Health Care of the Past, Present, and Future

LEARNING OBJECTIVES

- Define at least 10 words relating to health care of the past, present, and future.
- Identify three socioeconomic factors that influence the health care industry.
- Describe at least three advantages to following a career in the health care field.
- Describe a career ladder for at least one health care occupation.
- List at least three factors to be considered when choosing an occupation.
- Identify at least five milestones in the advancement of health care.
- Describe at least two factors that have contributed to the rising cost of health care.
- Describe at least two methods being used to reduce health care costs.
- Describe at least three types of health care services.

KEY TERMS

Accreditation (uh-kred-uh-TAY-shun) Official authorization or approval
Career (kuh-REE) Occupation or profession
Certification (ser-tuh-fuh-KAY-shen) Documentation of having met certain standards
Diagnosis-related grouping (die-ug-NO-els ree-lay-ted GROOP-ing) Predetermined payment structure for health care services established by the federal government
Health (hellth) State of optimal well-being, achieved through prevention of illness and injury
Insurance (in-SHER-ens) Payment for health care expenses, which may or may not occur, in return for a specified payment in advance
Licensure (LUSE-uh-shen) Legal authority to perform an activity
Litigation (lit-uh-GAY-shen) Legal dispute; lawsuit
Occupation (ahk-yoo-PAY-shen) Vocation, activity in which one participates
Health Care of the Past

In the earliest civilizations health needs were met by a specific person or group. Ancient treatments were harmful in some cases and helpful in others. Some of the most helpful were the use of herbs and plants for medication. The World Health Organization (WHO) estimates that 80% of the world’s population use plants or herbal treatments as part of their primary care. According to the American Association for the Advancement of Science (AAAS), about 118 of the 150 prescription drugs sold in the United States originate from plants, fungus, bacteria, and extracts from animals. Some of these remedies, such as quinine for malaria and digitalis for heart conditions, are still in use today (Box 1-1; also see Medical Milestones on pp. 21-22).

Hippocrates (460-377 B.C.) is considered the father of modern medicine. He initiated the oath of practice that, in adapted form, most physicians still adopt (Box 1-2).

In early times plagues and epidemics caused millions of deaths. Many of these diseases are now preventable through vaccination and improved methods of cleanliness and sanitation (Fig. 1-1). Although communicable diseases still cause many deaths in less-developed countries, new technological advances are being used to provide better health care throughout the world.

In the past, the “patient” of the health care industry was a passive recipient of the treatment recommended by the health care professional. The relationship was a dependent one, with the health care provider as the guiding force. The patient often accepted without question the treatment suggested by health care providers.

Society has traditionally accorded respect to health care providers. The ancient Egyptians, Greeks, and Chinese who practiced the art of surgery or were witch doctors or neighborly herbalists all enjoyed stature in their communities. The arts of the past have become the professions of today (Box 1-3). These health care professions have many educational and training requirements.

BOX 1-2

Hippocratic Oath

I swear by Apollo Physician, by Aesculapius, by Health, by Heal All, and by all the gods and goddesses, that, according to my ability and judgment, I will keep this oath and stipulation; to reckon him who taught me this art equally dear to me as my parents, and to share my substance with him and relieve his necessities if required. To regard him offering as on the same footing with my own brothers and to teach them this art if they should wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction I will impart a knowledge of my art to my own sons and to those of my teachers and to disciples bound by a stipulation and oath according to the law of medicine, but to none others.

I will follow that method of treatment which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest any counsel. Furthermore, I will not give to a woman an instrument to produce an abortion.

With Purity and with Holiness, I will pass my life and practice my art. I will not cut a person who is suffering with a stone, but will leave this to the practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick and will abstain from every voluntary act of mischief and corruption; and further from the seduction of females or males, bond or free.

Whatever, in connection with my professional practice, or not in connection with it, I may see or hear in the lives of men which ought not to be spoken abroad, I will not divulge, as reckoning that all such should be kept secret.

While I continue to keep this oath inviolated, may it be granted to me to enjoy life and practice the art, respected by all men, at all times, but should I trespass and violate this oath, may the reverse be my lot.
BOX 1-3
Evolution of a Profession

Florence Nightingale is credited with raising nursing to the level of a profession. Nurses were trained before her time, but not with the strong educational background that increased the respect for nurses.

When Nightingale asked to attend nursing training, her parents refused to allow it. She continued to learn on her own by visiting hospitals and finally obtained 3 months of training. She became superintendent of a small hospital and was quickly offered a position in a larger institution because of her strong views on social welfare.

In 1854 Florence Nightingale led a group of 38 nurses to Turkey to care for soldiers injured in the war in which England was involved. Although doctors did not welcome the nurses because they were women, they improved the terrible conditions and organized and restructured the care greatly.

In 1860 the Nightingale School of Nurses opened with funding that was provided by the English government in appreciation for the service of these nurses. Nightingale believed that nursing was an art that must be founded on organized, practical, and scientific training. She taught that the person, not the disease, should be treated. Although in poor health, Nightingale lived to be 90 years of age.

Health Care of the Present

In the United States the focus of health care has shifted from the prevention of contagious diseases to those such as cancer, drug abuse, and heart disease, that are the result of lifestyle. Additionally, concerns relating to emergency response and preparedness services have become of primary concern to the health care industry (Table 1-1). Some communicable diseases are still a focus, including acquired immunodeficiency syndrome (AIDS), tuberculosis (TB), and flu. The WHO reported 33 million people living with AIDS worldwide in 2007. At the end of 2006, the Centers for Disease Control and Prevention (CDC) estimated that 1.1 million people were living with human immunodeficiency virus (HIV) or AIDS in the United States. It also reported a total of 12,898 cases of TB in 2008, which shows a decline of 2.9% from 2007 and 54% from 1980. According to WHO, nine Asian countries reported outbreaks of the H5N1 avian flu in birds by February 2006, six of which reported cases affecting humans. More than half of the confirmed cases were fatal. An outbreak of H1N1 swine flu was detected in April 2009. By July 2009 the CDC reported 43,771 cases; 302 of these patients died. The government has allocated money and the CDC has established preparation guidelines for a possible flu pandemic. Table 1-2 provides an overview of the pandemics and pandemic scares.

TABLE 1-1
CDC Categories of Emergency Preparedness and Response

<table>
<thead>
<tr>
<th>Emergency</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioterrorism</td>
<td>Anthrax</td>
</tr>
<tr>
<td>agents</td>
<td>Botulism</td>
</tr>
<tr>
<td></td>
<td>Plague</td>
</tr>
<tr>
<td></td>
<td>Smallpox</td>
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<tr>
<td></td>
<td>Tularemia</td>
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<tr>
<td></td>
<td>Viral hemorrhagic fever</td>
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<tr>
<td>Chemical</td>
<td>Biotoxins</td>
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<tr>
<td>emergencies</td>
<td>Blister agents, vesicants</td>
</tr>
<tr>
<td></td>
<td>Blood agents</td>
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<tr>
<td></td>
<td>Caustics (acids)</td>
</tr>
<tr>
<td></td>
<td>Choking, lung, pulmonary agents</td>
</tr>
<tr>
<td></td>
<td>Long-acting anticoagulants</td>
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<tr>
<td></td>
<td>Metals</td>
</tr>
<tr>
<td></td>
<td>Nerve agents</td>
</tr>
<tr>
<td></td>
<td>Organic solvents</td>
</tr>
<tr>
<td></td>
<td>Riot-control agents, tear gas</td>
</tr>
<tr>
<td></td>
<td>Toxic alcohols</td>
</tr>
<tr>
<td></td>
<td>Vomiting agents</td>
</tr>
<tr>
<td>Radiation</td>
<td>Dirty bombs</td>
</tr>
<tr>
<td>emergencies</td>
<td>Nuclear blasts</td>
</tr>
<tr>
<td>Mass casualties</td>
<td>Explosions and blasts</td>
</tr>
<tr>
<td></td>
<td>Burns</td>
</tr>
<tr>
<td></td>
<td>Injuries</td>
</tr>
<tr>
<td></td>
<td>Emergency wound care</td>
</tr>
<tr>
<td>Natural disasters</td>
<td>Earthquakes</td>
</tr>
<tr>
<td>and severe weather</td>
<td>Extreme heat</td>
</tr>
<tr>
<td></td>
<td>Flood</td>
</tr>
<tr>
<td></td>
<td>Hurricane</td>
</tr>
<tr>
<td></td>
<td>Landslide, mudslide</td>
</tr>
<tr>
<td></td>
<td>Tornado</td>
</tr>
<tr>
<td></td>
<td>Tsunami</td>
</tr>
<tr>
<td></td>
<td>Volcano</td>
</tr>
<tr>
<td></td>
<td>Wildfire</td>
</tr>
<tr>
<td></td>
<td>Winter weather</td>
</tr>
<tr>
<td>Recent outbreaks</td>
<td>Multistate Escherichia coli outbreak</td>
</tr>
<tr>
<td>and incidents (2009)</td>
<td>Santa Barbara wildfire</td>
</tr>
<tr>
<td></td>
<td>H1N1 flu outbreak</td>
</tr>
<tr>
<td></td>
<td>Oklahoma-Texas wildfire</td>
</tr>
<tr>
<td></td>
<td>Italian earthquake</td>
</tr>
<tr>
<td></td>
<td>North Dakota floods</td>
</tr>
<tr>
<td></td>
<td>Mount Redoubt volcano eruption</td>
</tr>
<tr>
<td></td>
<td>Saltonstall outbreak</td>
</tr>
</tbody>
</table>


TABLE 1-2
Pandemics and Pandemic Scares

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>Spanish flu</td>
<td>20%-40% of world population became ill; more than 20 million people died worldwide</td>
</tr>
<tr>
<td>1957</td>
<td>Asian flu</td>
<td>Appeared in two waves; 69,800 died in the United States</td>
</tr>
<tr>
<td>1968</td>
<td>Hong Kong flu</td>
<td>33,800 died in the United States</td>
</tr>
<tr>
<td>1976</td>
<td>Swine flu</td>
<td>Identified and stayed in Fort Dix, NJ, region; mass vaccination program ended</td>
</tr>
<tr>
<td>1977</td>
<td>Russian flu</td>
<td>Appeared primarily in children</td>
</tr>
<tr>
<td>1997</td>
<td>Avian flu</td>
<td>Moved quickly from chicken to people; 18 died of the few hundred affected</td>
</tr>
</tbody>
</table>

TABLE 1-3
Agency Health Care Providers

<table>
<thead>
<tr>
<th>Agency</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>General hospital</td>
<td>Provides short-term care, acute care, and diagnostic and rehabilitation services; may be for profit or nonprofit, teaching or nonteaching</td>
</tr>
<tr>
<td>Specialty hospital</td>
<td>Provides treatment for a specific condition such as tuberculosis, mental health disorders, or rehabilitation services</td>
</tr>
<tr>
<td>Practitioner office</td>
<td>Provides diagnosis, simple testing, treatments, and counseling services; may be independent or group practice</td>
</tr>
<tr>
<td>Long-term care center</td>
<td>Provides personal care for elderly and extended convalescent care</td>
</tr>
<tr>
<td>Outpatient care facility</td>
<td>Provides surgical, diagnostic, and ambulatory care</td>
</tr>
<tr>
<td>Clinic</td>
<td>Provides combination of practices, which may or may not be supported by public health care funding</td>
</tr>
<tr>
<td>Health maintenance</td>
<td>Provides health services at group rates</td>
</tr>
<tr>
<td>Home health care</td>
<td>Provides care in the home of the patient; may be publicly or privately owned</td>
</tr>
<tr>
<td>Hospice care</td>
<td>Provides medical and psychological care for the terminally ill, either in the home or at a hospice facility; may be private or part of another facility</td>
</tr>
<tr>
<td>Assisted living facility</td>
<td>Provides residents a way to live alone or with someone in an apartment; provides services as needed, including meals and health care</td>
</tr>
<tr>
<td>Day care</td>
<td>Provides care for the elderly or children and may include care for illness</td>
</tr>
<tr>
<td>Public health care</td>
<td>Provides care through federal, state, and local agencies for those who cannot afford to pay for health care and provides preventive services for the entire population</td>
</tr>
<tr>
<td>Voluntary organization</td>
<td>Provides research, education, and support for specific concerns; funded by donations and grants</td>
</tr>
</tbody>
</table>

CHAPTER 1 * Health Care of the Past, Present, and Future
part of the Department of Health and Human Services. It was established in 1978 to provide care for the American merchant seamen but has expanded to cover many other facets of health care (Box 1-4). The Department of Labor also regulates some health concerns through the Occupational Safety and Health Administration.

Health care is one of the largest industries in the United States. Currently, the supply of workers is less than the demand, creating opportunities and job security in many areas of health care. The cost of health care in the United States continues to increase much faster than in other factors in the cost of living. The Kaiser Family Foundation reported the expansion of health care to 16.2% of the gross domestic product (GDP) in 2007. Some of the reasons for rising health care costs are the advanced technological developments, malpractice litigation, increase in longevity, and disaster relief expenses. In 2007, the Commonwealth Fund’s annual survey found that the U.S. health care system to be the most costly and consistently underperforming, compared to the seven countries considered. According to the U.S. Treasury Department, a 2008 census report indicated that 15.4%, or 46.3 million of Americans, did not have health insurance.

In March 2010, the U.S. government passed the Affordable Care Act. Some provisions in the legislation took effect in 2010, with others becoming effective in 2014. For example, children with preexisting conditions will not be denied insurance on that basis beginning in 2010. Small business owners will receive a tax credit up to 35% of their premiums to insure employees. The constitutionality of some provisions of the bill, such as the mandatory requirement for individuals to have health insurance, is being challenged.

Medicare is the federal health program for individuals 65 or older, certain younger people with disabilities, and people with end-stage renal disease. Since 1984 Medicare has reimbursed for services on the basis of the diagnosis instead of the actual cost. Diagnosis-related groupings (DRGs) have greatly affected the health care industry by shortening the time allowed for treatment. In 2005, Medicare began offering a prescription drug program for applicants. Medicaid is a joint program between the federal and state governments. It helps provide health care coverage for individuals with low income and limited resources. Programs for Medicaid vary from state to state. The Social Security Act established both Medicare and Medicaid in 1965.

Insurance companies have established options designed to lower or tailor the cost of coverage to the individual need. These include managed care models, increased deductibles, coinsurance, copayments, and preventive care. Managed care insurance plans include health maintenance organizations (HMOs), preferred provider organizations (PPOs), and point-of-service (POS). In one type of HMO described as the staff model, the health care providers are employed by the organization and work in a designated facility. The independent-practice association model contracts physicians and other health care providers to provide care to the HMO members. POS plans generally allow members to select treatment either "in network" or for a greater cost, "out-of-network."

The traditional model of insurance (fee-for-service) may also include cost-containment measures similar to those of managed care. The insured person may choose a plan that provides a percentage of the cost or a specified amount (Table 1-4).

Health care cost-containment measures have included the promotion of wellness and early detection by screening. In 2005 the National Committee for

**TABLE 1-4**

<table>
<thead>
<tr>
<th>Indemnity (Fee-for-Service)</th>
<th>Managed Health Care (HMO, PPO, POS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment of a monthly fee</td>
<td>Payment of a monthly premium</td>
</tr>
<tr>
<td>Yearly deductible for individual and family</td>
<td>Co-payment for office visit</td>
</tr>
<tr>
<td>80%-20% split of care after deductible is met</td>
<td>Coinurance (70%/30% or 80%/20%)</td>
</tr>
<tr>
<td>Generally includes preventive care</td>
<td>Yearly deductible for individual and family</td>
</tr>
</tbody>
</table>

**FIGURE 1-2** The organizational structure of a health care facility.

**BOX 1-4**

**Department of Health and Human Services Divisions and Functions**

- **Administration for Children and Families (ACF):** Responsible for programs that assist needy children and families, including administration of the state and federal welfare programs, such as Head Start.
- **Administration on Aging (AOA):** Provides services for elderly, including Meals on Wheels.
- **Agency for Healthcare Research and Quality (AHRQ):** Provides information through research to help people make better decisions about health care in the areas of safety, medical error, and effective service.
- **Agency for Toxic Substances and Disease Registry (ATSDR):** Conducts health studies, assessments, and education training to prevent exposure to hazardous substances in waste sites.
- **Centers for Disease Control and Prevention (CDC):** Monitors and prevents outbreaks of disease, including maintaining statistics and providing immunizations.
- **Centers for Medicare and Medicaid Services (CMS):** Provides Medicare and Medicaid services for aged and disabled populations, which include about one in every four Americans.

**Health Resources and Services Administration (HRSA):** Provides services for underserved populations, such as migrant workers, the homeless, and public housing residents. This division is also responsible for the organ transplantation system, infant mortality, and services to people with AIDS.

**Indian Health Service (IHS):** Supports the hospitals and health centers that provide care to 557 federally recognized tribes of American Indians and Alaska Natives.

**National Institutes of Health (NIH):** Supports more than 35,000 research projects in diseases such as cancer, diabetes, and AIDS.

**Program Support Center (PSC):** Provides services for fee support services such as training and grant administration throughout the federal government.

**Substance Abuse and Mental Health Services Administration (SAMHSA):** Works to improve substance abuse and mental health prevention and services.

**Food and Drug Administration (FDA):** Regulates safety of food, cosmetics, pharmaceutical, biological products, and medical devices.

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**BRAIN BYTE**

The Centers for Medicare & Medicaid Services (CMS) estimate that the United States will spend $3.1 trillion on health care in 2012.
Qualifying Assurance (the accrediting agency for managed care plans) and the U.S. News & World Report magazine ranked plans across the United States. One characteristic of the plans was the management of chronic health conditions. For example, a health professional must monitor a patient's overall health by monitoring a patient with a chronic condition such as diabetes or hypertension.

Employers have reduced benefits and shifted the cost of health care to the employee. According to the Kaiser Family Foundation's Employee Benefits Survey, premiums for health insurance rose 5% in 2007. Some insurance companies offer a "cafeteria-style" selection from which employees may choose various types of coverage up to a specified cost limit (Fig. 1-3).

Other plans relating to health care include disability income insurance, long-term care insurance, medical savings accounts, and workers' compensation. Disability income insurance provides income if a person becomes too sick, injured, or unable to work. When a chronic illness or disability prevents a person from working for an extended period, long-term care insurance offsets the expense of care. In a medical savings account, contributions are made to the account from one's salary before being taxed and then can be used to cover qualifying medical expenses. The fund withdrawals for medical coverage made from this account are not taxed. The first workers' compensation law in the United States was passed in 1908, but it covered only federal employees; now, there are 55 such programs in the United States. Workers' compensation was designed to prevent litigation or lawsuits after the injury of an employee. Most programs pay medical expenses, lost earnings, and retraining costs when needed.

The Health Insurance Portability and Accountability Act (HIPAA) of 1996 allows employed individuals to maintain insurance coverage if they lose or change jobs. The act specifically limits exclusion of coverage caused by pre-existing conditions, prohibits denial of coverage because of prior illness, and guarantees the insured individual's right to purchase insurance if unemployed. It also mandates the formats for electronic data interchange of information, such as patient and care information. Chapters 2 and 3 provide more information about the HIPAA guidelines.

Hospitals are meeting the challenge of increased cost by becoming large corporate facilities and by forming partnerships with physicians or such as extended care. Many smaller hospitals have been forced to close or sell to larger corporations, which because of their size have better buying power. Some hospitals have refused care for patients who have conditions or diagnoses for which treatment is not financially profitable.

The rise in professional malpractice insurance has contributed greatly to the increase in health care costs. To prevent the risk of liability, some physicians practice defensive medicine, such as ordering many tests and avoiding care for high-risk patients. In the field of obstetrics, the cost has led some physicians to stop delivering infants. In many states the obstetrician has been held financially responsible for children up to 18 or 21 years of age for damage that may have occurred at birth. Studies indicate that in most of the cases which have been taken to court, the abnormalities initiating the suit were not related to medical care.

BRAIN BYTE
In 2006 the CDC estimated that 6.5% of the U.S. population did not get needed health care because of cost.

BRAIN BYTE
Several states, such as California, have passed laws that limit noneconomic damages from malpractice to $250,000.

Pharmaceutical companies are also using defensive economic strategies by reducing the manufacture of drugs that have a high risk of adverse affects. Concern about the liability of vaccine manufacture was addressed in the Homeland Security Act to encourage vaccine development. The Food and Drug Administration (FDA) requires extensive testing of drugs before allowing their use. The Orphan Drug Act allows the FDA to release some drugs early to meet the needs of the ill when other medications have not been developed for the disease.

The state of the economy, the values of society, the law of supply and demand, and technological developments all influence health care in the United States. The industry, patients, and workers are currently adapting to the new technologies and challenges of an advanced society. Health is no longer considered to be just the absence of illness or injury. Health is a state of optimal well-being, achieved through prevention of illness and injury. The health care workers of today are concerned with the physical, emotional, and social needs of their patients.

Those who choose a career in the health field seek more than economic security. Other factors to consider include the nature of the duties, the working conditions, and the opportunities for advancement in health care occupations. Knowing the number and location of jobs, methods and qualifications for employment, and the psychosocial factors involved in the work is also important. Health care provides an opportunity to work with people, data, or things to complement the interests and abilities of the worker (Fig. 1-4).

Most health care careers provide workers with an opportunity to meet new challenges, enjoy a stable salary and employment, and move to new locations. The Bureau of Labor Statistics projects the health services as one of the top 10 growing industries in 2012. Jobs in health care offer a good working environment, and others respect these workers. Many people have reached top-level positions in health care through a series of occupations or a career ladder, both of which provide experience and support during the process. For example, an entry-level assistant or phlebotomist in the laboratory may become a medical technician, technologist, and pathologist with additional education. Career change might also occur on a horizontal level rather than a vertical one. For example, a medical radiology technician prepared in computed tomography (CT) might complete additional training to qualify to take magnetic resonance images (MRIs). Advancement is
knowledge and technology that make it possible to save many trauma victims have created many new career opportunities.

The patient of today has become a "client," or "consumer" of health care services. A shift in responsibilities has resulted in the client taking more responsibility for his or her own care. Today clients of health care are consumers with a greater awareness of the effect of their lifestyle on related health conditions. To avoid confusion, the term patient will be used throughout this text. Obtaining second opinions, shopping for the lowest health care costs, and seeking alternative and complementary providers have become common practice.

In 1972 the American Hospital Association (AHA) adopted the Patient's Bill of Rights, which describes the rights of the patient to participate in the system of care. This has now been replaced with a pamphlet to improve consumer understanding (Box 1-5). Congress enacted the Nursing Home Reform Act in 1987, which provides similar requirements to protect nursing home residents and places a strong emphasis on individual dignity and self-determination (Box 1-6).

As those seeking care have more critical needs, advanced skills are required of workers. Professional associations and government agencies set standards to ensure the quality of education and training. Agencies of accreditation have been established to determine whether a training program meets acceptable standards. The professional associations of the health care occupation provide most agencies of accreditation.

Many occupational areas are regulated by law to ensure that the quality of care is acceptable. Health care workers may need licensure, certification, or registration to practice. Licensure is controlled by the state and is usually based on successful completion of an examination. Certification, which may be given by an agency or a training program, indicates successful completion of a particular course. Individuals who have met a criterion of excellence or legal responsibility may be registered in some fields. Registration may be earned through the state or through an agency. Recently the federal government has required specific
training for nursing assistants working in extended care facilities. Practicing without holding the proper credentials in the professions that are regulated is illegal.

**Health Care of the Future**

All people in the United States use the health care system during their lifetime. Health care of the future will continue to emphasize wellness and prevention instead of cure. Wellness services will include nutritional advice, stress-reduction counseling, habit- change management, and exercise instruction (Box 1-7). Concern for childhood obesity and related illnesses will also play a more central role. (In 2006, 17.6% of children ages 12 to 19 were reported to be overweight.) Technology will continue to drive the type and pace of changes in the industry.

One main area of service in the future will be care of the elderly. The population of the United States continues to age and live longer. With fewer children being born each year, the average age of an American has risen to 36.8 and will continue to increase. In 2008 it was reported that 38.9% of the U.S. population was 65 years or older, and it is projected that this number will rise to 12%; 57% of this group were 65 or older. Older people require three times the amount of health care as those in younger groups. Many older people experience at least one chronic disease, and about half have some type of limited movement. Health care of the future will provide rehabilitative services for the elderly population.

**BRAIN BYTE**

People under 20 make up 27.6% of the U.S. population, whereas 12.6% are over 65.

**CASE STUDY 1-1** You are caring for a patient in a long-term care facility. The patient does not seem to be able to stay upright in a chair. You would like to provide support around the patient. What should you do?

Answers to Case Studies are available on the Evolve website: http://evolve.elsevier.com/Gerdin

More small hospitals will close their doors, and the number of large urban institutions and state-of-the-art intensive care units will increase. Hospitals will continue to provide care for only the severely ill and injured and will reduce the number of beds for other patients, who will be treated in other settings, especially home care.

Alternative providers and treatments will continue to develop. One alternative that has increased in popularity and acceptance is holistic health. In this type of care, patients are seen as unique individuals who are responsible for their own care. Holistic health care uses many methods of diagnosis and treatment, of which traditional medical practice is just one. The National Institutes of Health (NIH) is currently providing research money for unconventional therapies through the Office of Alternative Medicine. These therapies include the use of bee pollen to control asthma, acupuncture for depression, hypnosis to speed bone healing, yoga to control addiction, and shark cartilage to reduce tumors. However, development of alternative provisions may lead to an increase in the incidence of quackery as patients look for alternative treatments (Box 1-8).

In 2001 Congress considered a Patient Bill of Rights that would allow the consumer to hold HMOs legally responsible for treatment choices and practices. Other provisions of the law would have allowed health care patients to seek care at the nearest emergency department, obtain perinatal care without a referral, and use a pediatrician as the primary physician for children. Although the bill passed in the Senate and a similar one passed in the House, a committee was not appointed to consider it, so it died.

**BOX 1-6**

**Twenty-Five Ways to Spot Quacks and Vitamin Pushers**

How can food quacks and other vitamin pushers be recognized? Here are 25 signs that should arouse suspicion:

1. When talking about nutrients, they tell only part of the story.
2. They claim that most Americans are poorly nourished.
3. They recommend "nutrition insurance" for everyone.
4. They say that most diseases are caused by dietary factors and can be treated with "nutritional" methods.
5. They allege that modern processing methods and storage remove all nutritive value from our food.
6. They claim that diet is a major factor in behavior.
7. They claim that fluoridation is dangerous.
8. They claim that soil depletion and the use of pesticides and "chemical" fertilizers result in food that is less safe and less nutritious.
9. They claim you are in danger of being "poisoned" by ordinary food additives and preservatives.
10. They charge that the recommended dietary allowances (RDAs) have been set too low.
11. They claim that under everyday stress and, in certain diseases, your need for nutrients is increased.

The impact of technology in the future can only be imagined. Some innovations that may become common include the inventions of nanotechnology and telemedicine. A physician can now view the intestines from the inside after the patient swallows a small camera. Some forms of blindness will be cured with a microchip within 10 years. Some patients are receiving daily monitoring of health care conditions through remote data collection and consultations using computers. Distance surgery has been performed using similar technology. Reombinant deoxyribonucleic acid (DNA) techniques will allow new types of gene therapy and fetal stem cell research. Technology will stimulate controversy, such as the use of cloning of humans and their organs.

12. They recommend "supplements" and "health foods" for everyone.
13. They claim that "natural" vitamins are better than "synthetic" ones.
14. They suggest that a questionnaire can be used to indicate whether you need dietary supplements.
15. They say it is easy to lose weight.
16. They promise quick, dramatic, miraculous results.
17. They routinely sell vitamins and other "dietary supplements" as part of their practice.
18. They use disclaimers couched in pseudo-medical jargon.
19. They use anecdotes and testimonials to support their claims.
20. They say that sugar is a deadly poison.
21. They display credentials not recognized by responsible scientists or educators.
22. They offer to determine your body's nutritional state with a laboratory test or a questionnaire.
23. They claim they are being persecuted by orthodox medicine and that their work is being suppressed because it is controversial.
24. They warn you not to trust your doctor.
25. They encourage patients to lend political support to their treatment methods.

**CASE STUDY 1-2** You use a personal digital assistant (PDA) to record vital signs digitally. One of your co-workers asks you to lend him use your password to record his data because he cannot remember his. What should you do?

Answers to Case Studies are available on the Evolve website: http://evolve.elsevier.com/Gerdin

The Internet provides the patient with a wealth of information about a condition or disease; however, the information may or may not come from a reputable health care practitioner. The Internet gives the consumer access to clinical trials and research results. It also provides a way to buy pharmaceuticals, which...
may or may not be effective. With the increasing use of computers and technology in health care, the issue of privacy of information will become a central concern of the future.

The health care team will become more responsible for relieving some of the ills of society, such as the "border babies" and other abandoned children. Border babies are well infants who are left in hospitals because their mothers are unable to care for them due to drug addiction or poverty. Some states have passed laws that allow a mother to abandon an infant at a site designated a "safe haven" without fear of legal repercussions. In 48 states a baby may be left at a fire station or hospital with no questions asked.

The health care worker of the future must be trained for a broad range of skills and know about many areas of care. Fig. 1-5 demonstrates the relationship of the clusters defined by a project led by WestEd, from 1992 to 1996, and their related academic content. The project included health care workers, industry representatives, and education participants. Box 1-9 provides more specific descriptions and skill standards for each of the clusters that have been established. The placement of career opportunities in the clusters as described by the National Consortium on Health Science and Technology Education is shown in Fig. 1-6.

Additionally, the worker must be flexible, know how to solve problems as they arise, and use independent judgment. He or she must be willing to continue to learn and adapt to new technologies. The health care workers of the future will be highly regulated to ensure the quality of care that is provided. Technicians will continue to be trained to become multicompetent so that they can offer more than one kind of service. Expanded skills for health practitioners will be used in many facilities, especially in small hospitals, as fewer professional and more technical staff members are employed.

**CASE STUDY 1-3** During conversation one of your assigned patients shares with you that she does not have health insurance and will have to pay the bill herself. She asks you to cut corners for her care. What should you do?

Answers to Case Studies are available on the Evolve website: http://evolve.elsevier.com/Gerdin

On September 11, 2001, the World Trade Center and Pentagon were attacked by terrorists, killing more than 3000 people. After that date, several cases of anthrax occurred in various parts of the country. During 2005 natural disasters such as Hurricane Katrina and Rita added new challenges to the industry. The health care team will need to make adjustments with the rest of society to deal with this new phase of American history. Emergency care providers and procedures will grow in number and specialization to deal with the reality of emergency response and bioterrorism. Additionally, security measures for all public facilities, including research and health care facilities, will be a concern.

**CASE STUDY 1-4** While giving daily care, a patient asks you whether the doctor who is handling his case is a good physician. What should you do?

Answers to Case Studies are available on the Evolve website: http://evolve.elsevier.com/Gerdin

**FIGURE 1-5** National health care skill standard model. A biotechnology and research career pathway has been added to the model. (Courtesy WestEd, San Francisco, Calif.)

**Summary**

- The state of the economy, the values of society, the law of supply and demand, and technological developments influence the health care industry.
- Pursuing a health care career offers several advantages, including economic security, an opportunity to meet new challenges, and mobility.
- An example of a career ladder in health care that may be followed with additional education and training is the transition of a nurse assistant to licensed practical nurse to registered nurse.
- Some of the factors that may be part of choosing an occupation include the working conditions, nature of the job, and opportunities for advancement.
Pathway

Cluster Knowledge and Skills
+ Academic Foundation + Communications + Systems + Employability Skills + Legal Responsibilities + Ethics + Safety Practices + Teamwork + Health Maintenance Practices + Technical Skills + Information Technology Applications

Therapeutic Services
+ Acupuncturist
+ Aromatherapy Therapist
+ Art / Music / Dance Therapist(s)
+ Athletic Trainer
+ Audiolingual
+ Certified Nursing Assistant
+ Chiropractor
+ Dental Assistant / Hygienist
+ Dental Lab Technician
+ Dentist
+ Dietitian
+ Dietitian Nutritionist
+ EMT
+ Exercise Physiologist
+ Home Health Aide
+ Kinesthetic Therapist
+ Licensed Practical Nurse
+ Massage Therapist
+ Medical Assistant
+ Midwife
+ Occupational Therapist / Outpatient Orthopedic/Musculoskeletal
+ Ophthalmic Medical Personnel
+ Optometrist
+ Oral Health Therapist
+ Paramedic
+ Pharmacists / Pharmacy Tech
+ Physical Therapist / Assistant
+ Physician (MD/DO)
+ Physician’s Assistant
+ Psychologist
+ Recreation Therapist
+ Registered Nurse
+ Respiratory Therapist
+ Social Worker
+ Speech Language Pathologist
+ Surgical Technician
+ Veterinarian / Vet Tech

Diagnostics Services
+ Cardiovascular Technologist
+ Clinical Lab Technician
+ Computed Tomography (CT) Technologist
+ Cytopathologist
+ Cytogeneticist
+ Diagnostic Medical Sonographer
+ Electrophysiology (EKG) Technician
+ Electrocardiograph/Telemetry
+ Exercise Physiologist
+ Genetic Counselor
+ Hematologist
+ Magnetic Resonance Imaging
+ Medical Technologist / Clinical Laboratory Scientist
+ Nuclear Medicine Technologist
+ Nutritionist
+ Pathologist
+ Pathology Assistant
+ Physicist
+ Positron Emission Tomography (PET) Technologist
+ Radiologic Technologist/Radiographer
+ Radiologist

Health Informatics

Support Services
+ Admissions Clerk
+ Applied Researcher
+ Community Services Specialist
+ Data Analyst
+ Epidemiologist
+ Ethicist
+ Health Educator
+ Health Information Coder
+ Health Information Services Worker
+ Healthcare Administrator
+ Medical Assistant
+ Medical Biller / Patient Financial Services Rep
+ Medical Information Technologist
+ Medical Laboratory Scientist
+ Patient Advocate
+ Public Health Educator
+ Rehabilitation Specialist (HFA)
+ Risk Management
+ Social Worker
+ Transplant Coordinator
+ Unit Coordinator
+ Utilization Manager

Biotechnology Research and Development
+ Biomedical / Clinical Engineer
+ Biomedical / Clinical Technologist
+ Central Service
+ Environmental Health and Safety
+ Environmental Services
+ Facilities Manager
+ Food Service
+ Hospital Maintenance Engineer
+ Industrial Hygienist
+ Materials Management
+ Transport Technologist

Critical Thinking
1. Decide or deny the idea that the microscope is an illusion. Why? Support your answer with research and evidence. Consider the implications for the development of microscopic technologies and their applications.

2. Think about the implications of genetic modification and its effects on the environment. How do we balance the benefits and risks associated with genetic modification? What ethical considerations must be taken into account when exploring this technology?

3. Discuss the importance of energy conservation in today’s society. How can individuals and communities contribute to sustainable energy practices? Consider the role of technology in promoting renewable energy sources.

4. Analyze the impact of social media on mental health. How do social media platforms affect self-esteem, anxiety, and depression? What strategies can be implemented to foster a healthier online environment?

5. Evaluate the effectiveness of alternative medicine practices such as acupuncture, herbal medicine, and chiropractic care. Compare and contrast these practices with traditional medical interventions. Consider the role of cultural and societal factors in the acceptance and integration of these practices.

6. Consider the potential of artificial intelligence in addressing healthcare challenges. How can AI be utilized to improve diagnostic accuracy, patient outcomes, and resource allocation? Explore the ethical and legal implications of incorporating AI in healthcare systems.
personal opinion regarding the CDC decision in July 2009 to discontinue probable case counts for this flu.

10. Use the Internet to write a report or present an effective oral presentation that describes the health care reform bill provisions.

11. Use the Internet to research the impact of local, state, and national government on one aspect of the health care industry. Write an essay or present an effective oral presentation that compares the impact at each level of government.

**Explore the Web**

Health Care Reform Bill
[HealthCareReform.gov](http://www.healthcare.gov/)

Patient’s Rights
[National Association for Home Care & Hospice](http://www.nahc.org/home.html)

Workers’ Compensation

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**STANDARDS AND ACCOUNTABILITY**

**Foundation Standard 3: Systems**

Healthcare professionals will understand how their role fits into their department, their organization and the overall healthcare environment. They will identify how key systems affect services they perform and quality of care.

**Accountability Criteria**

3.1 Healthcare Delivery Systems

3.11 Understand the healthcare delivery system (public, private, government, and non-profit).

3.12 Explain the factors influencing healthcare delivery systems.

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**Insurance**

- HowStuffWorks: Health Insurance
  [http://health.howstuffworks.com/health-insurance.htm](http://health.howstuffworks.com/health-insurance.htm)
- HowStuffWorks: Car Insurance

**Emergency Preparedness**

- CDC Emergency Preparedness

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**Epidemics**

- Wikipedia: Epidemics
- Mayo Clinic: H1N1 Flu
- WHO: Flu
- CDC: H1N1 Flu
  [http://www.cdc.gov/h1n1flu/surveillanceqa.htm](http://www.cdc.gov/h1n1flu/surveillanceqa.htm)

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**Medical Milestones**

- 1518: College of Physicians is established in London.
- 1543: First anatomy textbook is published by Vesalius.
- 1590: Zacharias Janssen invents the compound microscope.
- 1628: William Harvey describes the circulation of blood.
- 1666: Anton van Leeuwenhoek uses the microscope to view microorganisms.
- 1670: Thomas Willis makes a connection between sugar in the urine and diabetes.
- 1796: Edwin Jenner develops the smallpox vaccine.
- 1816: Rene Laennec invents the stethoscope.
- 1818: James Blundell performs the first successful blood transfusion in humans.
- 1839: First dental school is founded in Baltimore.
- 1842: Crawford Long develops ether anesthesia.
- 1854: Florence Nightingale begins nursing soldiers and reforming the nursing profession.
- 1863: International Red Cross is established.
- 1865: Sir Joseph Lister uses asepsis in surgery.
- 1868: Thermometer is introduced to take body temperature.
- 1869: Gregor Mendel develops the laws of heredity.
- 1882: Robert Koch discovers that pathogens cause disease.
- 1887: Anne Sullivan helps Helen Keller communicate for the first time.
- 1893: Aspirin is developed.
- 1895: Wilhelm Rontgen discovers x-rays.
- 1898: Ronald Ross discovers that malaria is carried by mosquitoes.
- 1900: Blood groups are discovered.
- 1901: Jokichi Takamine isolates the first hormone, adrenaline.
- 1910: Marie Curie isolates radium, later used to treat cancer.
- 1912: Sir F. Gowland Hopkins determines that some diseases are caused by lack of "accessory substances," later named vitamins.
- 1914: John B. Watson establishes the behaviorist theory of psychology.
- 1918: Francis Benedict develops a procedure to test basal metabolic rate.
- 1922: Frederick G. Banting treats diabetes with insulin.
- 1928: Sir Alexander Fleming discovers penicillin.
- 1937: First blood bank is established in Chicago.
- 1937: Alton Ochsner and Michael De Bakey link lung cancer to cigarette smoking.
- 1944: First kidney dialysis machine is developed.
- 1944: DNA is proved to be the hereditary plan.
- 1948: Philip Hench and Edward Kendall synthesize cortisone.
- 1952: Jonas Salk develops a vaccine to prevent polioymyelitis.
- 1953: First heart-lung machine is used for successful open-heart surgery.
- 1953: First successful kidney transplantation is performed.
- 1961: First continuously operating laser is developed for surgical use.
- 1962: Rachel Carson, in Silent Spring, describes the poisoning of the environment by pesticides.
- 1963: Thomas Starzl performs the first human liver transplantation.
- 1964: James Hardy performs the first human lung transplantation.
- 1966: First hormone, insulin, is synthesized.
- 1967: Christian Barnard performs the first successful heart transplantation.
- 1967: First penicillin-resistant pneumococcal strain is reported.
- 1969: Denton Cooley implants the first temporary artificial heart.
- 1972: Computed tomography (CT scan) is introduced.
- 1975: Lyme disease is reported for the first time.
- 1977: Human growth hormone is produced by bacteria using recombinant DNA technology.
- 1978: The first "test tube" baby is born in England.

Continued
Medical Milestones—cont’d
1981 AIDS is identified as a disease.
1981 First successful surgery on a fetus is performed in California.
1984 First baby is conceived from a frozen embryo in Australia.
1984 Virus that causes AIDS is identified.
1990 Genetically engineered blood cells are used to treat immune disorders, first
gene therapy.
1990 U.S. Congress passes Patient Self-Determination Act (PSDA), an amendment
to the Omnibus Reconciliation Act.
1992 Method for detection of cystic fibrosis
gene is developed in England.
1993 Embryos are screened for genetic abnormalities before implantation.
1993 Human embryo is cloned.
1993 Genes that cause glaucoma, amyotrophic lateral sclerosis, Mende syndrome,
colorectal cancer, xeroderma pigmentosum, Hirschsprung disease,
Cancer disease, and Wilms tumor are identified.
1994 Breast cancer gene (BRCA2) and 22
mutations are identified.
1994 Test is developed for detection of colon cancer caused by a mutant gene.
1994 Gene therapy is used to treat the inherited form of high cholesterol.
1994 Normal gene is transferred into the lungs of an individual with cystic fibrosis.
1994 Scientists in Boston devise an eye
evamination to detect Alzheimer disease.
1997 Dolly, a sheep, is introduced as the first
mammal to be cloned from somatic cells.
1998 Stem cells are isolated from fetal tissues.
1999 Artificial bladder is grown from cells for
implantation in humans.
2000 Human genome mapping project is completed.
2001 Human embryo is created through cloning.
2002 First robot-assisted coronary artery bypass surgery is performed.
2002 Josef Penninger and Peter Bacsky identify
two genes, one that contributes to and
one that protects against heart failure.
2003 First molecular diagnostic test for severe acute respiratory syndrome (SARS) is
developed in Canada.
2003 Carlo Urbani of Doctors without Borders
alerts WHO of threat from SARS, leading
to effective response.
2004 First outbreak of polio in 26 years occurs
in Minnesota.
2005 PillCam endoscopic camera pill receives
the Technology Innovation Award.
2005 Jean-Michel Dubernard performs first partial face transplant.
2005 Marshall and Warren are awarded the
Nobel Prize in Physiology and Medicine
for the discovery of the bacterium
Helicobacter pylori and its role in peptic ulcer disease.
2006 FDA approves over-the-counter sale of
Plan B, a "morning after" contraceptive, to women 16 and older.
2006 First human papillomavirus vaccine approved.
2007 Human skin cells used to create
eymphonic stem cells.
2008 Laurent Lantieri performs first full face
transplant.
2009 U.S. President Obama signs Children's Health Insurance Reauthorization Act.
2009 WHO declares outbreak of H1N1 virus to be a global pandemic.
2010 U.S. Congress passes and President
Obama signs Affordable Care Act.

Interpersonal Dynamics
and Communications

LEARNING OBJECTIVES
- Define at least 10 words relating to the health care worker’s characteristics
  and abilities.
- Describe the relationship among values, attitudes, and behavior.
- Describe the hierarchy of needs established by Abraham Maslow.
- Identify at least five methods of maintaining good personal health and
  professional appearance.
- Use a problem-solving system to make a decision that involves identification
  of alternatives, risks, and evaluation of the outcome.
- Identify the elements of effective communication and at least three factors
  that might interfere with it.
- Describe at least one example of assertive communication that requires a
  change in behavior.

KEY TERMS
Attitude (AT-in-tood) Mental position or feeling with regard to a fact or situation
Behavior (be-HAY-rih) Manner of conducting oneself
Character (KARE-er) Distinctive qualities that make up an individual
Communication (kuh-myoo-nil-KAY-uh) Exchange of information
Culture (KUL-cher) Sum of the socially gained patterns that guide a person’s way of life,
including values, beliefs, language, and thought
Diversity (de-VUR-sih) Quality of being different
Habit (HA-bit) Act performed voluntarily without conscious thought
Hierarchy (Hi-er-ark-ee) Graded or ranked series
Nonverbal (non-VER-bul) Communicating without using language