Kathleen Huttlinger, PhD, FNP
Dr. Kathleen Huttlinger began practicing population-based, community-oriented nursing in rural Alabama, where she became interested in how culture influences perceptions of health among individuals and families. This interest extended to many global areas including Mexico, Southeast Asia, and Africa. She is currently involved in a research project that is investigating health literacy and other issues related to health care access in Appalachian communities.

Jennifer M. Schaller-Ayers, PhD, RN, BC
Dr. Jennifer Schaller-Ayers began practicing population-based, community-oriented nursing in rural San Diego County, California, where she was first introduced to cultural influences on health and the perception of health. This interest was furthered by practice in Arkansas, Utah, and North Dakota, where she worked with African-American and Native American populations, and in El Paso, Texas, where she worked with people of Mexican heritage. She is currently involved in population-based research projects investigating issues related to health care access in Appalachian communities.

ADDITIONAL RESOURCES

- Glossary
- Answers to Practice Application
- Content Updates
- Resource Tool
  —Resource Tool 3.A Declaration of Alma Ata

OBJECTIVES

After reading this chapter, the student should be able to do the following:

1. Identify the major aims and goals for global health that were presented at the International Conference on Primary Health Care at Alma Ata that have been carried forward to address global health concerns.
2. Identify the health priorities of Health for All in the 21st Century (HFA21).
3. Analyze the role of nursing in global health.
4. Explain the role and focus of a population-based approach for global health.
5. Describe how global health is related to economic, industrial, and technological development.

The author wishes to acknowledge the manuscript review and consultation of a review committee from the U.S. Army Center for Health Promotion and Preventive Medicine. Committee members are Colleen M. Hart, MS, RN, Lieutenant Colonel, U.S. Army; Joann E. Hollandsworth, MN, RN, Colonel, U.S. Army; E. Wayne Combs, PhD, RN, Lieutenant Colonel, U.S. Army; and Teresa I. Hall, MS, RN, RNC, Lieutenant Colonel, U.S. Army. The mention of the U.S. Army, Army organizations, and/or Army personnel in this chapter is not to be interpreted or construed, in any manner, to be official U.S. Army endorsement of same or to represent or express the official opinion of the U.S. Army.
This chapter presents an overview of the major public health problems of the world, along with a description of the role and involvement of nurses in global and community health care settings. It describes health care delivery from a global and population health perspective, illustrates how health systems operate in different countries, presents examples of organizations that address global health, and explains how economic development relates to health care throughout the world.

OVERVIEW AND HISTORICAL PERSPECTIVE OF GLOBAL HEALTH

In 1977 attendees at the annual meeting of the World Health Assembly maintained that a major goal for member agencies should be “the attainment by all citizens of the world by the year 2000 a level of health that will permit them to lead a socially and economically productive life” (World Health Organization, 1986a, p. 65). The goals of Health for All by the Year 2000 (HFA2000) were ex-
tended into the next century with the document Health for All in the 21st Century (HFA21) (WHO, 2002a). These goals have continued to be promoted by numerous health-related conferences held around the world, including the International Council of Nurses (ICN). In fact, nursing has always been an active participant in global health and these efforts have been recognized by many of the world’s leaders (Lewis, 2005).

In 1978 concern for the health of the world’s people was voiced at the International Conference on Primary Health Care that was held in Alma Ata, Kazakhstan, in what was then Soviet Central Asia. The conference, sponsored by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), had representatives from 143 countries and 67 organizations. They adopted a resolution that proclaimed that the major key to attaining HFA2000 was the worldwide implementation of primary health care (Lucas, 1998).

Following the Alma Ata conference and as the twenty-first century has progressed, interest in global health and how best to attain it has grown. People around the world want to know and understand the issues and concerns that affect health on a global scale. This is important as many countries have not yet experienced the technological advancement in their health care systems that have been realized by more developmentally advanced countries. Many terms are used to describe nations that have achieved a high level of industrial and technological advancement (along with a stable market economy) and those that have not. For the purposes of this chapter, the term developed country refers to those countries with a stable economy and a wide range of industrial and technological development—for example, the United States, Canada, Japan, the United Kingdom, Sweden, France, and Australia. A country that is not yet stable with respect to its economy and technological development is referred to as a lesser-developed country—for example, Bangladesh, Zaire, Haiti, Guatemala, most countries in sub-Saharan Africa, and the island nation of Indonesia. Both developed and lesser-developed countries are found in all parts of the world and in all geographic and climatic zones.

Health problems exist throughout the world, but the lesser-developed countries often have more exotic sounding health care problems such as Buruli ulcers, leishmaniasis, schistosomiasis, pediculosis, typhus, yellow fever, and malaria (WHO, 2000b). Ongoing health problems needing control in lesser-developed countries include measles, mumps, rubella, and polio, whereas the current health concerns of the more developed countries are problems such as hepatitis, the appearance of new viral strains such as the hantavirus, and larger social, yet health-related issues such as terrorism, warfare, violence, and substance abuse. Acquired immunodeficiency syndrome (AIDS) remains a major global concern for all countries (ICN, 2003).

In addition to direct health problems, the effects of war and conflict have devastating effects on a country and the health of its population. For example, in the fall of 2002, conflict and warfare erupted in Afghanistan between the Taliban and the United States and its allies. The ruling Taliban government left the country with virtually no health care system. Continuing conflict there has taken a dramatic toll on its population, especially on older adults, women, and children. Serious nutritional problems and outbreaks of influenza have been reported. The increased incidence of violence against women and children, the hazards of unexploded weapons and land mines, and the occurrence of earthquakes and other natural disasters add to the health risks (USAID, 2005; WHO, 2002b,c).

Conflicts in Afghanistan and Iraq and the Balkans lead to injuries, disabilities, and loss of life. Wherever conflict and open warfare occur, health care services are disrupted often with tragic consequences to vulnerable populations.

As countries promote the objectives of HFA21, they realize that they need to improve their economies and infrastructures. They often seek funds and technological expertise from the wealthier and more developed countries (Lucas, 1998; World Bank, 2005). According to the WHO, HFA21 is not a single, finite goal but a strategic process that can lead to progressive improvement in the health of people (WHO, 2002a). In essence, it is a call for social justice and solidarity. See the Healthy People 2010 box for a description of how Healthy People 2010 and HFA21 are interrelated.

As economic agreements between countries remove financial and political barriers, growth and development are stimulated. Simultaneously, global health problems that once seemed distant are brought closer to people around the globe, political and economic barriers between countries fall, and the movement of population groups increases, as does the risk of exposure to numerous kinds of diseases and other health risks (Basch, 1990; Howson, Fineberg, and Bloom, 1998). One such example that has potential worldwide health implications is the sporadic reappearance of the Ebola virus in the central African countries (WHO, 2004c).

World travelers both serve as hosts to various types of disease agents and may expose themselves to diseases and environmental health hazards that are unknown or rare in their home country (Figure 4-1). Two examples of diseases from recent years that were once fairly isolated and rare...
Part One
Perspectives in Health Care and Population-Centered Nursing

Despite efforts by individual governments and international organizations to improve the general economy and welfare of all countries, many health problems continue to exist, especially among poorer people. Many countries lack both political commitment to health care and recognition of basic human rights issues. They may fail to achieve equity in access to primary health care, demonstrate inappropriate use and allocation of resources for high-cost technology, and maintain a low status of women (Figure 4-2). Currently, the lesser-developed countries experience high infant and child death rates, with diarrheal and respiratory diseases as major contributory factors (Lucas, 1998; WHO, 2002a; World Bank, 2002). Other major worldwide health problems include nutritional deficiencies in all age groups, women’s health and fertility problems, sexually transmitted diseases (STDs), and illnesses related to the human immunodeficiency virus (HIV), malaria, drug-resistant TB, neonatal tetanus, leprosy, occupational and environmental health hazards, and abuses of tobacco, alcohol, and drugs.

Because of these continuing problems, the director general of the WHO has made a commitment to renew all of the policies and actions of HFA21. The WHO continues to develop new and holistic health policies that are based on the concepts of equity and solidarity with an emphasis on the individual’s, family’s, and community’s responsibility for health. Strategies for achieving the continuing goals of HFA21 include building on past accomplishments and the identification of global priorities and targets for the first 20 years of the new century (WHO, 2002a).

Being informed about global health is important, especially for nurses. Many of the world’s health problems directly affect the health of individuals who live in the United...
States. For example, the 103rd U.S. Congress passed the North American Free Trade Agreement (NAFTA), which opened trade borders between the United States, Canada, and Mexico in 1994 and allowed an increased movement of products and people (Figure 4-3). Along the United States–Mexico border, an influx of undocumented immigrants in recent years has raised concerns for the health of people who live in this area. For example, many immigrants have settled on unincorporated land, known as *colonias*, outside the major metropolitan areas in California, Arizona, New Mexico, and Texas. These colonies may have no developed roads, transportation, water, or electrical services. These settlements have led to an increase in numerous disease conditions including amebiasis, respiratory and diarrheal diseases, and environmental health hazards in the *colonias* that are associated with poverty, poor sanitation, and overcrowded conditions (Brown, 2005; VanderMeer, 1998).

Interestingly, Canadian worker groups are concerned that NAFTA will eventually lead to worsened working conditions as manufacturing plants move to the lower-wage and largely nonunionized southern United States and Mexico (Fuller, 2002).

On a more positive note, NAFTA has provided an impetus and framework for the government of Mexico to modernize their medical system so that they can compete and respond to the demands of a more global competition. Although some improvements have been made, there is still an overriding concern that environmental and health regulations in Mexico have not kept up with the pace of increased border trade (Fuller, 2002; Ortega-Cesena, Espinosa-Torres, and Lopez-Carillo, 1994). The Mexican National Academy of Medicine continues to make health and environmental recommendations to the government, which illustrates the beneficial interactions that are occurring between Mexico, Canada, and the United States as part of this trade agreement.

<table>
<thead>
<tr>
<th>BOX 4-1 Millennium Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
</tr>
<tr>
<td>MDG 1</td>
</tr>
<tr>
<td>MDG 2</td>
</tr>
<tr>
<td>MDG 3</td>
</tr>
<tr>
<td>MDG 4</td>
</tr>
<tr>
<td>MDG 5</td>
</tr>
<tr>
<td>MDG 6</td>
</tr>
<tr>
<td>MDG 7</td>
</tr>
<tr>
<td>MDG 8</td>
</tr>
</tbody>
</table>


Nurses play an active role in the international border areas where political and economic boundaries mesh. For example, the geography along the United States-Mexican border is rugged, remote, and framed by inhospitable mountain ranges and deserts. Except in the larger metropolitan areas, health care for people who live along the border is scarce. Nurses supported by private foundations and by local and state public health departments often provide the only reliable health care in these areas.

In its continued quest to promote global health, the International Council of Nurses (ICN) is backing the United Nation’s (UN) *Millennium Development Goals (MDGs)*. These goals were agreed upon by world leaders at the Millennium Summit in 2000. The MDGs were developed to relieve poor health conditions around the world and to establish positive steps to improve living conditions (UN, 2005). By the year 2005, all member nations pledged to meet the goals described in Box 4-1.

**THE ROLE OF POPULATION HEALTH**

*Population health* is an approach and perspective that focuses on the broad range of factors and conditions that have a strong influence on the health of populations. It is a holistic approach that considers the total health system, from prevention and promotion to diagnosis, treatment, and care. This approach emphasizes health for groups at the population level rather than at the individual level and focuses on reducing inequities and improving health in these groups. In a public health sense, a population can be defined by a geographic boundary, by a group of people who share a common characteristic such as ethnicity or religion, or by the epidemiologic and social condition of a community that minimizes morbidity and mortality (Fox, 2001).

The factors and conditions that are important considerations in population health are called *determinants*. Population health determinants may include income and social factors, social support networks, education, employment,
working and living conditions, physical environments, social environments, biology and genetic endowment, personal health practices, coping skills, healthy child development, health services, sex, and culture (Fox, 2001; Ibrahim, Savitz, Carey et al, 2001). The determinants do not work independently of each other but form a complex system of interactions.

Canada is a leader in promoting the population health approach. Canada has been implementing programs using this framework since the mid 1990s and builds on a tradition of public health and health promotion. Box 4-2 presents the development of the Healthy Cities movement in Toronto. A Canadian document, the Lalonde Report (Lalonde, 1974), proposed that changes in lifestyles or social and physical environments lead to more improvements in health than would be achieved by spending more money on existing health care delivery systems. Following this report, in 1989 the Canadian Institute for Advanced Research (CIAR) introduced the population health concept, proposing that individual determinants of health do not act in isolation. The Canadian initiative was aimed at efforts and investments directed at root causes to increase potential benefits for health outcomes (Public Health Agency of Canada, 2005; Zollner and Lessof, 1998). A key was the identification and definition of health issues and of the investment decisions within a population that were guided by evidence about what keeps people healthy. Therefore a population health approach directs investments that have the greatest potential to influence the health of that population in a positive manner. A significant factor is early intervention so that there can be greater potential for population health gains.

Canada has since implemented a broad range of projects across the country. Examples include a population division within the Calgary Regional Health Authority to reduce inequities in health status (Labonte, Jackson, and Chirrey, 1998) and policies in British Columbia directed at HIV/AIDS in aboriginal populations.

Mexico has also integrated the health determinants into public policies. At the Fifth Global Conference on Health Promotion in Mexico City held on June 5-9, 2000, the theme of “Bridging the Equity Gap” addressed health determinants related to economically and socially disadvantaged populations. At this time, the Mexican government along with 87 other governments signed statements for the “Promotion of Health From Ideas to Action.” This statement acknowledges that population-focused health promotion strategies contribute to the sustainability of local, national, and international health activities (Levya-Flores, Kageyama, and Erviti-Erice, 2001).

**PRIMARY HEALTH CARE**

The role of primary health care is historically based on the worldwide conference that was held at Alma Ata (Tejada de Rivers, 2003; WHO, 1998; WHO/UNICEF, 1978). WHO and UNICEF still actively promote primary health care and maintain that the training of health workers needs to be based on current primary health care practices. They advocate for community members to be involved in all aspects of the planning and implementation of health services that are delivered to their respective communities.

Because there are differences among countries with respect to the implementation of primary health care be-

---

**BOX 4-2 Examples of the Healthy Cities Movement**

| Toronto, Ontario, was one of the first cities in North America to become involved in the Healthy Cities movement. Toronto began with a strategic planning committee to develop an overall strategy for health promotion. The committee conducted vision workshops in the community and a comprehensive environmental scan to help identify health needs in Toronto. The outcome was a final report outlining major issues, and it included a strategic mission, priorities, and recommendations for action. The Toronto Healthy City was involved in a number of projects. One of them, the Healthiest Babies Possible project, was an intensive antenatal education and nutritional supplement program for pregnant women who were identified by health and social agencies as being at high risk. The program included intensive contact and follow-up of women, along with food supplements. It has been successful in decreasing the incidence of low-birth-weight infants. Another example is Chengdu, China. Chengdu is located on the upper parts of the Yangtze River and is surrounded on four sides by the Fu and Nan Rivers and was one of the most polluted cities in southwestern China. The pollution created severe environmental problems as a result of industrial waste, raw sewage, and the intensive use of freshwater. The proliferation of slum and squatter settlements exacerbated the social, economic, and environmental problems of the city. The Fu and Nan Rivers Comprehensive Revitalization Plan was started in 1993 as a Healthy Community and City initiative to deal with the growing environmental problems. The principles of participatory planning and partnership were used to raise awareness of the problem among the general public and to mobilize major stakeholders to invest in a sustainable future for Chengdu and its inhabitants. The plan resulted in providing 30,000 households living in the slum and squatter settlements with decent and affordable housing, and with projects to deal with sewage and industrial waste. In addition, the plan was able to improve parks and gardens, turning Chengdu into a clean and green city with the natural flow of its rivers. |

---

cause of local customs and environments, it was anticipated that several major components should be included in health service plans (WHO/UNICEF, 1978). These components are the following:

- An organized approach to health education that involves professional health care providers and trained community representatives
- Aggressive attention to environmental sanitation, especially food and water sources
- Involvement and training of community and village health workers in all plans and intervention programs
- Development of maternal and child health programs that include immunization and family planning
- Initiation of preventive programs that are specifically aimed at local endemic problems such as malaria and schistosomiasis in tropical regions
- Accessibility and affordability of services for the treatment of common diseases and injuries
- Availability of chemotherapeutic agents for the treatment of acute, chronic, and communicable diseases
- Development of nutrition programs
- Promotion and acceptance of traditional medicine

The Alma Ata conference participants emphasized universal access and participation and encouraged a reallocation of resources, if needed, to reduce the inequality of health care that existed among the nations of the world. They encouraged community participation in all aspects of health care planning and implementation and the delivery of health care that was “scientifically sound, technically effective, socially relevant and acceptable” (WHO/UNICEF, 1978, p. 2). These aims continue to be reinforced and modified and were recently updated to incorporate Millennium Development Goals (WHO, 2003a; Kekki, 2005).

Mexico is an example of a country that has made a particular effort to implement primary health care services. Mexico has initiated a module program that is administered through the ministry of health. The program is characterized by village-based health posts, each of which is operated by a community volunteer and a health committee. The volunteer and committee are supervised by a nurse who operates from a regional health center. It is believed that this module system can address community needs and will ultimately lead to better use of services and resources (Nigenda, Ruiz, and Montes, 2001).

**NURSING AND GLOBAL HEALTH**

Nurses have an important leadership role in health care throughout the world (Hancock, 2005). In particular, nurses with community and public health experience provide much-needed knowledge and skill in countries where nursing is not an organized profession, and they give guidance not only to the nurses but also to the auxiliary personnel who are part of the primary health care team (International Council of Nurses [ICN], 2001a). In many settings throughout the world, nurses provide direct client care and facilitate the educational and health promotional needs of the community. Unfortunately, in the lesser-developed countries, the role of the nurse is defined poorly if at all (Figure 4-4), and care often depends on and is directed by physicians (Buchan and Dal Poz, 2002). In contrast, in developed countries, nursing is often viewed as one of the strongest advocates for primary health care, through its social commitment to equality of health care and support of the concepts that are contained in the Alma Ata declaration (Andrews and Gottschalk, 1996; ICN, 2003). Examples of efforts led by nurses in international community health settings include the recent involvement of nurses from around the world after the devastating tsunami in south Asia (ICN, 2005), a quality improvement program in the Congo (DuMortier and Arpagaus, 2005), an emergency service program in Mongolia (Cherian, Noel, Buyanjargal et al, 2004), and a community-based tuberculosis program in Swaziland (Escott and Walley, 2005) (Figure 4-5).

One example of a changing role for nursing takes place in China. Nursing in China is undergoing a dramatic

---

**FIG. 4-4** When not providing direct client care, nurses in Indonesia must help keep the hospital grounds clean. (Courtesy K. Huttlinger.)

**FIG. 4-5** Nursing students coming from a clinic in Nepal. (Courtesy J. Schaller-Ayers.)
change, largely because of an evolving political and economic environment. In the past, nursing was viewed as a trade, and the acquisition of nursing skills and knowledge took place in the equivalent of a middle school or junior high in the United States. Increasing pressure on the health care system in China is providing an impetus for education at the university level. The Chinese government is sending many of its nurses to the United States, Europe, and Australia to receive university-level education in nursing at the undergraduate and graduate levels in hopes that these individuals will return to China to provide the nursing and nursing education needed there (Anders and Harrigan, 2002).

In some countries, such as Chile, the physician-to-population ratio is higher than the nurse-to-population ratio. In these cases, physicians influence nursing practice and place economic and political pressure on local, regional, and national governments to control the services that nurses offer. In Chile, nurses have set up successful and cost-effective clinics to deliver quality primary care services, but they are constantly being threatened by physicians who want to oust the nurses and replace them with physicians who will increase the cost for services (WHO, 2000a). Box 4-3 describes nursing and health care efforts in Zambia.

**MAJOR GLOBAL HEALTH ORGANIZATIONS**

A large number of international organizations have an ongoing interest in global health. Despite the presence of these well-meaning organizations, it is estimated that the
International Development (US aID). of the WHO. the WHO headquarters is in Geneva, with sessions about health policies; (2) the executive board serves as the liaison between the assembly and the secretariat; (3) the secretariat carries out the day-to-day activities distinct generals, has three major divisions: (1) the World Organization (Campana, 2005). Continued efforts by this Council. the idea for a worldwide health organization developed to control yaws, leprosy, and tuberculosis in poorer countries, such as those in sub-Saharan Africa, still receive the greatest amount of financial support from the multilateral organizations, or nongovernmental organizations (NGOs) or private voluntary organizations (PVOs) (including philanthropic organizations). Multilateral organizations are those that receive funding from multiple government and nongovernment sources. The major organizations are part of the United Nations (UN), and they include the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the Pan American Health Organization (PAHO), and the World Bank. A bilateral organization is a single government agency that provides aid to lesser-developed countries; an example is the U.S. Agency for International Development (USAID). Nongovernmental organizations (NGOs) or private voluntary organizations (PVOs), including the philanthropic organizations, are represented by such agencies as Oxfam, Project Hope, and the International Red Cross; various professional and trade organizations; Catholic Relief Services (CRS); church-sponsored health care missionaries; and many private groups.

Multilateral Organizations

World Health Organization

The World Health Organization (WHO) is a separate, autonomous organization that, by special agreement, works with the United Nations through its Economic and Social Council. The idea for a worldwide health organization developed from the First International Sanitary Conference in 1902, which is viewed as a precursor to the World Health Organization (Campana, 2005). Continued efforts by this and other worldwide agencies resulted in the formation of the WHO in 1946 as an outgrowth of the League of Nations and the UN charter. The UN charter provided for the formation of a special health agency to address the wide scope and nature of the world’s health problems.

The WHO, headed by a director general and five assistant generals, has three major divisions: (1) the World Health Assembly approves the budget and makes decisions about health policies; (2) the executive board serves as the liaison between the assembly and the secretariat; and (3) the secretariat carries out the day-to-day activities of the WHO. The WHO headquarters is in Geneva, with six regional headquarters located in Copenhagen, Denmark; Alexandria, Egypt; Brazzaville, the Congo; New Delhi, India; Manila, Philippines; and Washington, DC. The WHO’s extremely broad scope includes more than 25 major functions with greater than 100 subfunctions; however, it is generally recognized that its principal work is to direct and coordinate international health activities and to provide technical medical assistance to countries in need.

More than 1000 health-related projects are ongoing within the WHO at any one time. Some projects may be operated and funded by the WHO or in collaboration with other governments, health care agencies, or private foundations and charities. Most projects involve technical services to individual governments. Requests for assistance may be made directly to the WHO by a country for a project, or they may be part of a larger collaborative endeavor involving many countries. Examples of current collaborative, multinational projects include comprehensive family planning programs in Indonesia, Malaysia, and Thailand; applied research on communicable disease and immunization in several East African nations; and projects that investigate the viability of administering AIDS vaccines to pregnant women in South Africa and Namibia.

In addition to multinational programs, there are projects that involve individual countries. In single-nation projects, the focus is generally placed on the training of medical personnel, the development of health services such as primary care, and specific disease control and intervention programs.

DID YOU KNOW? Mercy Corps International initiated the Kosovo Women’s Health Promotion Project (2001), in which nurse-midwives actively participate in promoting midwifery care for positive reproductive outcomes. Kosovo is one of the countries where women’s health care has suffered from the ravages of war.


United Nations Children’s Fund

The United Nations Children’s Fund (UNICEF) was formed shortly after World War II (WWII) to assist children in the war-ravaged countries of Europe, and it is a subsidiary agency to the UN Economic and Social Council. After WWII, it became apparent to many social agencies that the world’s children needed medical and other kinds of support. With financial assistance from the newly formed UN General Assembly, post-WWII programs were developed to control yaws, leprosy, and tuberculosis in children. Since then, UNICEF has worked closely with the WHO as an advocate for the health needs of women and children under the age of 5. In particular, there have been multinational programs aimed at the provision of safe drinking water, sanitation, education, and maternal and child health.
Pan American Health Organization

Founded in 1902, the Pan American Health Organization (PAHO) is one of the oldest continuously functioning international health organizations and predates the WHO. Presently, PAHO serves as a regional field office for the WHO in Latin America, with a focused effort to improve the health and living standards of the Latin American countries. PAHO distributes epidemiologic information, provides technical assistance over a wide range of health and environmental issues, supports health care fellowships, and promotes health and environmentally related research along with professional education. Focusing primarily on reaching people through their communities, PAHO works with a variety of governmental and nongovernmental entities to address the health issues of the people of the Americas. At present, a primary concern of PAHO is the prevention and control of AIDS and other sexually transmitted diseases. PAHO has developed some very special programs directed at the spread of AIDS in the most vulnerable groups in Latin America—mothers and children, workers, the poor, older adults, refugees, and displaced persons. Other focused efforts include the provision of public information, the control and eradication of tropical diseases, and the development of health system infrastructures in the poorer Latin American countries. PAHO collaborates with individual countries and actively promotes multinational efforts as well.

Of interest is a recent effort by PAHO to carefully examine the effects of health care reform on nurses and midwifery in the Latin American countries. Changes that countries in Latin America have made in their health care systems in recent years have affected nurses and midwives and their work environments in both positive and negative ways. Of special interest are the scope of practice for nursing and midwifery and the relationship of nurses with other health care workers and providers.

World Bank

The World Bank is another multilateral organization that is related to the UN. Although the major aim of the World Bank is to lend money to the lesser-developed countries so that they might use it to improve the health status of their people, it has collaborated with the field offices of the WHO for various health-related projects such as the control and eradication of the tropical disease onchocerciasis in West Africa. A poverty-reduction strategy in Yemen is significant because it involves many societal, community-based groups in Yemen including parliamentarians, academics, civic leaders, women’s groups, and the media (see http://web.worldbank.org for additional information).

Other examples of World Bank projects in the lesser-developed countries include programs aimed at providing safe drinking water and affordable housing, developing sanitation systems, and encouraging family planning and childhood immunizations. The World Bank also sponsors programs that affect health indirectly. One such example is a $30 million project in Brazil to protect the Amazon ecosystem. The environmental effects, including health effects, of the decreasing rain forest in the Amazon are being realized. This project is important for Brazil and for the rest of the world in terms of the effects on ozone and the global climate.

The World Bank has provided financial assistance for people in lesser-developed countries to pursue careers in health care and has enabled these individuals to enroll in health care programs in the more developed nations. It has also lent money both to governments and to private foundations for economic initiatives that improve internal infrastructures, including communication systems, roads, and electricity, all of which ultimately affect health care delivery.

Bilateral Organizations

Bilateral organizations or agencies operate within a single country and focus on providing direct aid to lesser-developed countries. The U.S. Agency for International Development (USAID) is the largest of these and operates totally out of the United States. Japan, France, Canada, Germany, Sweden, and Great Britain have similar organizations, although they are somewhat limited in their scope. All bilateral organizations are influenced by political and historical agendas that determine which countries receive aid. Incentives for engaging in formal arrangements may include economic enhancements for the benefit of both countries, national defense of one or both countries, or the enhancement and protection of private investments made by individuals in these nations.

Countries with advanced medical systems and technology may enter into a collaborative effort with a lesser-developed country to conduct medical research. For example, the Japanese government currently has an active collaborative arrangement with Indonesia to study ways to control the spread of yellow fever and malaria. France gives most of its aid to its former colonies.

Nongovernmental or Private Voluntary Organizations

Nongovernmental organizations (NGOs) or private voluntary organizations (PVOs) as well as the philanthropic organizations provide almost 20% of all external aid to lesser-developed countries. NGOs and PVOs are represented by many different kinds of religious and secular groups. Religious organizations, which reflect several denominations and religious interests, support many health care programs, including hospitals in rural and urban areas, refugee centers, orphanages, and leprosy treatment centers. For example, the Maryknoll Missionaries, sponsored by the Roman Catholic Church, carry out health service projects around the world. The missionaries comprise a large group of religious as well as lay people trained and educated in a variety of educational and health care professions.

Another religious group, Catholic Relief Services (CRS), specializes in providing food to starving people and those
affected by war, famine, drought, and natural disasters. Thus it indirectly affects the health of the people it serves.

Many Protestant and evangelical groups throughout the world function both as separate entities and as part of the Church World Service, which works jointly with secular organizations to improve health care, community development, and other needed projects. Other private and voluntary groups that assist with the worldwide health effort include CARE, Oxfam, and Third World First. Several of these organizations receive additional funding from developed countries including the United States, the United Kingdom, Sweden, Canada, and countries in western Europe.

The International Red Cross is one of the best-known NGOs. Although the Red Cross is most often associated with disaster relief and emergency aid, it lays the groundwork for health intervention as a result of a country’s emergency. It is a volunteer organization that consists of approximately 160 individual Red Cross societies around the world, and it prides itself on its neutrality and impartiality with respect to politics and history. Therefore it seeks permission from the country in which the disaster occurs before services are rendered.

Another NGO that provides health services and aid to countries experiencing warfare or disaster is Medicins Sans Frontieres (MSF). Unlike the Red Cross, MSF will provide services to victims without the permission of authorities and often speaks out against observed human rights abuses in the country it serves. MSF was the recipient of the Nobel Peace Prize in 1999 and the Conrad Hilton Prize in 1998.

Philanthropic organizations receive funding from private endowment funds. A few of the more active philanthropic organizations that are involved in world health care include the W. K. Kellogg Foundation, the Milbank Memorial Fund, the Pathfinder Fund, the Hewlett Foundation, the Ford Foundation, the Rockefeller Foundation, the Carnegie Foundation, and the Gates Foundation. The purpose and programmatic goals of each organization differ widely with respect to funding, and their purposes often change as their governing boards change. Some of the worldwide health care activities that have been sponsored throughout past years include projects in public and preventive health; vital statistics; medical, nursing, and dental education; family planning programs; economic planning and development; and the formation of laboratories to investigate communicable diseases.

The professional and trade organizations are PVOs that are found mostly in the more developed and industrialized countries. One of the most famous of the professional and technical organizations is the Institut Pasteur, which has been in existence since the 1880s. In particular, its laboratories have facilitated the development of sera and vaccines for countries in need, have disseminated current health information, and have trained and provided fellowships for medical training and study in France.

Many private and commercial organizations such as Nestle and the Johnson & Johnson Company provide financial and technical backing for investment, employment, and access to market economies and to health care. Although these organizations have been present throughout the world for more than 30 years, they have come under criticism for the promotion and marketing of infant formulas, pharmaceuticals, and medical supplies, especially to lesser-developed countries. The intense marketing that is done in these countries is known as commodification, and there is some controversy as to its legitimacy. For example, the health commodification of pharmaceuticals in southern India is a concern because the companies give little consideration to the cultural and social structure of the country, thus interfering with the long-standing traditional Indian medical system. In southern India, good health and prosperity are related to certain social parameters bestowed to families and communities as a result of their conformity to the socio-moral order that was established by their ancestors, gods, and patron spirits (Nichter, 1989; Segal, Demos, and Kronenfeld, 2003). The taking of pharmaceutical agents thus disrupts the social and cultural order of things that have been traditionally addressed by cultural practices. Similar controversies in other countries have involved infant formulas and oral rehydration therapies.

**DID YOU KNOW?** Information about volunteering for many NGOs and PVOs can be obtained from the following Internet web pages:

- WHO: [www.who.int/home-page](http://www.who.int/home-page)
- UNICEF: [www.unicef.org](http://www.unicef.org)
- OXFAM: [www.oxfam.org.uk](http://www.oxfam.org.uk)
- International Red Cross: [www.icrc.org](http://www.icrc.org)
- Catholic Relief Services: [www.catholicrelief.org](http://www.catholicrelief.org)

**Evidence-Based Practice**

This research study examined the relationships among demographic characteristics, acculturation, psychological resilience, and symptoms of depression in midlife women from the former Soviet Union who immigrated to the United States. This cross-sectional study of 200 women revealed that the Russian immigrant women scored higher on the depression scales than those women native to the United States. Older women scored particularly high, but those younger women who learned English and held at least part-time jobs had lower scores.

**NURSE USE**

This study indicates that interventions that encourage the use of English may help decrease symptoms of depression in midlife immigrant Russian women.

GLOBAL HEALTH AND ECONOMIC DEVELOPMENT

Global health is related to economic, industrial, and technological development. Even though several studies of lesser-developed countries have indicated that the general demand for health care is related to health production technology, little evidence shows how and under what circumstances this technology affects the use of health care services (Adenikinju, 2003). Access to services and the removal of financial barriers alone do not account for use of health services. In fact, the introduction of health care technology from developed countries to lesser-developed countries has led to less-than-satisfactory results. For example, during the 1980s in an eastern Mediterranean country, two thirds of the high-output x-ray machines were not in use because of a lack of qualified and trained individuals to carry out routine maintenance and repairs (World Bank, 2005). In another example, a hospital in a Latin American country was given a high-technology neonatal intensive care unit by a wealthier and more technologically advanced country. However, 70% of the infants died after discharge because there were no follow-up nutritional and prevention services and many of them experienced malnutrition and complications from dehydration on return to their home communities. These programs might have been more successful if they had focused on general public health and less complex kinds of health care technology (Perry and Marx, 1992). Quite simply, the most basic needs were not met, nor was recognition given to what resources and services the country could sustain.

Warfare presents another interesting challenge to delivering optimal health care. Afghanistan is a country that has been beset by more than 20 years of warfare, several years of severe drought, mass population displacement, abuses of basic human rights, and a health determinant index that is the worst in the world. In addition, internal state institutions, including those that direct health, have been virtually nonfunctional during the Taliban regime, economic performance in terms of production and financial services is defunct, and the tax and budget system is in ruin (WHO, 2002c). Even though more than 200 international and national representatives of health organizations, governments, and NGOs are presently coming to the aid of Afghanistan, the question of restoration of the internal system to prewar functioning remains. It is hoped that this cooperative effort can chart a successful course for health recovery in Afghanistan (USAID, 2005). Last, except for the demilitarized zone of Korea, Afghanistan is the most heavily land-mined region of the world. The presence of these land mines has serious consequences for the people, who risk losing limbs and dying as a result of contact with them.

On the basis of these examples, improvement in the overall health status of a population contributes to the economic growth of a country in several ways (Van der Gaag and Barham, 1998; World Bank, 2005):

• By a reduction in production loss that was caused by workers who were absent from work because of illness
• By an increase in the use of natural resources that, because of the presence of disease entities, might have been inaccessible
• By an increase in the number of children who can attend school and eventually participate in their country’s economic growth
• By monetary resources, formerly spent on treating disease and illness, now available for the economic development of the country

However, adequate health care coverage for individuals who live in lesser-developed countries is often lacking because their governments may reallocate financial resources from internal health needs and education to invest it instead in the country’s market economy, or to develop technology, or to pay off the interest on their national debt. Many countries also divert resources to develop the underlying infrastructure that they believe is needed for technological and industrial improvement. Unfortunately, when governments experience an economic crisis, household expenditures are adversely affected. Most often, the provision of health services in lesser-developed countries depends on the importation of drugs, vaccines, and other health care products (Van der Gaag and Barham, 1998; World Bank, 2005), which in turn depends on a network of foreign exchange that is influenced by economic and political factors. Often, lesser-developed countries have a difficult time maintaining a balance of payments, leading to severe shortages of foreign exchange and subsequent reduction in the ability to import goods (Evlo and Carrin, 1992).

Because the economics of international development are complex, it is often difficult to convince governments to direct their resources away from perceived needs such as military and technology and, instead, place resources in health and educational programs. Ideally, the role of the more developed countries is to assist lesser-developed countries to identify internal needs and to support cost-efficient measures and share their technology and industrial expertise (Peters and Fisher, 2004).

It is important that nurses who work in international communities not only acknowledge the importance of technology and development but also recognize the political, economic, and cultural implications. Provision of health services alone will not ease a country’s health care plight (Figure 4-6).

HEALTH CARE SYSTEMS

The countries of the world present many different kinds of health care systems, but most consist of five fundamental elements (Basch, 1990):

• Usership, or who can use the system
• Benefits, or what kind of coverage a citizen might expect
• Providers who deliver health care
• Facilities, or where the provision of health care takes place
• Power, or who controls access and usability of the system
The roles of nursing around the world are as diverse as the kinds of health care systems of which they are a part. A brief description of several health systems will help illustrate these concepts.

**United Kingdom**

The United Kingdom has a tax-supported health system that is owned and operated by the government, and services are available to all citizens without cost or for a small fee. Administration of health services is conducted through a system of health authorities (Trusts). Each Trust plans and provides services for 250,000 to 1 million people. The services offered by each Trust are comprehensive, in that health care is available to all who want it and covers all aspects of general medicine, disability and rehabilitation, and surgery. Although physicians are the primary providers in this system, nurses and allied health professionals are also recognized and used. Services are made available through hospitals, private physicians and allied health professional clinics, health outreach programs such as hospice, boroughs, and environmental health services. Physicians are paid by the number of clients they serve and not by individual visits. Although the British system has come under criticism in past years, individual citizens still maintain a high level of support for government funding and control of their health services (Schoen, Davie, and Desroches, 2000; Hutton, 2003).

District nursing, or public health nursing, has been in Britain since the days of Florence Nightingale. In 2001 district nurses saw 2.86 million patients (Hutton, 2003). As Britain faces a growing population of older adult citizens, the demand for district nursing is increasing. District nursing varies from Trust to Trust: some offer services 24 hours per day whereas others are more limited. District nursing faces many challenges—for example, more than 50% of district nurses are near retirement age and fewer nurses at the entry level are selecting district nursing as a career choice (Audit Commission, 2005).

One of the hallmarks of the British system is a reduction in infant mortality, from 14.3 deaths per 1000 births in 1975 to 5.4 in 2002. Overall life expectancy in Great Britain also improved during the same period (72.2 years in 2000). This has been done while holding down gross spending on health care. For comparison, in the United States, infant mortality was 6.9 in 2000 and life expectancy 76.9 years (Central Intelligence Agency, 2001). The United States spends $4,090 per capita on health care annually (13.6% of GDP), Canada spends only $2,095 (9.3% of GDP) and the United Kingdom spends a mere $1,347 (6.7% of GDP) (WHO, 2003a).

**Canada**

The Canadian health care system is based on a national health insurance program that is operated by each provincial government. In this system specialists are concentrated in centers, whereas primary care providers are evenly distributed throughout the Canadian provinces. Physicians are the primary providers, although nurses do play an active role in all aspects of health care delivery, including community and public health. The provincial government sets the annual budget for hospitals and other health care agencies. The system is financed by provincial and federal governments, which receive monies from personal income taxes. Benefits are broad and cover every aspect of health care, but limit certain kinds of elective surgeries as well as dental and eye care. As in Great Britain, infant mortality has decreased during the past 10 years, and overall life expectancy has increased.

Canada has had an organized system for health care for many years. The original plan for prepaid health care began during World War I when rural municipalities in Saskatchewan employed contract physicians to care for residents. The revenue to hire these general practice physicians came from local property taxes and “premiums” charged to non–property owners (Health Canada, 2004). The success of this early work in Saskatchewan supported the passage in 1947 of legislation to establish the first compulsory hospital insurance plan in North America by the cooperative Commonwealth Federation Party (Kerr and MacPhail, 1996). Several significant milestones in the development of a Canadian health plan included the following:

- **1949 National Health Grants Act**: Funded hospital construction (much like the Hill-Burton Act in the United States)
- **1957 Hospital Insurance and Diagnostic Services Act**: Prepaid universal coverage for all residents, for both inpatient and outpatient care, on a 50-50 cost-sharing basis between the province and federal funds

**FIG. 4-6** A local pharmacy in rural Bangladesh. (Courtesy K. Huttlinger and L. Krefting.)
• 1966 Medical Care Insurance Act: Expanded prepaid hospital coverage to include medical care (also began in Saskatchewan)
• 1977 Fiscal Arrangements and Established Programs Financing Act: Replaced the increasingly expensive 50-50 cost sharing with block grants; the federal contribution was reduced to 25%; physicians became dissatisfied with their levels of reimbursement and began using co-payments and extra billing
• 1984 Canada Health Act: Disallowed extra billing and co-payment fees and added a clause for federal reimbursement for “health practitioners,” which opened the door for nurse practitioners to provide primary care

Five basic principles of health care form the basis for the Canadian national health insurance system. These principles are similar to those proposed in the unsuccessful health reform plan in the 1990s in the United States:
• Universality: Coverage to the entire population
• Comprehensiveness: Coverage for all medically necessary services
• Accessibility: Because of the relatively sparsely populated, rural areas across Canada, accessibility has been a challenge. As in the United States, physicians prefer to work and live in urban, not rural, areas.
• Portability: Coverage for residents who require health services soon after they move to a different province or during a visit outside their home province
• Public administration: Nonprofit administration of services by an organization fiscally responsible to the provincial government

As can be seen from what is reimbursed, this system supports hospital and physician dominance. Health care services are provided through the private sector on a fee-for-service basis, and the vast majority of hospitals are owned and operated by nonprofit groups including municipalities, voluntary agencies, and religious groups. Although these institutions employ some physicians, most of the medical staff is composed of private physicians who are granted admittance privileges by each of the facilities (Health Canada, 2004). The federal government does provide block grants to help defray the cost. Most of the provinces have instituted some kind of expenditure target or limit to control the amount spent on physician services (Health Canada, 2004). Home care and community care were not initially eligible for federal reimbursement.

Canada, like the United States, has a misdistribution of physicians, and nurses are underused. Nursing education entered the university after World War II, and Canada currently has excellent baccalaureate, master’s, and doctoral programs in nursing. As their health care system continues to be examined, it is likely that nurses in Canada can carve out a greater role in a more cost-effective system. This will be especially true if the goal of HFA21 is achieved. For the last decade, Canadian provinces have examined the way they can incorporate principles of primary health care (PHC). There are unlimited opportunities for nurses to play key roles in a community-based primary health care system. Such a system is consistent with what nurses learn in baccalaureate education in both Canada and the United States. However, advances by nursing may be restricted by the severe nursing shortage that Canada has suffered since the late 1990s.

Canada held a summit to develop strategies for dealing with the nursing shortage (Health Canada, 2004). They are:
• Improvement in quality of work life
• Establishment of a nursing advisory committee in each province
• Effective planning and evaluation of nursing resources
• Identification of gaps in research
• Development of an education plan that promotes a positive image of nursing
• Increasing the number of educational allotments for students
• Examining means to have nurses reenter the workforce

Health promotion and disease prevention comprises two main components of Canada’s health care system. Several websites have been developed to make health education more available to citizens. One such site is Health Promotion On-Line, available at http://www.hc-sc.gc.ca/english/for_you/hpo/index.html. The Internet enables nurses to reach a wide population base with health education efforts. Also, nurses play an active role in the Commission on the Future of Health Care in Canada. The goal of this organization is to ensure the sustainability of a universally accessible and publicly funded health system. The system should offer quality services to Canadians and strike an appropriate balance between investments in prevention and health maintenance and those directed to care and treatment (Commission on the Future of Health Care in Canada [CFHCC], 2005).

THE CUTTING EDGE In Southern Australia, a group of nutritionists developed and implemented a very specialized nutrition program for the Umoona aboriginal community in Coober Pedy. This project focused on the fact that a great portion of ill health was attributed to diet-related illnesses. Working with aboriginal health workers, the nutritionists fashioned an intervention program that could be delivered by the health workers that was culturally appropriate, easily understood, and relevant to the aboriginal population.


Sweden
Health care in Sweden is available to all citizens. The system is based on a national health service that is operated almost completely by the Swedish government. The Board of Health and Welfare (Socialstyrelsen) is responsible for health care delivery in Sweden and seeks to provide high-quality care on equal terms for all citizens (National Board of Health and Welfare, 2001). Local responsibility rests
with 21 county councils that contain district medical centers that hire physicians. Several districts are in each council, and several councils are in a region. Each council has a hospital, and there are regional hospitals that provide specialty care in every region. The 1982 Health Care Act made it mandatory for all councils to plan for all health services (Swedish Institute, 2003). Also, private hospitals and physicians in private practice often have agreements with the Social Insurance Office. All children under 20 years who are registered citizens receive free health and medical care.

The role of nurses in the Swedish health care delivery system is not as pronounced as in the United States, Canada, or Great Britain, but there are indications that nurses are gaining in their professional role and autonomy. Sweden has hospital, clinic, and district (public) health nurses. District nurses have several roles, including triaging for referral, telephone information services, and direct care. The financial basis for the Swedish health care delivery system is derived from a proportional wage tax of 13.5%. Federal revenues generate 35% of the total cost, and the last 4% is obtained through direct patient fees that vary by district (with a cap on the total amount a person pays per year for health care and prescriptions) (Swedish Institute, 2003). The services that are provided in this system are comprehensive and range from all hospital expenses to preventive services, physician and district nursing services, prescription drugs, dental and eye care, and psychiatric care. During the last 20 years, infant mortality has decreased and life expectancy has increased.

China

Great advances in public health have been the hallmark of the People’s Republic of China since it was founded in 1949. Examples of public health advances in China include controlling contagious diseases such as cholera, typhoid, and scarlet fever and a reduction in infant mortality (Kennedy, 1999). These accomplishments in public health were credited to a political system that was and is largely socialistic and features a health care system that is described in socialistic terms as collective. The Chinese collective system emphasized the common good for all people, not individuals or special groups. This system was financed through cooperative insurance plans. The collective health care system was owned and controlled by the state and used barefoot doctors. The barefoot doctors were medical practitioners trained at the community level and who could provide a minimal level of health care throughout the country. Barefoot doctors combined Western medicine with traditional techniques such as acupuncture and herbal remedies. The government stressed an improvement in the quality of water supplies and disease prevention and implemented massive public health campaigns against sanitation problems, such as flies, mosquitoes, and the snails that spread schistosomiasis. See Box 4-2 for the description of a Healthy Cities initiative that took place in Chengdu, China. Recently, with the decrease in infectious diseases, there has been an increase in chronic diseases such as hypertension in the Chinese population (Dobie, 2005a).

Today, health care in China is managed by the Ministry of Public Health, which sets national health policy. The current Chinese government continues to make health care a priority and has set goals to provide medical care to all of its citizens. However, with recent economic reforms, health care, especially in rural areas, has deteriorated because of lack of monetary support and the move toward the market economy (Qun, 2001). Health care costs are rising rapidly as more Western-style medicine is used, such as medical tests and prescription drugs. People tend to use health care episodically, and satisfaction has decreased as more people move from rural to urban settings (Dobie, 2005b; Kennedy, 1999). China’s health care system is being modified by the introduction of primary health care in community health clinics (CHCs) based on the health care system in Canada. With this system, a family practice physician is assigned 500 or more individuals for whom to provide health care. CHCs work closely with other organizations, such as the Communist Party, to present health education programs (Dobie, 2005b). In 2001 the cost for nursing services and health care in a hospital was about $3 (U.S.) and less than $3 (U.S.) for physician care and drugs (Dobie, 2005b).

The ministry is also actively involved in medical and nursing education and sets standards for the curricula in schools and for placing graduates. Beijing Medical University established the first master’s degree in nursing program in 1996. Currently there are 1.2 million nurses, 500 diploma schools, and 20 baccalaureate programs. In 2001 China started a distant learning project to educate baccalaureate-level nurses (International Council of Nurses, 2003). Since the 1980s, China’s nurses have been visiting countries such as the United States, Canada, and Australia to seek baccalaureate and graduate nursing degrees. The W. K. Kellogg Foundation has sponsored exchange visits between China’s nurse educators and Western nurse educators. As a result of these visits, China has implemented home health nursing to reduce the prolonged stay (often a month or more) in hospitals to recuperate after surgery (University of Michigan, 2000). Mobile medical clinics staffed by physicians and nurses make visits to isolated rural communities to deliver health care. In addition, faith-based health care delivery systems have recently been developed (Qun, 2001). China continues to try different avenues to bring health care to its citizens, and nursing is an important component of those efforts.

Mexico

In 1995 Mexico initiated the Health Sector Reform Program to expand medical coverage, to provide efficient and quality services to the population, and to treat disor-
Organizations of health care are closely linked with employers, who provide part of the cost for health care services along with contributions from the government and from the employee. The system is coordinated by the secretariat of health, who oversees the integration and coordination of health services and encourages competition among service providers. In 1996 the secretariat of health implemented a program that expanded basic services for those with limited or no health care coverage to the most rural and remote areas of the country. People may also enroll for more expanded services by paying a fee that is met with a government contribution (Nigenda, Ruiz, and Montes, 2001).

Mexico, in an effort to increase health services for all residents, has increased the number of outpatient clinics and hospitals each year. Health promotion, which is a major priority for the secretariat of health, focuses on programs for family health, comprehensive health of children and adolescents, healthy munícipios, health care exercises, and development of educational content (Nigenda, Ruiz, and Montes, 2001).

An additional 9 substantive program themes have a direct impact on health status: reproductive health, child health care, health care for adults and older adults, vector-borne diseases, zoonoses, mycobacterioses, epidemiologic emergencies and disasters, HIV/AIDS and other STDs, and addictions. Traditional healing is very important in all parts of the country but especially for indigenous people in rural and remote areas.

MAJOR GLOBAL HEALTH PROBLEMS AND THE BURDEN OF DISEASE

As described, present population determinants of the world’s health demonstrate that critical health care needs still exist despite ongoing attempts to attain good health. The amount of debt incurred by lesser-developed countries has increased steadily over the last 20 years, and money that was once used for health care has been used to pay off growing debt. Therefore, even though attempts have been made by lesser-developed countries to address health care needs, major health problems still exist. Communicable diseases that are often preventable are still common throughout the world and are more common in lesser-developed countries. Also, both developed and lesser-developed countries are seeking ways to cope with the aging of their populations. An aging population presents governments with the burden of providing care for people who become ill with more expensive noncommunicable and chronic forms of diseases and disabilities. Illnesses such as AIDS continue to raise concerns, and long-standing diseases such as TB and malaria still persist, adding to a growing burden of overextended health care delivery systems.

Mortality statistics do not adequately describe the outlook of health in the world. The WHO and the World Bank (2005) have developed an indicator called the global burden of disease (GBD). The GBD combines losses from premature death and losses of healthy life that result from disability. Premature death is defined as the difference between the actual age at death and life expectancy at that age in a low-mortality population. People who have debilitating injuries or diseases must be cared for in some way, most often by family members, and thus they no longer can contribute to the family’s or a community’s economic growth. The GBD represents units of disability-adjusted life-years (DALYs) (World Bank, 2005) (Box 4-4). In 2000, for example, 1.28 billion DALYs were lost worldwide, which equates to 39 million deaths of newborn children or to 80 million deaths of people who reach age 50. Approximately 13.7 million children under age 5 died during the same year in lesser-developed countries, representing a tremendous loss of future human potential. If these children could face the same risks as those in countries with developed market economies, the deaths would decrease by 90% to 1.1 million. This example demonstrates the importance of having accessible and affordable disease prevention programs for children around the world (World Bank, 1998a, 2002). Overall, premature deaths throughout the world during the 1990s accounted for 66% of all DALYs lost, with debilitating injuries and diseases accounting for 34%.

In lesser-developed countries, 67% of all DALY loss during the 1990s was attributed to premature death. In contrast, the developed countries reported only 55% from this same cause. Communicable diseases still account for the greatest proportion of calculated DALYs worldwide for both males and females, followed by noncommunicable diseases and injuries. Infections and parasitic diseases remain a threat to the health of many population groups. Studies demonstrate the continuing need for intervention for infectious and other kinds of communicable diseases. Conditions that contribute to one fourth of the GBD throughout the world include diarrheal disease, respiratory tract infections, worm infestations, malaria, and childhood diseases such as measles. In 1992 sub-Saharan Africa demonstrated a GBD of 43% DALYs lost, largely because of preventable diseases among children, and 600,000 infants...
CHAPTER 4 Perspectives in Global Health Care

BOX 4-4 Calculating Disability-Adjusted Life-Years

There are five components of disability-adjusted life-years (DALYs):
1. Duration of time lost because of a death at each age: Measurement is based on the potential limit for life, which has been set at 82.5 years for women and 80 years for men.
2. Disability weights: The degree of incapacity associated with various health conditions. Values range from 0 (perfect health) to 1 (death). Four prescribed points between 0 and 1 represent a set of accepted disability classes.
3. Age-weighting function, \( Cx^e \), where \( C = 0.16243 \) (a constant), \( e = 0.04 \) (a constant), \( x = \) age; this function indicates the relative importance of a healthy life at different ages.
4. Discounting function, \( e^{-r(x-a)} \), where \( r = 0.03 \) (the discount rate), \( e = 2.71 \) (a constant), \( a = \) age at onset of disease, and \( x = \) age; this function indicates the value of health gains today compared to the value of health gains in the future.
5. Health is added across individuals: 2 people each losing 10 DALYs are treated as showing the same loss as 1 person losing 20 years.

“In summary, the disability-adjusted life-year (DALY) is an indicator of the time lived with a disability and the time lost due to premature mortality. The duration of time lost due to premature mortality is calculated using standard expected years of life lost with model life-tables. The reduction in physical capacity due to morbidity is measured using disability weights. The value of time lived at different ages has been calculated using an exponential function which reflects the dependence of the young and older adults on the adults. Streams of time have been discounted at 3%. Accordingly the number of DALYs lost due to disability at age ‘x’ can be calculated using the following formula” (Murray and Lopez, 1996, p. 15):

\[
\text{DALY}(x) = (D)(C_x^e)(e^{-r(x-a)})
\]

where \( D = \) disability weight (ranging from 1 [death] to 0 [perfect health]).


became infected with HIV (WHO/UNAIDS, 2002). Other countries and areas with comparable DALYs are India (29%) and the Middle Eastern crescent (29%). In adults, STDs and TB combine to account for 70% of the world’s GBD (World Bank, 1998a, 2002).

Determining the total amount of loss, even using the GBD, is difficult because many consequences of disease and injury are hard to measure. For example, measuring the social and cultural impact of the disfigurations that result from accidents or debilitating diseases such as leprosy and river blindness is difficult. Likewise, it is hard to measure social conditions such as familial and marital dysfunction, war, and familial violence.

The following sections describe selected communicable diseases that still contribute substantially to the worldwide disease burden: TB, AIDS, and malaria. Other health problems discussed include maternal and women’s health, diarrheal disease in children, nutrition, and bioterrorism.

Communicable Diseases

One example of the long-term benefits of immunizing children against communicable diseases is the successful campaign against smallpox that was carried out during the 1960s and 1970s by the World Health Organization. Smallpox has been virtually eliminated throughout the world, with only occasional and incidental reporting from laboratory accidents and inoculation complications. The systematic and planned smallpox program formed the basis for a series of worldwide efforts that are now being implemented to control and eradicate other infectious and communicable diseases.

In 1974 the WHO formed the Expanded Programme on Immunization, which sought to reduce morbidity and mortality from diphtheria, pertussis, tetanus, TB, measles, and poliomyelitis throughout the world (WHO, 1986b, 2002a). At present, 8 out of 10 of the world’s children are protected against these diseases, and the world’s infant death rate has fallen by more than 37% since 1970 (WHO, 2000b). The major aim of immunization is to induce immunity to a disease without experiencing the actual disease (Thanassi, 1998).

DID YOU KNOW?

Twenty-nine billion people lack access to adequate sanitation and safe water. In Nicaragua, Paraguay, Brazil, and Peru, less than 50% of the population have access to sanitation either in or near their homes.

Tuberculosis

Predictions that 80 million new cases of TB would occur worldwide during the late 1990s and into the early years of the twenty-first century are being realized (Dye, Williams, Espinal et al, 2002). Of these 80 million cases, it is estimated that close to 5 million are associated with HIV (Bleed, Dye, and Raviglione, 2000; Lienhardt and Rodrigues, 1997). At present, TB represents the largest cause of death from a single infectious agent, affecting nearly 3 million people each year. This particular statistic represents 25% of premature adult deaths in lesser-developed countries that might have been prevented (WHO, 2000b, 2004a). The growth of the world’s population, including an increase in the number of older adults and the adverse effects of HIV, contributes to the large projected estimates for TB (WHO, 2004a).
One third of the world’s population, or 1.7 billion people, harbor the TB pathogen *Mycobacterium tuberculosis*. Clinical manifestations of the disease include pulmonary TB, which is the most widespread form; TB meningitis, which is a leading cause of childhood mortality; and TB of a variety of other organs. The WHO (2004a) reports that 1.7 million deaths resulted from TB in 2004, and Africa had the greatest numbers of death where the presence of HIV contributed to the rapid growth of TB.

The presence of disease-causing bacilli in sputum examination is not evident in all forms of pulmonary TB. About half the cases are detectable by sputum smear examination, and these are of the infectious pulmonary type. Chemotherapy undoubtedly reduces the number of individuals who die from TB. However, many lesser-developed countries do not have organized treatment and prevention programs and therefore lose more people each year to TB than to either malaria or measles (Lienhardt and Rodrigues, 1999; WHO, 2004a).

Although TB is known worldwide, concern is greatest in certain areas: Southeast Asia (3 million new cases), sub-Saharan Africa (1.6 million cases), and Eastern Europe, where there is a reoccurrence of TB and a quarter of a million cases (WHO, 2004a). This compares with a record low number of cases, 14,111, in the United States in 2004 (Centers for Disease Control [CDC], 2005).

However, foreign-born residents accounted for nearly 54% of the U.S. cases (CDC, 2005). Globally, approximately 3 million deaths were attributable to TB in 2000, which exceeds the number of deaths from measles and malaria. The case fatality ratio for untreated TB is greater than 50%. Of these deaths, 1.5 million occurred in Southeast Asia and 1 million in the western Pacific. A large number of deaths are attributable to related HIV infections, with most of these deaths occurring in sub-Saharan Africa (Bleed et al, 2000). Additional estimates have indicated that one fourth of adult deaths that could be avoided in lesser-developed countries are caused by TB. This equates to a tremendous loss of social and economic potential for these countries.

Two factors are a threat to TB control and eradication. The first is the appearance of the HIV virus, which is one of the highest risk factors associated with the breakthrough of once-latent TB. HIV-associated TB infections most often progress to an active disease. Information currently available suggests that 5% to 10% of individuals infected with HIV and *M. tuberculosis* will develop TB each year. This can be compared with 2% of people infected with *M. tuberculosis* but not HIV who will develop TB (WHO, 2005c). The appearance of HIV has added to the difficulty of treatment programs in both developed and lesser-developed countries. For example, in Africa, almost half of those individuals who are HIV seropositive are also infected with TB, and it is estimated that nearly 5% to 8% of these individuals will develop the clinical manifestations of TB. More important, HIV-positive individuals with infectious TB have an increased likelihood of transmitting TB to their families and to the community, further increasing the prevalence of this condition.

The growing multidrug resistance of the TB bacillus to isoniazid and rifampin, the two drugs used to treat it, decreases the control and eradication of TB. Resistance to these drugs is already evident around the world, including in the Mexico-Texas border communities. The WHO and other organizations maintain that a high priority should be given to TB control and eradication programs around the world. They advocate a short-term chemotherapy regimen for smear-positive patients as being one of the most cost-effective health interventions available.

Bacille Calmette-Guérin (BCG) consists of a series of vaccines that induce active immunity. These are used to prevent TB and have been available since the 1920s. Although the effectiveness of BCG is still questionable, research studies have demonstrated that it is effective in preventing the more lethal forms of TB, including meningitis and miliary disease in children (WHO, 2005c). These same studies have demonstrated that more than 80% of the infants in lesser-developed countries have been vaccinated, with less coverage in sub-Saharan Africa. However, more studies are needed worldwide to determine the effect that BCG can have on the more infectious types of TB. Present indications are that BCG does not reduce the transmission of infectious types of TB.

The standard chemotherapeutic agents used in many countries for TB are isoniazid, thiacetazone, and streptomycin, and they are effective at converting sputum-positive cases to noninfectivity. The drug and the combinations that are used vary from country to country. To be effective, however, treatment must be carried out on a consistent basis, and many lesser-developed countries have difficulty getting patients to comply with any treatment regimen. Most of the TB intervention programs in these countries have been unable to carry out curative programs following standard treatment regimens (Pio, 1997; WHO, 1992). In 1990 the WHO Global Tuberculosis Program (GTB) promoted the revision of national tuberculosis programs to focus on short-course chemotherapy (SCC), with directly observed treatment (DOT). The introduction of DOT programs has been successful in the United States and in several lesser-developed countries, including Malawi, Mozambique, Nicaragua, and Tanzania, producing a cure rate of approximately 80%. The SCC program involves aggressive administration of chemotherapeutic drugs combined with short-term hospitalization. The key to the program lies in a well-managed system with a regular supply of anti-tuberculosis drugs to the treatment centers, follow-up care, and rigorous reporting and analysis of patient information (WHO, 2004a). Despite these efforts, little progress has been made, and little international support has been given to placing TB control programs as a number one priority worldwide.
Acquired Immunodeficiency Syndrome

As discussed in Chapter 38, acquired immunodeficiency syndrome (AIDS) is a major cause of morbidity and mortality throughout the world (WHO/UNAIDS, 2002). Because HIV/AIDS is discussed fully elsewhere, only a brief synopsis is presented here.

Once infected with HIV, individuals harbor the virus for the remainder of their lives. The virus may produce no symptoms for years, but risk increases with the threat of a breakdown of the immune system and the subsequent infections that may occur. Worldwide prevention programs are important because failing to control this virulent disease will result in damaging and costly consequences for all countries in the future. Ideally, the goal is primary prevention of HIV. When prevention efforts fail at this level, the next goal is secondary prevention, or early diagnosis and treatment. In 2001 the director general of WHO appealed to the world’s health professionals to set up targets for action to control and eradicate the spread of HIV/AIDS (WHO, 2002a). In particular, WHO along with UNICEF, UNAIDS, women’s health groups, and other international organizations have promoted the use of nevirapine to prevent mother-to-child transmission of HIV. The regimen calls for a single dose of nevirapine to be given to the mother at delivery and a single dose to the newborn within 72 hours. WHO is recommending that nevirapine be included in the minimum standard package of care for HIV-positive women and their children (WHO/UNAIDS, 2002; Subways, 2004). Tertiary prevention with HIV includes both care of the client and instructing, guiding, and teaching the family how to care for the person with HIV. The Levels of Prevention box details these interventions.

Malaria

Malaria continues to be one of the most important tropical parasitic diseases, and it kills more people than any other communicable disease except tuberculosis. Ninety countries and areas are considered malaria ridden (Thanassi, 1998). The disease is most endemic in countries in the tropical areas of Asia, Africa, and Latin America. It is estimated that 300 to 500 million people develop clinical cases of malaria each year, with more than 90% of these occurring in equatorial Africa (WHO, 2005a). This current situation exists despite worldwide efforts to eradicate and control the spread of malaria over the last 50 years.

Methods of vector control vary widely, from using the larvae-eating fish tilapia to the use of insecticidal sprays and oils. Needless to say, the latter poses a potential threat to the environment in tropical areas where a delicate ecosystem is already threatened by other potential hazards such as lumbering and mining. Countries that do not have strict environmental laws continue to use dichlorodiphenyltrichloroethane (DDT) sprays to control mosquito populations despite the advent of DDT-resistant mosquitoes. The non-DDT insecticide sprays, such as malathion, generally cost more, presenting an extra financial burden to lesser-developed countries. Methods for control and eradication that are being considered by malaria-ridden countries are environmental management, reduction and control of the source, and elimination of the adult mosquito.

Chemotherapeutic agents can be used for both protection and treatment of the disease. Drugs for treatment and prophylaxis are expensive and often cause side effects. However, current evidence suggests that the Plasmodium sporozoites are becoming resistant to both treatment and preventive chemotherapeutic agents. Efforts are under way to develop an antimalarial vaccine, but so far the results have been unsuccessful. Individuals who live or travel to Anopheles-infested areas should protect themselves with mosquito netting, clothing that protects vulnerable parts of the body, and repellents for both their bodies and their clothes.

Maternal and Women’s Health

The WHO and UNICEF have continued with worldwide initiatives to reform the health care received by women and children in lesser-developed countries (USAID, 2005; WHO, 2000a). However, studies on women’s health indicate that most deaths to women around the world are related to pregnancy and childbirth. Most of these deaths occur in lesser-developed countries. Throughout the world, women between 15 and 44 years of age account for approximately one third of the world’s disease burden, and

**Levels of Prevention**

Applied to Global Health Care

**Primary Prevention**

Teach people how to avoid or change risky behaviors that might lead to contracting human immunodeficiency virus (HIV).

**Secondary Prevention**

Initiate screening programs for HIV.

**Tertiary Prevention**

Manage symptoms of HIV, provide psychosocial support, and teach clients and significant others about care and other forms of symptom management.
women between 45 and 59 for one fifth of the burden. This burden comprises diseases and conditions that are either exclusively or predominantly found in women, including maternal mortality and morbidity, cervical cancer, anemia, STDs, osteoarthritis, and breast cancer (World Bank, 2005). Although most of these conditions can be dealt with by cost-effective prevention and screening programs, many lesser-developed countries have ignored women’s health issues other than those directly related to pregnancy and childbirth.

Currently, lesser-developed countries presently account for 87% of the world’s births. However, statistics from lesser-developed countries would indicate that prenatal services and safe birthing services are unavailable, inaccessible, and unaffordable to women. The highest maternal death rates are in Africa (Anderson, 1996; USAID, 2005). An African woman’s risk of dying from pregnancy-related causes is 1 in 20 (Raymond, Greenberg, and Leeder, 2005; Andrews and Gottschalk, 1996). Africa is followed by the countries of Bangladesh, Pakistan, and India. These three countries account for nearly half of the world’s maternal deaths but only 29% of the world’s births. In fact, these three countries have more maternal deaths each week than Europe has in a single year. Still, an accurate reporting of maternal deaths is difficult to obtain because many of the women who die live in remote areas, they are poor, and their deaths are considered by many to be unimportant (Callister, 2005).

The primary causes of maternal mortality, particularly in lesser-developed countries, vary. They include hemorrhage, infection, convulsions, and coma caused by eclampsia and obstructed labor, and infections from unsanitary conditions and nonsterile and poorly performed abortions. Risk factors for maternal mortality include poor nutritional status, disease conditions, high parity, and age less than 20 and greater than 35 years.

To date, little attention has been paid to the problem of maternal mortality, even though the reported incidences are high throughout the world. There has been, however, a movement to address the issue by the WHO and by the UN Fund for Population Activities (UNFPA). These two organizations have called for government initiatives and actions to address direct obstetric deaths as well as those that arise from indirect causes. The WHO and UNFPA have argued that their initiatives and their call for action for programs addressing maternal health are associated with the health of infants and children.

Even though programs in many countries have been initiated, safe motherhood initiatives are still needed throughout the world. These programs and initiatives need to include providing accessible family planning services and prenatal and postnatal health care services, ensuring access to safe abortion procedures, and improving the nutritional status of all women (Figure 4-7).

### Diarrheal Disease

Diarrhea, one of the leading causes of illness and death in children under 5 years of age throughout the world, is most prominent in the lesser-developed countries despite recent initiatives by the WHO to correct this problem. Each year there are 1.6 million diarrheal deaths related to unsafe water, sanitation, and hygiene (WHO, 2005b). The prevalence of diarrheal disease was so pervasive during the 1970s and 1980s that the World Health Assembly established a global program to reduce mortality and morbidity in infants and young children who suffered from all forms of the disease. This program continues today. Diarrhea is a symptom of a variety of different illnesses, and the definitions and perceptions of it vary greatly from country to country. For example, in Bangladesh, diarrhea is defined as more than two watery or loose stools in 24 hours, whereas Indonesians define it as four loose stools in 24 hours. Definitions are complicated by the observable presence of blood, mucus, or parasites and the age of the affected person (WHO, 2005b).

Causes of diarrhea are just as varied and diverse as its definitions and perceptions. Some of the causes include (1) viruses such as the rotavirus and Norwalk-like agents; (2) bacteria, including *Campylobacter jejuni*, *Clostridium difficile*, *Escherichia coli*, *Salmonella*, and *Shigella*; (3) environmental toxins; (4) parasites such as *Giardia lamblia* and *Cryptosporidium*; and (5) worms. Nutritional deficiencies can also cause diarrhea and are most often secondary to infectious agents. Of these, the rotavirus has emerged as a major world concern, hospitalizing 55,000 American children and killing 1 million children in the world each year (WHO, 2005b).

Dehydration is an immediate result of diarrhea and leads to a loss of fluid and electrolytes. The loss of up to

**FIG. 4-7  General Hospital and Maternity Home in Katmandu, Nepal. (Courtesy J. Schaller-Ayers.)**

**WHAT DO YOU THINK?**  Nutritional support by promotion of continued breastfeeding and improved weaning practices using high-density, easily digestible, local foods is especially important during and after episodes of diarrhea.
Evidence-Based Practice

This binational study explored the migration patterns and health experiences of indigenous Mixtec and Zapotec women from the state of Oaxaca in southern Mexico. The researcher discovered a high degree of independent decision making among the women about migration and the various patterns of health-seeking behaviors for themselves and their families. Nearly always, their first recourse for treating health and illness conditions was the use of herbal and home remedies. They also used local public health departments and community clinics for children’s well-care and immunizations, for acute episodes that were not responsive to treatment at home, and for themselves. They look for health care staff in the United States who are considerate of them as persons, who demonstrate affection and warmth to their children, and who are thorough and competent. Although some immigrant women have learned English, and all expressed a desire to learn, many work in the fields, in factories, and as domestics. These women lack the ability to speak English as a second language, are fully responsible for families, and have very complicated lives that present barriers to learning English. Some women speak their indigenous language and learned Spanish in northern Mexico before coming to the United States.

NURSE USE

Spanish-speaking immigrants are very responsive to health care workers who speak some Spanish.

Sharon McGuire, PhD, RN: Migration patterns and health experiences of Mixtec and Zapotec women, dissertation research, University of San Diego, Calif.

10% of the body’s electrolytes can lead to shock, acidosis, stupor, and failure of the body’s major organs (e.g., kidney, heart). Persistent diarrhea often leads to loss of body protein and increased susceptibility to infection. Prevention and control of diarrheal disease, especially in infants and children, should therefore be a major aim of countries around the world. In addition, many countries have developed diarrhea control programs that improve childhood nutrition. These programs focus on the promotion of breastfeeding, instruction of weaning practices, promotion of oral rehydration therapy, and use of supplementary feeding programs (WHO, 2005b). However, all these programs must be considered in conjunction with improving the social and economic conditions that contribute to safe environmental, sanitary, and general living conditions of populations around the world (Basch, 1990).

Nutrition and World Health

Good nutrition is an essential part of good health. Poor nutrition by itself or that associated with infectious disease accounts for a large portion of the world’s disease burden (World Bank, 2005). Those environmental and economic conditions that are related to poverty contribute to underconsumption of nutrients, especially those nutrients that are needed for protein building, such as iodine, vitamin A, and iron. Worldwide, women and children suffer disproportionately from nutrition deficits, especially of the micronutrients just mentioned (Caballero and Rubinstein, 1997; ICN, 2003). For example, in war-torn Afghanistan, a critical shortage of fruits and vegetables led to an outbreak of scurvy that had devastating effects on the population, leaving them vulnerable to secondary diseases. In the same area, a vitamin A deficiency is evidenced by large numbers of people with night blindness (WHO, 2002b).

Stunting, or low height and weight for a given age, is another effect of poor nutrition. Stunting is most frequently the result of eating foods that do not provide enough energy and do not contain enough protein. Because protein foods are usually more expensive than nonprotein food sources, many households reduce, or unconsciously eliminate, protein-rich foods to save money. Countries where populations are most affected by stunting are India (65%), Asia, not including India and China (50%), China (40%), and sub-Saharan Africa (40%) (World Bank, 2005).

Iron deficiencies are also common in lesser-developed countries and severely affect women and children. A deficiency of iron in the diet reduces physical productivity and affects the capacity of children to learn in school. Iron deficiency in the diet also affects appetite, causing many individuals, especially children, to have a lessened desire to eat. This in turn affects overall food intake and growth over a prolonged time.

Women are most susceptible to iron deficiency as a result of menstruation and childbearing. Women who experience iron deficiency can develop a severe shortage of iron in their blood that results in anemia, which increases risk of hemorrhage during childbirth. A World Bank report (2005) indicates that 88% of all pregnant women in India are anemic, compared with 60% of the pregnant women in other parts of Asia. In developed, market-economy countries, only 15% of pregnant women experience iron deficiency anemia (Caballero and Rubinstein, 1997).

Other common dietary deficiencies observed throughout the world include iodine, vitamin A, folic acid, and calcium deficiencies. The impact of malnutrition and dietary deficiencies is significant. Any malnourished condition in a population can increase susceptibility to illness. For example, the principal causes of death among malnourished persons are measles, diarrheal and respiratory disease, TB, pertussis, and malaria. The loss of life from these diseases can be measured as 231 DALYs worldwide, with one fourth of the 231 being directly attributable to malnourishment and dietary deficiencies.
Worldwide initiatives directed at overcoming nutritional deficits include the following (World Bank, 2005):
• Control of infectious diseases
• Nutritional education
• Control of intestinal parasites
• Micronutrient fortification of food
• Food supplementation
• Food price subsidies

Individual governments and organizations such as the International Red Cross, the WHO, and many international religious and private foundations have been active in promoting better nutrition.

Bioterrorism

Bioterrorism may be defined as “the intentional use of a pathogen or biological product to cause harm to a human, animal, plant, or other living organism in order to influence the conduct of government or to intimidate or coerce a civilian population” (Gostin, Sapsin, Teret et al, 2002, p. 623). Bioterrorism is a significant public health threat that could produce widespread, devastating, and tragic consequences, and would impose particularly heavy demands on international public health and health care systems. Nurses and other health personnel need to be aware and vigilant to the health consequences of terrorism and the potential use of biological agents to instill fear and to spread disease (International Council of Nurses, 2001, p. 1) (Box 4-5).

A nation’s capacity to respond to the threat of bioterrorism depends in part on the ability of health care professionals and public health officials to rapidly and effectively detect, diagnose, respond, and communicate during a bioterrorism event (Box 4-6). The national health care community—including public health agencies, emergency medical services, hospitals, and health care providers—would bear the brunt of the consequences of a biological attack (Veneema, 2002, p. 70).

Attacks with biological agents are likely to be covert, rather than overt (CDC, 2000). Terrorists may prefer to use biological agents because of their difficulty to detect. These agents do not cause illness for several hours to several days (CDC, Bioterrorism Overview). “The covert release of a biological agent may not have an immediate impact because of the delay between exposure and illness onset, and outbreaks associated with intentional releases might closely resemble naturally occurring outbreaks” (CDC, 2001, p. 893) (Box 4-7).

Biological Agents of Highest Concern

The “CDC defines three categories of biological agents with potential to be used as weapons based on the ease of dissemination or transmission, potential for major public health impact (e.g., high mortality), potential for public panic and social disruption, and requirements for public health preparedness. Agents of highest concern (Category A) are Bacillus anthracis (anthrax), Yersinia pestis (plague), variola major (smallpox), Clostridium botulinum toxin (botulism), Francisella tularensis (tularemia), filoviruses (Ebola hemorrhagic fever, Marburg hemorrhagic fever), and arenaviruses (Lassa [Lassa fever], Junin fever [Argentine hemorrhagic fever], and related viruses)” (CDC, 2001, p. 893).

Surveillance Systems

Veneema (2002, pp. 63-54) addresses surveillance systems. To differentiate between an impending health care crisis and a hoax, it is imperative to understand the national and international

---

**Box 4-5 Nursing Implications for Bioterrorism**

The World Health Organization, in their document Public Health Response to Biological and Chemical Weapons: WHO Guidance, Annex 3: Biological Agents (2004c, p. 235) references the following categories for providing general information regarding biological events. An understanding of the following general aspects for each agent will help nurses in preparing and managing the public health aspects of a bioterrorist event.

- **Name of the agent/disease:** The name of the pathogen and the disease it causes. Each disease is also designated by its alphanumeric code assigned by ICD-10.
- **Description of the agent:** Classification and description of the agent.
- **Occurrence:** Places where the disease is prevalent.
- **Reservoirs:** Principal animal and environmental sources of human infection.
- **Mode of transmission:** Principal modes of transmission to humans, for example, vector-borne, person-to-person, waterborne, foodborne, airborne.
- **Incubation period:** The time between exposure and the first appearance of symptoms. This will vary from individual to individual and for some pathogens is highly variable. Incubation periods also depend on the route of entry and on dose, generally being shorter for higher doses.
- **Clinical features:** Principal signs and symptoms characteristic of the disease. For many of the listed agents, the initial symptoms are nondescript, resembling those of influenza and making early clinical identification difficult.
- **Laboratory diagnosis:** Laboratory methods for identification of pathogens in clinical and environmental specimens. Biosafety recommendations for laboratory workers.
- **Medical management and public health measures:** Isolation requirements, protection of caregivers, disposal of contaminated materials, and, where applicable, quarantine and hygienic measures.
- **Prophylaxis and therapy:** Vaccines, antimicrobials, and antisera, where applicable.
- **Other information (communications and public health law, etc., can be found at [http://www.who.int/csr/delibepidemics/biochemguide/en/print.html](http://www.who.int/csr/delibepidemics/biochemguide/en/print.html)).**

systems of surveillance currently in place. How would a government find out that a deliberate outbreak had taken place? For the international system, the World Health Organization (WHO) monitors disease outbreaks through the Global Outbreak Alert and Response Network (WHO, 2004b; World Health Organization Group of Consultants, 2001). This network, formally launched in April 2000, electronically links the expertise and skills of 72 existing networks from around the world, several of which were uniquely designed to diagnose unusual agents and handle dangerous pathogens. Its purpose is to keep the international community constantly alert to the threat of outbreaks and ready to respond. It has four primary tasks (Veneema, 2002):

1. Systematic disease intelligence and detection. The first responsibility of the WHO network is to systematically gather global disease intelligence drawing from a wide range of resources, both formal and informal. Ministries of Health, WHO country offices, government and military centers, and academic institutions all file regular formal reports with the Global Outbreak Alert and Response Network. An informal networks scour world communications for rumors of unusual health events.
2. Outbreak verification. Preliminary intelligence reports from all sources, both formal and informal, are reviewed and converted into meaningful intelligence by the WHO Outbreak Alert and Response Team, which makes the final determination whether a reported event warrants cause for international concern.
3. Immediate alert. A large network of electronically connected WHO member nations, disease experts, health institutions, agencies, and laboratories is kept continually informed of rumored and confirmed outbreaks. The network also maintains and regularly updates an Outbreak Verification List, which provides a detailed status report on all currently verified outbreaks.
4. Rapid response. When the Outbreak Alert and Response Team determines that an international response is needed to contain an outbreak, it enlists the help of its partners in the global network. Specific assistance available includes targeted

**BOX 4-6 What Can Nursing Do in the Event of a Bioterrorist Attack?**

The International Council of Nursing (ICN) policy paper on disaster preparedness outlines actions, including risk assessment and multidisciplinary management strategies, as critical to the delivery of effective responses to the short-, medium-, and long-term health needs of a disaster-stricken population. In the event of terrorist attacks, nurses and other health professionals need to work with other groups and public to address concerns and provide health services. These actions include the following:

**HELP PEOPLE TO COPE WITH AFTERMATH OF TERRORISM.**
- Assist people to deal with feelings of fear, vulnerability, and grief.
- Use groups who have survived terrorist attacks as useful resource for victims.

**ALLAY PUBLIC CONCERNS AND FEAR OF BIOTERRORISM.**
- Disseminate accurate information on the risks involved, preventive measures, use of antibiotics and/or vaccines, and reporting suspicious letters or packages to the police or other authorities.
- Address hoax messages, false alarms, and threats; any perceived threat to the public health must be investigated.

**IDENTIFY THE FEELINGS THAT YOU AND OTHERS MAY BE EXPERIENCING.**
- In the aftermath of terror even health care professionals can feel bias, hatred, vengeance, and violence towards ethnic or religious groups that are associated with terrorism. These feelings can compromise their ability to provide care for these groups. Yet as the ICN Code of Ethics for Nurses affirms, nurses are ethically bound to provide care to all people (ICN, 2000).
- Explain that feelings of fear, helplessness, and loss are normal reactions to a disruptive situation.
- Help people remember methods they may have used in the past to overcome fear and helplessness.
- Encourage people to talk to others about their fears.
- Encourage others to ask for help and provide resources and referrals.
- Remember that those in the helping professions (e.g., nurses, physicians, social workers) may find it difficult to seek help.
- Convene small groups in workplaces with counselors/mental health experts.

**ASSIST VICTIMS TO THINK POSITIVELY AND TO MOVE TOWARD THE FUTURE.**
- Remind others that things will get better.
- Be realistic about the time it takes to feel better.
- Help people to recognize that the aim of terrorist attacks is to create fear and uncertainty.
- Encourage people to continue with the things they enjoy in their lives and to live their normal life.

**PREPARE NURSING PERSONNEL TO BE EFFECTIVE IN A CRISIS/EMERGENCY SITUATION (ICN, 2001).**
- Incorporate disaster preparedness awareness in educational programs at all levels of nursing curriculum.
- Provide continuing education to ensure a sound knowledge base, skill development, and ethical framework for practice.
- Network with other professional disciplines and governmental and nongovernmental agencies at local, regional, national, and international levels.
investigations, confirmation of diagnoses, handling of dangerous biohazards (biosafety level IV pathogens), client care management, containment, and logistical support in terms of staff and supplies.

**DID YOU KNOW?** Biological weapons are attractive to terrorists because they are relatively easy to obtain, require minimal scientific knowledge and skill to produce and weaponize, and can cause mass destruction at relatively low cost (Mondy, Cardenas, and Avila, 2003, p. 422). It has been estimated that affecting 1 square kilometer of land would cost $2000 if using a conventional weapon, $800 if using a nuclear weapon, and $200 if using a gas-containing weapon, but only $1 if using a biological weapon (McColloch et al, 1999).

In summary, “if health care professionals and emergency responders are to be prepared to manage bioterrorism attacks, unprecedented cooperative efforts at the national, state, and local levels are necessary. To aid such efforts, advance practice public health nurses must exercise their ability to collaborate with a variety of disciplines and communities” (Mondy, Cardenas, and Avila, 2003, p. 422). Biological threats to the United States have generated fear and panic among many. Nurses who are educated about bioterrorism and its effects can answer questions confidently and calm fears when peers, family members, and friends ask about this issue (Stillsmoking, 2002).

**BOX 4-7 Illness Patterns and Diagnostic Clues Related to Bioterrorism**

<table>
<thead>
<tr>
<th>Box Title</th>
<th>Details</th>
</tr>
</thead>
</table>
| All nurses and “other health care providers should be alert to illness patterns and diagnostic clues that might indicate an unusual infectious disease outbreak associated with intentional release of a biological agent and should report any clusters or findings to their local or state health department. Indications of intentional release of a biological agent include the following: 1. An unusual temporal or geographic clustering of illness (e.g., persons who attended the same public event or gathering) or patients presenting with clinical signs and symptoms that suggest an infectious disease outbreak (e.g., two or more patients presenting with an unexplained febrile illness associated with sepsis, pneumonia, respiratory failure, or rash; or a botulism-like syndrome with flaccid muscle paralysis, especially if occurring in otherwise healthy persons) 2. An unusual age distribution for common diseases (e.g., an increase in what appears to be a chickenpox-like illness among adult patients, but which might be smallpox) 3. A large number of cases of acute flaccid paralysis with prominent bulbar palsies, suggestive of a release of *botulinum* toxin” (CDC, 2000, p. 893) | PSYCHOSOCIAL CONCERNS RELATED TO BIOTERRORISM

“People who have experienced or witnessed a terrorist attack may respond with acute stress reaction. They may feel one or all of the following symptoms (Fields and Margolin, 2001): • Recurrent thoughts of the attack • Fear of everything, refusal to leave the house, or isolating oneself • Survivor guilt, for example, “Why did I survive? I should have done something more.” • A sense of great loss • Reluctance to express feelings, losing a sense of control over life (ICN, 2006, p. 1) |

**CHAPTER REVIEW**

**PRACTICE APPLICATION**

The role and involvement of nurses in global health vary dramatically from country to country. It is not surprising to learn that nursing plays a more active role in health care delivery in the more technologically advanced countries. The more developed countries have a defined role for nurses, whereas the role is less well-defined, if it is defined at all, in lesser-developed countries.

During the last decade, lesser-developed countries have implemented primary health care programs directed at prevention and management of important public health problems. With the increasing migration between and within countries because of war and famine, a greater need for nursing expertise to alleviate suffering of refugees and displaced persons has emerged. Starvation, disease, death, war, and migration underscore the need for support from the wealthier nations of the world.
More than 30 million refugees and internally displaced persons in lesser-developed countries currently depend on international relief assistance for survival. Death rates in these populations during the acute phase of displacement have been up to 60 times the expected rates. Displaced populations in Ethiopia and southern Sudan have suffered the highest death rates. In Afghanistan and in war-torn Iraq, infectious diseases accounted for one half of all admissions to the hospital—mostly malaria and typhoid fever. The greatest causes of death have been measles, diarrheal diseases, acute respiratory tract infections, and malaria. In addition, poor sanitation in many hospitals and clinics and shortages of drugs and qualified health care workers produce huge gaps for needed health care services. Continued violence accounts for a population who is afraid to leave their homes to seek medical help.

Nurses from more developed countries are recruited to combat the major mortality in refugee camps—malnutrition, measles, diarrhea, pneumonia, and malaria. Nurses are following the principles of primary health care and are promoting adequate food intake, safe drinking water, shelter, environmental sanitation, and immunizations. These life-saving practices have been implemented in the following countries: Thailand (Myanmar refugees), Rwanda, Zaire, Angola, Afghanistan, the Sudan, and the former Yugoslavia.

You are sent to a country ravaged by war, in which many people are refugees. You are asked to work side by side with other nurses, both foreign and native to the country.
A. What would you do first to develop this group of nurses into a functioning team?
B. Which health and environmental problems would you attempt to handle early in your work?
C. Identify second-stage interventions and prevention once the initial crisis stage is relieved.

Answers are in the back of the book.

KEY POINTS

- Global health is a collective goal of nations and is promoted by the world’s major health organizations.
- As the political and economic barriers between countries fall, the movement of people back and forth across international boundaries increases. This movement increases the spread of various disease entities throughout the world.
- Nurses can and do play an active role in the identification of potential health risks at U.S. borders, with immigrant populations throughout the nation, and as participants in global health care delivery.
- Understanding a population approach is essential for understanding the health of specific populations.
- Primary health care is key to the provision of universal access to health care for the world’s populations.
- The major organizations involved in world health include the following: (1) multilateral; (2) bilateral and nongovernmental or private voluntary; and (3) philanthropic.
- The health status of a country is related to its economic and technical growth. More technologically and economically advanced countries are referred to as developed, whereas those that are striving for greater economic and technological growth are termed lesser developed. Many lesser-developed countries often divert financial resources from health and education to other internal needs, such as defense or economic development, that are not aimed at helping the poor.
- The global burden of disease (GBD) is a way to describe the world’s health. The GBD combines losses from premature death and losses that result from disability. The GBD represents units of disability-adjusted life-years (DALYs).
- Critical global health problems still exist and include communicable diseases such as tuberculosis, measles, mumps, rubella, and polio; maternal and child health; diarrheal diseases; nutritional deficits; malaria; and AIDS.
- Bioterrorism has become a global health concern.

CLINICAL DECISION-MAKING ACTIVITIES

1. In your class, divide into small groups and discuss how you might find out if there are immigrant communities in your area. You might contact your local health department, area social workers, or community social organizations and churches.
   a. Discuss how you can gain access to one of these immigrant groups. Upon gaining access, how would you go about determining what specific kinds of services the people might need? What are their beliefs about health and health care? What customs regarding health were followed in their country of origin? How does the American health care system differ from the health care system in their country?
   b. As a nurse, what kinds of interventions can you implement with immigrant populations? What special skills or knowledge do you need to provide care to immigrant populations?

2. Write to one of the major international health organizations or visit their internet web page and obtain their mission and goal statements. What is the focus of their health-related activities? Does the organization that you identified have a specific role defined for nurses? How can a nurse who is interested become involved in their programs and activities?

3. Pick a country or area of the world outside the United States that interests you. Go to the library or use the internet to obtain information about the following:
   a. Status of health care in that country
   b. Major health concerns
   c. GBD (global burden of disease)
   d. Whether this country is developed or lesser developed
   e. Which, if any, global health care organizations are involved with the delivery of health care in that country

4. Choose one or more of the following countries, and find out from your local or state health department the health risks that are involved in visiting that country: Indonesia, Zaire, Paraguay, Bangladesh, Kuwait, Kenya, Mexico, China, and Haiti.
References


Ball K: Biological warfare: what happens if we were attacked? Today’s Surg Nurse 20:3-6, 1998.


Centers for Disease Control: TB, data and statistics, Atlanta, 2005, CDC.


World Health Organization: Twelve yardsticks for health, New York, 1986a, WHO.
World Health Organization: Global advisory group on nursing and midwifery, Geneva, 2000a, WHO.
World Health Organization: Health for all (press release), New York, 2002a, WHO.
World Health Organization: Key health expenditures/country, Geneva, 2003b, WHO.
World Health Organization: Malaria, Geneva, 2005a, WHO.
World Health Organization: The international network to promote household water treatment and safe storage, Geneva, 2005b, WHO.