to the country in question. The government then identifies the country's priorities and targets for the reduction of poverty, and the World Bank aligns its aid efforts correspondingly (The World Bank, 2014).

Alma-Ata

In 1978, in Alma-Ata, Kazakhstan (formerly part of the Soviet Union), leaders within the world community assembled to discuss and solve the issue of primary care for all world inhabitants. The Alma-Ata Declaration stated that governments have the responsibility for the health of their people, which can be fulfilled only by the provision of adequate health and social measures. According to this document, a main social target of governments, international organizations, and the whole world community in coming decades was to be the attainment by all peoples of the world, by the year 2000, of a level of health care that would permit them to lead a socially and economically productive life. Primary health care is the key to attaining this target as part of the development of social justice (Hixon & Maskarinec, 2008). The Alma-Ata Declaration states that citizens cannot always provide primary health care by themselves, so governments must include everyone, not just those who can afford health care, in their health-related programs. This document urges member states:

1. To ensure political commitment at all levels to the values and principles of the Declaration of Alma-Ata, keep the issue of strengthening health systems based on the primary healthcare approach high on the international political agenda, and take advantage, as appropriate, of health-related partnerships and initiatives relating to this issue, particularly to support achievement of the Millennium Development Goals (MDGs).

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2. To accelerate action toward universal access to primary health care by developing comprehensive health services and by developing national equitable and sustainable financing mechanisms, mindful of the need to ensure social protection and protect health budgets in the context of the current international financial crisis.

3. To put people at the center of health care by adopting, as appropriate, delivery models focused on the local and district levels that provide comprehensive primary healthcare services, including health promotion, disease prevention, curative care and end-of-life services that are integrated and coordinated according to need.[1]

In 2005, WHO established a commission on Social Determinants of Health: A Renewal of the Alma-Ata Declaration. In 2008, this commission completed its report recommending a renewal of the goal of primary health care for all and new attention to the need for addressing health disparities worldwide. The Renewal of the Alma-Ata Declaration addressed the following issues:

1. The aging of the world population
2. The plight of indigenous populations
3. Food and nutrition
4. The impact of conflicts and violence
5. The environment and health
6. Global and national inequalities
7. The impact of health on the global economy, social standing, and hierarchy
8. Health disparities among and within nations
9. Best practices and country studies
10. The importance of expanding social determinants of health studies (Hixon & Maskarinec, 2008)

The principles of the Alma-Ata Declaration and Primary Health Care remain at the heart of the global discussions on the post-2015 agenda. These focus on several concepts and priorities, such as *sustainable well-being* for all, *maximizing healthy lives*, and *accelerating progress* on the health MDG's agenda, particularly on the unfinished business of the burden of major National Coverage Determinations and universal health coverage (Thirty-fifth Anniversary of the Alma-Ata Primary Health Care Declaration Conference).

Access to Health Care

A continuing goal is access to health care to achieve health equity and increase the quality of life for all people worldwide. Access to healthcare impacts:

1. Overall physical, mental, and social health status
2. Prevention of disease and disability
3. Detection and treatment of health issues
4. Quality of life
5. Preventable death
6. Life expectancy (Access to Health Services: Healthy People, 2014)

[1]Reprinted from Landscape Analysis of Barriers to Developing or Adapting Technologies for Global Health Purposes, World Health Organization, p. 40. Copyright 2010. http://apps.who.int/medicinedocs/documents/s17778en/s17778en.pdf

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STATE OF THE WORLD'S POPULATION

Worldwide, a child born in 1955 had an average life expectancy at birth of only 48 years. By 2000, the average life expectancy at birth had increased to 66 years and, if past trends continue, the global life expectancy at birth is projected to rise to 73 years by 2025. These improvements in longevity have resulted from improved living conditions overall, advances in medical science, and a number of population-level interventions. However, major disparities persist. During the past decade, in low-income countries, average life expectancy at birth increased from 55 to 57 years (3.6%), while increasing from 78 to 80 years (2.6%) in high-income countries. The world's population as of October 31, 2011, reached 7 billion. Although women on average are having fewer children than they were in the 1960s, the world population continues to rise. At present, there are more people who are younger and also more people who are older than ever before. In some of the poorest countries, high fertility rates hamper the infrastructure development and perpetuate poverty, while in some of the richest countries, there are great concerns regarding low fertility rates and too few people entering the job market. The unemployed people of many nations who wish to migrate from developing countries to developed countries are finding more national borders closed to them. Gaps between rich and poor are widening in almost every location worldwide (UNFPA, 2011).

In 2050, the world population is projected to total 9.15 billion. It is expected that in developing countries, most families will have two or fewer children per family. The largest increases in population growth rates will occur in Africa. Many countries are facing a shrinking pool of working-age individuals (ages 15–64 years), who are needed to support the older adult population. This imbalance may jeopardize pension guarantees and long-term healthcare programs for the elderly. Within the United States, the largest population growth is expected to come from immigration and from growth of the older adult population (Bremner et al., 2010).

The United Nations Family Planning Association (UNFPA) has validated, across nations, the inadequate resources, gender bias, and gaps in serving the world's poor (UNFPA, 2011). Many developing countries have initiated population projects to reduce poverty and have developed laws and policies to protect the rights of women and girls. They have introduced reproductive health services as part of primary health care, increased the skills of birth attendants, and provided more prevention and treatment of HIV/AIDS. Many couples today continue to lack access to birth control. Birth complications remain the leading cause of death of women worldwide, with five million new fatalities per year. Every minute, a woman dies in pregnancy or in childbirth and another 20 to 30 women suffer serious injury or disability; most of these women die in developing countries of preventable or treatable complications. A wide disparity in global survival rates among the rich and poor women within countries is evident (UNFPA, 2011).

World Population Statistics and Related Health Issues

Estimates for the year 2050 range from between 3.2 and 24.8 billion people (The World Bank, 2013).

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Life Expectancy

According to IndexMundi (2014a; 2014b), statistics indicated the following for the world:

1. *World life expectancy*—males: 68.09 years and females: 70.24 years.
2. *World birth rate*—18.9 births per 1,000 population. The total fertility rate (2014) ranges from 7.35 births per woman in Niger, 6.57 in Uganda, to 2.22 in Peru.
3. *World death rate*—7.9 deaths per 1,000. The world range leads in South Africa with 17.23 deaths per 1,000 and Russia with 16.03 deaths per 1,000, to the United Arab Emirates with 2.04 per 1,000 and Qatar with 1.55 per 1,000.

WHO's annual statistics report shows that low-income countries have made the greatest progress, with an average increase in life expectancy by 9 years from 1990 to 2012. The top six countries where life expectancy increased the most were Liberia with a 20-year increase (from 42 years in 1990 to 62 years in 2012), followed by Ethiopia (from 45 to 64 years), Maldives (58 to 77 years), Cambodia (54 to 72 years), Timor-Leste (50 to 66 years), and Rwanda (48 to 65 years) (IndexMundi, 2014a; 2014b).

Global Family Planning Needs in Developing Countries

Many emerging economies have experienced very rapid increases in their contraceptive coverage, enabling steady fertility declines. By contrast, the least developed countries, mostly located in Sub-Saharan Africa, are just beginning to use modern contraceptives (Rwanda and Ethiopia are among the few exceptions). An unmet need for family planning remains high in Sub-Saharan Africa. About 25% of couples who would like to postpone their next birth by 2 years do not currently use a contraceptive method. This need could be met by improving knowledge of contraception and increasing the supply of reproductive health services so that couples can better plan their families (Guengant & May, 2013).

Global Health Research

The World Health Organization (2013), in its population data sheet, calls for the following improvements:

1. Increased international and national investment and support for research addressing improved healthcare coverage for all countries.
2. Closer collaboration between researchers and policymakers.
3. Building research capacity by developing a local workforce of well-trained researchers.
4. All countries having comprehensive codes of good research practice.
5. Global and national research networks to coordinate research and increase collaboration and information exchange.

Gaps Between Rich and Poor Countries

A boy born in 2012 in a high-income country can expect to live to the age of around 76, which is 16 years longer than a boy born in a low-income country (age 60). For girls, the difference is

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even wider; a gap of 19 years separates life expectancy in high-income (82 years) and low-income countries (63 years). Wherever they live in the world, women live longer than men. The gap between male and female life expectancy is greater in high-income countries where women live approximately 6 years longer than men. In low-income countries, the difference is around three years. Women in Japan have the longest life expectancy in the world at 87 years, followed by Spain, Switzerland, and Singapore. Female life expectancy in all the top 10 countries was 84 years or longer. Life expectancy among men is 80 years or more in nine countries, especially as the declining use of tobacco helps people live longer in several countries. At the other end of the scale, life expectancy for both men and women is still less than 55 years in nine Sub-Saharan African countries: Angola, Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Lesotho, Mozambique, Nigeria, and Sierra Leone (CDC, 2014).

WORLD HEALTH STATISTICS

The following facts, from WHO's World Health Statistics report, characterize the current state of world health (WHO, 2014c):

- The top three causes of years of life lost due to premature death are coronary heart disease, lower respiratory infections (such as pneumonia), and stroke.
- Worldwide, a major shift is occurring in the causes and ages of death. In 22 countries (all in Africa), 70% or more of years of life lost (due to premature deaths) are still caused by infectious diseases and related conditions. Meanwhile, in 47 countries (mostly high income), noncommunicable diseases and injuries cause more than 90% of years of life lost. More than 100 countries are transitioning rapidly toward a greater proportion of deaths from noncommunicable diseases and injuries.
- Around 44 million (6.7%) of the world's children, aged less than 5 years, were overweight or obese in 2012. Ten million of these children were in the WHO African Region where levels of child obesity have increased rapidly.
- Most deaths among those under five occur among children born prematurely (17.3%); pneumonia is responsible for the second-highest number of deaths (15.2%).
- Between 1995 and 2012, 56 million people were successfully treated for tuberculosis and 22 million lives were saved. In 2012, an estimated 450,000 people worldwide developed multidrug-resistant tuberculosis.
- Only one-third of all deaths worldwide are recorded in civil registries along with cause-of-death information.

THE CDC GLOBAL HEALTH STRATEGY/HEALTH CHALLENGES

The Centers for Disease Control and Prevention (CDC) created major goals, stated in its Health Challenges report as the following (CDC, 2014a):

1. Health impact—prevent new infections
   a. Reduce TB
   b. Reduce malaria

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   c. Reduce child mortality and morbidity
   d. Control or eradicate vaccine-preventable diseases
   e. Reduce noncommunicable diseases
2. Health security—improve capacities to prepare and respond to infectious diseases
   a. Strengthen capacity to prepare for and detect infectious diseases and other emerging health threats
   b. Respond to international public health emergencies and improve country response capabilities
3. Health capacity—build country public health capacity
   a. Strengthen public health institutions and infrastructure
   b. Improve surveillance and use of strategic information
   c. Build workforce capacity
   d. Strengthen laboratory systems and networks
   e. Improve research capacity
4. Organizational capacity—maximize potential of CDC's global programs to achieve impact
   a. Strengthen organizational and technical capacity to better support the CDC's global health activities
   b. Enhance communication to expand the impact of the CDC's global health expertise

MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) are the most broadly supported, comprehensive, and specific development goals worldwide. Collectively, they provide benchmarks for resolving extreme poverty and include goals and targets related to income, poverty, hunger, maternal and child mortality, disease, inadequate shelter, gender inequality, environmental degradation, and the Global Partnership for Development. Adopted by world leaders in 2000 and set to be achieved by 2015, the MDGs are both global and local, adapted by each country to address its specific development needs. They provide a framework for the entire international community to work together toward a common end for everyone.

Progress Toward Meeting the Millennium Developmental Goals

In 2014, the United Nations issued *The Millennium Developmental Goals Report 2014*, which contained the following:

1. *Eradicate extreme poverty and hunger*. Reduce by half the proportion of people living on less than a dollar a day; achieve full and productive employment and decent work for all, including women and young people; and reduce by half the proportion of people who suffer from hunger. The goal of cutting in half the proportion of people in the developing world living on less than $1 per day by 2015 remains within reach. This achievement will be due mainly to the extraordinary economic success in most of Asia. In contrast, previous estimates suggested that little progress was made in reducing extreme poverty in Sub-Saharan Africa. There are half a billion fewer people living below an international poverty line of $1.25 a day. In western Asia, poverty rates are relatively low but increasing.

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Progress

The MDG target has been met, and poverty rates have been halved between 1990 and 2010, but 1.2 billion people are still living in poverty (UN, 2014). According to *The Millennium Development Goals Report 2014*, the world reached the poverty reduction target 5 years ahead of schedule as 700 million fewer people in 2010 lived in extreme poverty compared to 1990. Further, the report also highlights that the goal of halving the number of chronically hungry people, while not yet achieved, is within reach. Since 1990 the number has fallen from over 1 billion people to 842 million in 2013.

2. *Achieve universal primary education.*

Progress

In most regions, primary school enrollment rates in 2006 exceeded 90%, and universal enrollment was achieved in many countries. The number of children of primary school age who were not in school dropped from 103 million in 1999 to 73 million in 2006 despite an overall increase in children of that age group. In Sub-Saharan Africa, net enrollment only reached 71%, with 38 million children in that region still out of school. In southern Asia, enrollment reached 90%, with 18 million children still not enrolled. Too many children are still denied a right to a primary education. If current trends continue, the world will not meet the goal of universal primary education by 2015.

3. *Promote gender equality and empower women.* Eliminate gender disparity in primary and secondary education by 2005 and at all levels by 2015.

Progress

For girls in some regions, education remains elusive. Poverty is a major barrier to education, especially among older girls. Women are slowly rising to political power, but usually when boosted by quotas and other special measures. Women are assuming more power in the world's parliaments, boosted by quota systems.

4. *Reduce child mortality*. Child death rates have fallen by more than 30%, with about three million children's lives saved each year, compared to 2000. In 2006, the annual number of deaths among children younger than age five dropped below 10 million. A child born in a developing country is 13 times more likely to die within the first 5 years of life than a child born in a developed country. Sub-Saharan Africa accounts for half of all under-five deaths in the developing world. In eastern Asia, Latin America, and the Caribbean, child mortality rates are approximately four times higher than in developed regions. Mortality rates are higher for children from rural areas and poor families whose mothers lack basic education.

Progress

Large gains have been made in child survival, but efforts must be redoubled to meet the global target. The target is to reduce by two-thirds, between 1990 and 2015, the under-5-year-olds' mortality rate, from 93 children of every 1,000 dying to 31 of every 1,000. Between 1990 and 2012 mortality in children declined by 47% from an estimated 90 deaths per 1,000 live births

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to 48 deaths per 1,000 live births. The under-five mortality rate is still highest in Africa with a rate of 95 per 1,000 live births. The risk of a child dying before his or her fifth birthday is eight times greater in the WHO African region than in the WHO European region. Inequities among low-income countries were greater than 13 times the average rate for high-income countries. Undernutrition is the major cause of death in children, causing 45% of all deaths. The number of underweight children declined from 160 million in 1999 to 99 million in 2012, a decline from 25% to 15%.

5. *Improve maternal health*. Reduce by three-fourths the maternal mortality ratio; achieve by 2015 universal access to reproductive health.

Progress

Maternal mortality remains high across most of the developing world. In 2005, more than 500,000 women died during pregnancy, childbirth, or within 6 weeks after delivery. Ninety-nine percent of these deaths occurred in developing regions, with Sub-Saharan Africa and southern Asia accounting for 86% of them. In Sub-Saharan Africa, a woman's chance of dying from pregnancy or childbirth complications is 1 in 22, compared to 1 in 7,300 in developed regions.

Maternal mortality has declined by nearly half since 1990, but falls far short of the MDG target. The targets for improving maternal health include reducing by three fourths the maternal mortality ratio and achieving universal access to reproductive health. Poverty and lack of education perpetuate high adolescent birth rates. Inadequate funding for family planning is a major failure in fulfilling commitments to improving women's reproductive health. The number of women dying from pregnancy and childbirth decreased 50% from 1900 to 2013, yet in many developing countries the percentage of deaths still remains high. The key problem remaining for many women is lack of access to quality care. Seven in every 10 births are attended by skilled birth attendants; yet, coverage varies greatly across country by income levels from 99% in high-income countries to 46% in low-income countries.

6. *Combat HIV/AIDS, malaria, and other diseases*. Halt and reverse the spread of HIV/AIDS; achieve by 2010 universal access to treatment; halt and reverse the incidence of malaria and other diseases.

Progress

An estimated 2.3 million people were newly diagnosed with HIV in 2012, which represented a 33% decline in new infections. People living in Sub-Saharan Africa accounted for 70% of all new infections.

Greater than 6.2 million malaria deaths have been prevented between 2000 and 2015, primarily of children under 5 years in Sub-Saharan Africa. The global malaria incidence rate has decreased by 37% and mortality by 58%. Greater than 900 million mosquito nets were delivered to malaria-endemic countries in Sub-Saharan Africa between 2000 and 2014.

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In 2012 an estimated 8.6 million people developed tuberculosis (TB) and 1.3 million died from it (including those who also were HIV positive). Globally TB mortality has declined by 45% since 1990 and is expected to be reduced to zero by 2015. The number of cases still remains unacceptably high. Between 2000 and 2013 tuberculosis prevention, diagnosis, and treatment interventions saved approximately 37 million lives. The TB mortality rate decreased by 45% and the prevalence rate by 41% between 1990 and 2013.

7. *Ensure environmental sustainability*. By 2015 cut by half the proportion of people without access to sustainable drinking water and sanitation. Global greenhouse gas emissions resume their upward path, confirming the need for bold action. Forests are a safety net for the poor, but they continue to disappear at an alarming rate (UN, 2013). The global goal of halving the proportion of people without access to safe drinking water was met in 2010 with reduced child mortality and improved nutrition. Still, 747 million people in the world do not have clean water.

Progress

Despite the significant progress, wide disparities exist between urban and rural areas and between different socioeconomic groups. Global emissions of carbon dioxide (CO_2) have increased by almost 50% since 1990. Protected ecosystems covered 14% of terrestrial and coastal marine areas worldwide by 2012. Over 2.3 billion more people have gained access to an improved source of drinking water since 1990, but 748 million people still draw their water from an unimproved source. Between 1990 and 2012, almost 2 billion people obtained access to improved sanitation. However, 1 billion people continue to resort to open defecation. One-third of urban residents in developing regions still live in slums.

8. *Develop a global partnership for development*. Continue to develop an open, rule-based, predictable, nondiscriminating trading and financial system; address the special needs of the least developed countries; deal with landlocked developing countries and small island countries; deal comprehensively with the debt problems of developing countries (UN, 2009, 2010). There is less aid money overall, with the poorest countries most adversely affected (UN, 2014).

Progress

Official development assistance from developed countries increased by 66% in real terms between 2000 and 2014, reaching $135.2 billion. In 2014, Denmark, Luxembourg, Norway, Sweden, and the United Kingdom continued to exceed the UN official development assistance target of 0.7% of gross national income. In 2014, 79% of imports from developing to developed countries were admitted duty free, up from 65% in 2000. The proportion of external debt service to export revenue in developing countries fell from 12% in 2000 to 3% in 2013. As of 2015, 95% of the world's population is covered by a mobile-cellular signal. The number of mobile-cellular subscriptions has grown almost tenfold in the last 15 years, from 738 million in 2000 to over 7 billion in 2015. Internet penetration has grown from just over 6% of the world's population in 2000 to 43% in 2015.

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FUTURE GLOBAL HEALTH PATTERNS

The World Health Organization, in its Global Statistics Report, anticipates the following patterns to emerge in global health (WHO, 2014c):

1. Tobacco will cause chronic obstructive pulmonary diseases (e.g., emphysema and lung cancer) and will kill more people than the HIV epidemic.
2. Males living in the former USSR and socialist economies in Europe will have poor and deteriorating health status, including a 28% risk of death in the 15 to 60 age groups.
3. Mental health diseases (depression, alcoholism, and schizophrenia), which have long been underestimated in significance, will be responsible for 1% of deaths and 11% of the total world disease burden.
4. Communicable diseases, maternal and perinatal problems, and nutritional diseases will continue to be major problems in developing countries, while noncommunicable diseases such as depression and heart diseases will also cause premature death and disability.
5. Deaths from noncommunicable diseases will increase by 77% due to the aging of the world population and the decrease in birth rate.
6. Accidents and violence mortality (death) rates may compete with mortality rates of infectious diseases.

Disability Adjusted Life Years and Years Lived with a Disability

“Years of Life Lost” (YLL) is a calculation that subtracts the average life expectancy from the actual age of death. If, for example, a life expectancy is 65 years but that person dies at 45, the calculation would be –20. This calculation is used to put more weight on the death of a child than an older person or someone who lives longer than the average life expectancy). “Disability Adjusted Life Year” (DALY) is calculated by adding the YLL + YLD (Years Lived with a Disability). This measurement is helpful in determining the general health of a person while he or she was alive.

In rank order, the following issues are leading causes of YLL (WHO, 2014c):

1. Ischemic heart disease
2. Lower respiratory infections
3. Stroke
4. Preterm birth complications
5. Diarrheal diseases
6. HIV/AIDS
7. Birth asphyxia and birth trauma
8. Road injuries
9. Chronic obstructive pulmonary disease
10. Malaria
11. Congenital anomalies
12. Neonatal sepsis and infections
13. Self-harm

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14. Trachea, bronchus, lung cancers
15. Diabetes mellitus
16. Tuberculosis
17. Cirrhosis of the liver
18. Interpersonal violence
19. Meningitis
20. Protein-energy malnutrition

World Population Challenges

Greater investments in scientific research and technology will be needed in developing countries to meet the increasing demand for the challenges of treatment of illness and disease prevention. UNFPA (2011) indicates that world population challenges will include the following issues:

1. *Migration from rural areas to urban cities*. Half the world's population lived in urban areas as of 2007—a pattern that created a greater need for social services, including reproductive health, especially in poor urban areas.
2. *Stress on the global environment*. Global warming, population growth, resource consumption, deforestation, and decreases in water and cropland further negatively impact health outcomes.
3. *Increased demand for family planning*. More than 350 million couples continued to lack family planning services; by 2025, the demand for such services will increase by 40%.
4. *Pregnancy and childbirth complications*. These issues continue to cause illness and death in women in developing countries, resulting in 8 million women having life-threatening complications and 529,000 deaths from this cause.
5. *Lack of prenatal care*. Thirty-three percent of all pregnant women in the world receive no prenatal care and 60% of all deliveries occur outside a hospital by an unskilled birth attendant.
6. *Skilled birth attendants*. Only 50% of all pregnant women will be delivered by a skilled birth attendant.
7. *HIV/AIDS*. Thirty-eight million people have HIV/AIDS.

Injuries and Violence

Injuries and violence are a major public health issue worldwide and account for nearly 1 out of every 10 deaths every year. The CDC (2014b) notes the following:

- Globally, more than nine people die every minute from injuries or violence (5.8 million people of all ages and economic groups die each year from both unintentional and violence related injuries).
- The three leading causes of injury and violence-related deaths are road traffic incidents (1.3 million), suicides (844,000), and homicides (600,000).
- In addition, millions of people seek medical treatment due to injuries and violence.

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- Violence can result in serious injuries and even death, but may also lead to other significant mental and physical health consequences such as depression and anxiety, pregnancy complications, and even chronic diseases such as diabetes and heart disease.
- Violence also erodes the sense of safety and security, essential to the well-being of families and communities.

In addition to deaths, road traffic crashes result in 20 to 50 million injuries every year—nearly half are among pedestrians or people riding motorcycles or bicycles in countries where motorbikes are a principal mode of transportation. These injuries cost $518 billion annually. The Global Helmet Vaccine Initiative in Vietnam is an innovative program that includes helmet distribution, public education, and legislative changes. It has resulted in an increase in helmet usage among motorcycle riders from 30% to over 90%, a 16% decrease in road traffic head injuries, and an 18% decrease in risk of death. Increasing helmet use is a simple, inexpensive, and very cost-effective means of preventing serious head injuries on the road (CDC, 2014b).

Prevention of Child Abuse

Together for Girls is the first global partnership to promote coordinated, effective strategies to prevent sexual violence against girls, one of the most vulnerable groups in society. Societies worldwide want to ensure that children can grow and thrive in safe, nurturing conditions. To support that goal, the Injury Center, a part of the Together for Girls Program, is collaborating with national governments and nongovernmental organizations to protect the health and safety of young girls. Together for Girls was launched in September, 2009 at the annual meeting of the Clinton Global Initiative. This partnership brings together international public, private, and nonprofit organizations, including four UN agencies.

Three core activities have been identified to address the systemic and societal foundations of sexual violence:

1. Collect pertinent data through national surveys.
2. Implement the best prevention and protection strategies.
3. Mobilize an in-depth communications campaign to bring about desired changes in social and behavioral norms.

This initiative builds on a successful partnership formed in Swaziland in 2007, where CDC, UNICEF, and other partners conducted a national survey estimating the magnitude and health consequences of sexual violence against girls. Survey data provided the foundation for the development of critical strategies to address sexual violence, including draft legislation, child-friendly courts, and a national educational campaign aimed at raising awareness about sexual violence and how to prevent it (CDC, 2014b).

GLOBAL HEALTH DISPARITIES

A **health disparity** is a statistically significant difference in health indicators that persists over time. Health disparities are comparative measurements of the burden of disease as well as morbidity and mortality rates, in specific populations. **Healthcare disparities**, by comparison,

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are differences in access to appropriate healthcare services by various groups because of a multitude of factors; they are mainly associated with social inequalities. Health disparities are differentiated from healthcare disparities, although both concepts are intimately linked. Disparities in access to quality and timely healthcare services contribute to the disparities in health status. Poorer health status compromises the ability of some groups to obtain timely and appropriate health services. Health and healthcare disparities exist worldwide, affecting both developed and developing countries. Population groups both in one nation and across different countries are affected by health disparities. In contrast to developed countries, developing nations have a lower level of material well-being based on per capita income, life expectancy, and rate of literacy. These nations are also referred to as less economically developed, Third World, lower-income nations, or resource-poor countries. In contrast, developed nations are also called industrialized societies, advanced economies, and higher-income nations (King, Harper, & Young, 2012). These terms should be used with caution because they may imply inferiority–superiority relationships among nations.

INDICES OF HEALTH DISPARITIES

1. *Burden of disease*. The impact of a health problem in an area measured by financial cost, mortality, morbidity, or other indicators. It is often quantified in terms of quality-adjusted life-years (QALYs), which allow for comparison of disease burden due to various risk factors or diseases. It also makes it possible to predict the possible impact of health interventions. WHO provides a detailed explanation of how disease burden is measured at local and national levels for various environmental contexts. The global burden of disease is shifting from infectious diseases to noncommunicable diseases, including chronic conditions such as heart disease and stroke, which are now the chief causes of death globally.

2. *Mortality rate*. The number of deaths in a population, scaled to the size of that population, per unit of time. This rate is expressed in units of deaths per 1,000 people per year; thus a mortality rate of 9.5 in a population of 100,000 would mean 950 deaths per year in that entire population.

3. *Infant mortality rate (IMR)*. The number of deaths of infants (1 year of age or younger) per 1,000 live births. The IMR is a useful indicator of a country's level of health or development.

4. *Morbidity rate*. The number of individuals in poor health during a given time or number who currently have that disease (prevalence rate), scaled to the size of the population. This rate takes into account the state of poor health, the degree or severity of a health condition, and the total number of cases in a particular population during a particular point in time irrespective of cause.

5. *Life expectancy*. The average number of years of life remaining at a given age or average life span or average length of survival in a specified population; the expected age to be reached before death for a given population in a country, based on the year of birth or other demographic variables.

6. *Birth rate*. The number of childbirths per 100,000 people per year.

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7. *Total fertility rate*. The average number of children born to each woman over the course of her life. Fertility rates tend to be higher in developing countries and lower in more economically developed countries.

8. *Disability*. The lack of ability relative to a personal or group standard or spectrum. It may involve physical, sensory, cognitive, or intellectual impairment, or a mental disorder; it may occur during a person's lifetime or be present from birth.

9. *Nutritional status*. A factor influenced by diet, levels of nutrients in the body, and ability to maintain normal metabolic integrity. Body fat may be estimated by measuring skin fold thickness and muscle diameter; levels of vitamins and minerals are measured based on their serum levels, through urine concentration of nutrients and their metabolites, or by testing for specific metabolic responses (CDC, 2003; UNFPA, 2011).

Health Disparities in the United States

Health disparities may be defined more narrowly as persistent gaps between the health status of minorities and nonminorities that continue despite advances in health care and technology. In the United States, ethnic minorities have higher rates of disease, disability, and premature deaths than nonminorities. African Americans, Hispanics/Latinos, American Indians and Alaska Natives, Asian Americans, Native Hawaiians, and Pacific Islanders all have higher rates of infant mortality, cardiovascular diseases, diabetes, HIV/AIDS, and cancer, as well as lower rates of immunizations and cancer screenings, than nonminority groups. Such disparities arise for a number of reasons:

- *Inadequate access to health care*. Caused by economic, geographic, and/or linguistic factors; lack of or decrease in health insurance and education; and poorer quality of health care.
- *Substandard quality of care/lower quality of care*. Caused by patient–provider miscommunication, provider discrimination, and stereotyping or prejudice (Agency of Healthcare Research and Quality, 2006; National Healthcare Disparities Report 2009, 2010).

Challenges of World Population Growth

As of October 2011, the global population of 7 billion continued to grow rapidly at a rate of approximately 76 million per year. The average family size declined from six children per woman in 1960 to three children per woman, mainly due to family planning. Countries that have significant decreases in fertility will have increases in the aging population. Ninety-six percent of the world population growth is attributable to growth in developing countries. As of 2011, Europe and Japan had declining populations, whereas the North American population increased by 1% due to immigration. Actual population sizes and growth patterns today are somewhat lower than those predicted 10 years ago, mainly due to the impact of the HIV/AIDS epidemic. The 38 African countries most affected by HIV/AIDS are projected to have 823 million people by 2015—a population that includes 91 million fewer people than if no AIDS deaths had occurred (UNFPA, 2011).

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Global Healthcare Equity

Disparities in health care are now a major challenge for healthcare agencies around the world. As former South African President Nelson Mandela (1998) stated, "The greatest single challenge facing our globalized world is to combat and eradicate its disparities." The burden of disease is growing disproportionately within certain regions of the world, especially in areas commonly affected by "brain drain." Some doctors and nurses from Africa, Asia, and Latin America are leaving the rural areas for cities, while many others are leaving their countries altogether and relocating in developed nations. The irony is that more healthcare providers in developed countries are now working, at least for part of their working lives, in developing countries, even as the "brain drain" pulls some of the most competent healthcare providers out of their home countries, where they are most needed. Regardless of the causes, many developing countries with the least amount of human and economic resources are confronted with the largest burden in public health. In the developed world, the most affluent 15% of the world's population consumes more than 60% of the world's total energy—much more than the developing world (Farmer, Furin, & Katz, 2004).

There is still major evidence that socioeconomic as well as health inequalities exist within and among nations. Although the health of the world population has improved considerably, some countries of the world still have inadequate and inequitable health care within their borders and among their citizens. For example, in 2010, there was an estimated 22.9 million people living with HIV in Sub-Saharan Africa. This has increased since 2009, when an estimated 22.5 million people were living with HIV, including 2.3 million children. The increase in people living with HIV could be partly due to a decrease in AIDS-related deaths in the region. There were 1.2 million deaths due to AIDS in 2010 compared to 1.3 million in 2009. Almost 90% of the 16.6 million children orphaned by AIDS live in Sub-Saharan Africa (Avert.org, 2011). The disappearance of an entire generation of productive men and women (ages 18–45) is evidence that healthcare services have been inadequate in this region, resulting in children and grandparents left behind (Ruger, 2005).

Adequate health care promotes social stability and economic growth. Countries that do not have adequate health care often have inadequate funding, poor government organization, and inadequate access for healthcare services for all of their populations (Go & Given, 2005). Go and Given (2005) report that although developing countries such as India, Mexico, and China would like to expand their healthcare systems and have more high technology, they first must restructure their systems to devote more expenditures to, and place greater emphasis on, education and preventive medicine, rather than trying to first invest in high-technology health care. The three main criteria for an adequate healthcare system include (1) equitable access to quality care in the form of both prevention and treatment services for rural and urban populations; (2) affordability, which means that even if people have no income or health insurance they may receive services; and (3) sustainability, which means that the system has long-term political and financial support.

For example, Mexico, China, and India are emerging economies that are rapidly industrializing and embracing global markets; each has its own unique culture, geography, and history as well. All three countries are working to improve access to their healthcare systems for all of their citizens and are emphasizing preventive health care as a major priority. Ninety percent of Mexicans

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now have access to preventive care and basic public health services, although some indigenous Indians in isolated rural areas still have no coverage. Sixty-seven percent of India's population is now immunized, although many rural areas have less basic health care than urban areas. In the past, the Indian government paid the entire cost of health care for individuals, but now a shift in healthcare costs has placed greater burden on individuals to cover their own healthcare needs. The Indian government is now spending less and expects that individuals will pay for part of the services that were once completely funded by the government. At present, new medical treatments and medications are becoming more expensive and many people must also pay out-of-pocket for health care because they lack health insurance (Go & Given, 2005). The World Health Report (WHO, 2003) states that a key responsibility of any government's healthcare system is to decrease the health disparities. Lack of political power and basic education represent barriers to accessing the healthcare system for all. The majority of the populations in Mexico, China, and India have equal access, yet only a small elite group has access to state-of-the-art health care.

UNIVERSAL RIGHT TO HEALTH CARE

The right to health care under international law is found in 1948 under the 1948 Universal Declaration of Human Rights ("the Declaration"), which was unanimously accepted by the UN General Assembly as a common standard for the entire world's population. This declaration sets forth each person's right to "a standard of living adequate for the health and well-being of himself and his family . . . including medical care and . . . the right to security in the event of . . . sickness, disability . . . or other lack of livelihood in circumstances beyond his control." The Declaration does not define the components of a right to health, but they are included in the statement regarding medical care. Health is considered to extend beyond health care to include basic preconditions for health, such as potable water and adequate sanitation and nutrition. In addition, the right to health includes freedoms from nonconsensual medical treatment and experimentation (Gable & Meier, 2013).

Within the WHO Constitution and the Declaration of Alma-Ata, health-related human rights have been encouraged. The human right to health has been addressed in international law and implemented through domestic law within numerous nations. The Framework Convention on Global Health (FCGH) states that the right to the highest attainable standard of physical and mental health can be a force to enable even the poorest people to benefit from immense health improvements that we know possible—interventions that are proven and affordable (Gable & Meier, 2013).

Historically, the United States has not wanted to accept international human rights standards or pass the laws necessary to meet them. The United States is currently the only developed country in the world that does not have a plan for universal healthcare coverage and some type of legal right to health care for all its residents (The Atlantic, 2012).

EMERGING GLOBAL HEALTH THREATS

The WHO Report of 2010 indicates that public health issues evolve over time. As a result of planned and unplanned activities or changing environments, humans may come in contact with many different organisms that have the capacity to cause disease. Thanks to the development of antibiotics, people are now able to survive many bacterial infections, which previously would

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have been the cause of certain death. Even so, infectious diseases continue to cause both new epidemics, such as those linked to HIV/AIDS or the Ebola virus, or reoccurring epidemics, such as those involving tuberculosis or cholera. Many of the emerging health threats around the world today are caused by resistance to antibiotics, new strains of drug-resistant bacteria, or poor adherence to medical regimens (WHO, 2011).

Preventable diseases and injuries are seen more often as humans migrate from rural to urban areas. Also seen more often are unintentional injuries such as traffic accidents, poisonings, and intentional injuries, such as war and street violence. More than 40% of the total disease burden due to urban air pollution occurs in developing countries, and children are most vulnerable to these environmental hazards, because they do not have the ability to detoxify pollutants related to their bodies' immaturity. More than 90% of all deaths due to injuries occurred in low- and middle-income countries. Although tobacco use is declining in developed countries, it is increasing in developing countries (WHO, 2011).

Mental health, neurological disorders, and substance abuse are causing a great amount of disability and human suffering. Many people do not receive any health care for these problems because of inadequate infrastructures, and widely prevalent stigma and discrimination may prevent them from seeking care even when it is available. Many countries lack mental healthcare policies, facilities, or budgets within their healthcare systems. Cost-effective services are available, and research clearly demonstrates that depression, schizophrenia, and alcohol- and drug-related problems can be treated at primary care centers with inexpensive medications and basic training of healthcare personnel. Intentional (suicide, violence, and war) and unintentional (traffic accidents) injuries, which primarily affect young adults, accounted for more than 14% of the adult disease burden of the world, yet in parts of Europe and the Eastern Middle East region, these causes were responsible for more than 30% of the disease burden. In males, violence, traffic injuries, and self-inflicted injuries are within the top 10 disease burdens in the 15- to 44-year-old groups (WHO, 2011).

Measures of Population Health

In order to evaluate the health of a population, one needs to examine four aspects of that population:

1. *Life expectancy.* A measure of mortality rates across the developmental life span, which is expressed in years of life.
2. *Healthy life expectancy (HLE).* Years of active life, reflecting a person's ability to perform tasks that reflect self-care, called the activities of daily living. HLE is a way of measuring not just years of life, but expected years of life divided into healthy and unhealthy life. It is a way to more accurately measure the current health of a population, measuring the extent of morbidity and mortality of a population.
3. *Mortality*. The number of deaths within a specific population, which has often been used as a basic indicator of health.
4. *Disability*. A situation in which a person's abilities or limitations are determined by physical, mental, or cognitive status within society, which is determined by how well the personal environment accommodates the loss of functioning.

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Global Health Indicators

Global monitoring of health changes across world populations requires global health indicators. The indicators provide estimates of a country's state of health and may reflect either direct measurements of health phenomena, such as diseases and deaths, or indirect measurements, such as education and poverty. With population statistics available regarding education, access to safe water and sanitation, and rates of diseases, it is possible to fairly accurately measure a population's burden of disease and designate it as low, medium, or high. Unfortunately, few developing countries are able to measure their health statistics accurately; therefore, numbers of births, deaths, persons with specific diseases, and so on may be only estimates—and may not be truly representative of the population. Criteria for good health indicators include the following:

1. *Definition*. The indicator must be well defined and be able to be used internationally.
2. *Validity.* The indicator must accurately measure what it is supposed to measure and must be reliable so that it can be replicable and consistent in different settings, and be easy to interpret.
3. *Feasibility*. Obtaining the information must be easily affordable and not overburden the system.
4. *Utility*. The indicator must provide useful information for various levels of health decision makers (Larson & Mercer, 2004).

MORAL ISSUES IN GLOBAL HEALTH

The creation of global initiatives requires a review of ethical and moral values. In 2003, Lee Jong-Wook, the director-general of the WHO, stated that global health must be guided by an ethical vision. According to Lee, technical excellence and political commitment have no value unless they have an ethically sound purpose. The following are different schools of thought used to justify global initiatives:

1. *Humanitarianism*. Acting virtuously toward those in need. It is often the response to social problems. Humanitarianism is incorporated within all religions, based on compassion, empathy, or altruism. It is the ethical basis of philanthropy by NGOs; it is also the basic philosophy behind U.S. governmental foreign aid policy.
2. *Utilitarianism*. Maximizing happiness for many people. Improving the health of individuals living within a society will be in the best interest for all the people of a society.
3. *Equity by achieving a fair distribution of health capabilities*. Ensuring that all people in a society have a fair and equal chance to achieve good health.
4. *Rights*. Fulfilling obligations so others are dignified; ensures that health care respects human rights and dignity for all people living in a society.
5. *Knowledge and institutions*. Supports the basis for research and development of new health technologies and medications. For example, the development of HIV/AIDS antiretroviral drugs created a new moral dilemma by emphasizing the differences in the drugs' affordability among nations. Corporations have realized what are perceived as "huge" profits by producing and selling the drugs; however, the cost of development and use of resources must be recouped.
6. *Consensus and advocacy groups*. People who are usually in powerful political positions who wish to have health policies established for others in the society.

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Global Health Workforce Migrations (Brain Drain)

Presently there is a crisis in human resources, which is a major global health issue at present that threatens the quality and sustainability of healthcare systems throughout the world. Healthcare workers currently find many opportunities for employment abroad, and this has led to major migration for workers moving from low-income countries to higher-income countries. Healthcare worker migration has major effects on the countries from which workers migrate and the receiving countries greatly benefit. The countries from which workers migrate (sending countries) have negative results such as shortages in health service capacity, financial loss in the investment of training and educating the worker, financial loss of income taxes paid to the governments, decline in morale and commitment among remaining workers, loss of expert knowledge in academic centers, and loss of role models for young students. Donor countries ultimately suffer the most from "brain drain."

The gains for recipient countries include relief of shortages of healthcare workers, improved quality of health care, and increased income taxes paid to the governments. Some dispute this argument by saying that many healthcare workers eventually return to their native countries and bring back their gains in medical expertise and experiences. The World Health Organization (WHO) estimates that there is an undersupply of almost 4.3 million doctors, midwives, nurses, and other healthcare professionals. High-income countries have an average of almost 90 nurses and midwives per 10,000 people, as compared to some low-income countries having fewer than 2 per 10,000 people (Aluttis, Bishaw, & Frank, 2014). This imbalance results in North America and Europe gaining 65% of healthcare workers, yet bearing only 20% of global disease. Africa, in contrast, bears 24% of the health burden with only 3% of the global health workforce (Mackey & Liang, 2013).

SUMMARY

This introduction, which serves as a gateway to the rest of this text, has provided an overall perspective on various global health issues. We defined key terms and offered a brief discussion of global health history, the state of the world population, predictions of global health patterns, population growth issues, equity in accessing health care, emerging health threats, global health indicators, migration of healthcare workers, and global health and its relationship to moral values. Within the following chapters, we further address these and many more issues pertaining to global health.

Study Questions

1. What are some of the major health issues regarding the world population growth?
2. What are some causes of the numerous global health disparities?
3. Why is it necessary for wealthier developed countries to share needed funds and technology to assist with developing countries' major health and healthcare problems?
4. What are the Millennium Health Goals and why is important to note their progress worldwide?

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Case Study: Unforeseen Costs of Cutting Mosquito Surveillance Budgets

A recent budget proposal to stop the funding for the U.S. Centers for Disease Control and Prevention (CDC) surveillance and research for a mosquito-borne diseases program was found to have the potential to leave a country poorly prepared to handle mosquito-transmitted diseases. Their study showed that decreasing this type of program can significantly increase the management costs of epidemics and total costs of preparedness. The authors' findings demonstrated a justification for the reassessment of a current proposal to slash the budget of the CDC vector-borne diseases program, and emphasized the need for improved and sustainable systems for vector-borne disease surveillance.

Case Study Questions

1. What do you think about the U.S. CDC making budget cuts for surveillance and research for countries with mosquito-borne diseases?
2. Is money really saved in the long term for prevention and control of diseases, such as dengue and West Nile virus, by cutting the surveillance budget? What else could be done to save money?

Data from Vazquez-Prokopec, G., Chaves, L., Ritchie, S., Davis, J., & Kitron, U. (2010). *Neglected Tropical Diseases, 4*(10), 1–4.

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