

TABLE 1-1 History of Health Care in Ancient Times

Historical Events of Health Care in Ancient Times	
4000 BC–3000 BC Primitive Times	<p>Believed that illness and disease were caused by supernatural spirits and demons</p> <p>Tribal witch doctors treated illness with ceremonies to drive out evil spirits</p> <p>Herbs and plants used as medicines, and some are still used today</p> <p>Trepanation or trephining (boring a hole in the skull) was used to treat insanity and epilepsy</p> <p>Average life span was 20 years</p>
3000 BC–300 BC Ancient Egyptians	<p>Earliest people known to maintain accurate health records</p> <p>Called upon the gods to heal them when disease occurred</p> <p>Physicians were priests who studied medicine and surgery in temple medical schools</p> <p>Imhotep (2635–2595? BC) may have been the first physician</p> <p>Believed the body was a system of channels for air, tears, blood, urine, sperm, and feces</p> <p>If channels became "clogged," bloodletting or leeches were used to "open" them</p> <p>Used magic and medicinal plants to treat disease</p> <p>Average life span was 20 to 30 years</p>
1700 BC–220 AD Ancient Chinese	<p>Religious prohibitions against dissection resulted in inadequate knowledge of body structure</p> <p>Carefully monitored the pulse to determine the condition of the body</p> <p>Believed in the need to treat the whole body by curing the spirit and nourishing the body</p> <p>Recorded a pharmacopoeia (an official drug directory) of medications based mainly on the use of herbs</p> <p>Used acupuncture, or puncture of the skin by needles, to relieve pain and congestion</p> <p>Also used moxibustion (a powdered substance was placed on the skin and then burned to cause a blister) to treat disease</p> <p>Began the search for medical reasons for illness</p> <p>Average life span was 20 to 30 years</p>
1200 BC–200 BC Ancient Greeks	<p>Began modern medical science by observing the human body and effects of disease</p> <p>Biochemist Alcmaeon in 6th century BC identified the brain as the physiological site of the senses</p> <p>Hippocrates (460–377 BC) called the Father of Medicine:</p> <ul style="list-style-type: none"> • Developed an organized method to observe the human body • Recorded signs and symptoms of many diseases • Created a high standard of ethics, the Oath of Hippocrates, used by physicians today <p>Aristotle (384–322 BC) dissected animals and is called the founder of comparative anatomy</p> <p>Believed illness is a result of natural causes</p> <p>Used therapies such as massage, art therapy, and herbal treatment that are still used today</p> <p>Stressed diet and cleanliness as ways to prevent disease</p> <p>Average life span was 25 to 35 years</p>
753 BC–410 AD Ancient Romans	<p>First to organize medical care by providing care for injured soldiers</p> <p>Early hospitals developed when physicians cared for ill people in rooms in their homes</p> <p>Later hospitals were religious and charitable institutions housed in monasteries and convents</p> <p>Began public health and sanitation systems:</p> <ul style="list-style-type: none"> • Created aqueducts to carry clean water to the cities • Built sewers to carry waste materials away from the cities • Used filtering systems in public baths to prevent disease • Drained marshes to reduce the incidence of malaria <p>Claudius Galen (129–199? AD), a physician, established many medical beliefs:</p> <ul style="list-style-type: none"> • Body regulated by four fluids or humors: blood, phlegm, black bile, and yellow bile • An imbalance in the humors resulted in illness • Described symptoms of inflammation and studied infectious diseases • Dissected animals and determined function of muscles, kidney, and bladder <p>Diet, exercise, and medications were used to treat disease</p> <p>Average life span was 25 to 35 years</p>

TABLE 1-2 History of Health Care in the Dark Ages and the Middle Ages

Historical Events of Health Care in the Dark Ages and the Middle Ages	
400–800 AD Dark Ages	<p>Emphasis was placed on saving the soul and the study of medicine was prohibited</p> <p>Prayer and divine intervention were used to treat illness and disease</p> <p>Monks and priests provided custodial care for sick people</p> <p>Medications were mainly herbal mixtures</p> <p>Average life span was 20 to 30 years</p>
800–1400 AD Middle Ages	<p>Renewed interest in the medical practices of Greeks and Romans</p> <p>Physicians began to obtain knowledge at medical universities in the 9th century</p> <p>A pandemic (worldwide epidemic) of the bubonic plague (black death) killed three quarters of the population of Europe and Asia</p> <p>Major diseases were smallpox, diphtheria, tuberculosis, typhoid, the plague, and malaria</p> <p>Arab physicians used their knowledge of chemistry to advance pharmacology</p> <p>Rhazes (al-Razi), an Arab physician, became known as the Arab Hippocrates:</p> <ul style="list-style-type: none"> • Based diagnoses on observations of the signs and symptoms of disease • Developed criteria for distinguishing between smallpox and measles in 910 AD • Suggested blood was the cause of many infectious diseases • Began the use of animal gut for suture material <p>Arabs began requiring that physicians pass examinations and obtain licenses</p> <p>Avenzoar, a physician, described the parasite causing scabies in the 12th century</p> <p>Average life span was 20 to 35 years</p>

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TABLE 1-3 History of Health Care in the Renaissance

Historical Events of Health Care in the Renaissance	
1350–1650 AD Renaissance	<p>Rebirth of science of medicine</p> <p>Dissection of the body began to allow a better understanding of anatomy and physiology</p> <p>Artists Michelangelo (1475–1564) and Leonardo da Vinci (1452–1519) used dissection to draw the human body more realistically</p> <p>First chairs (positions of authority) of medicine created at Oxford and Cambridge in England in 1440</p> <p>Development of the printing press allowed knowledge to be spread to others</p> <p>First anatomy book was published by Andreas Vesalius (1514–1564)</p> <p>First book on dietetics written by Isaac Judaeus</p> <p>Michael Servetus (1511–1553):</p> <ul style="list-style-type: none"> • Described the circulatory system in the lungs • Explained how digestion is a source of heat for the body <p>Roger Bacon (1214?–1294):</p> <ul style="list-style-type: none"> • Promoted chemical remedies to treat disease • Researched optics and refraction (bending of light rays) <p>Average life span was 30 to 40 years</p>

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the Renaissance. This period is often referred to as the “rebirth of the science of medicine.” The major source of new information about the human body was a result of accepting and allowing human dissection. Physicians could now view body organs and see the connection between different systems in the body. Artists, such as Michelangelo and Leonardo da Vinci, were able to draw the body accurately. In addition, the development

of the printing press resulted in the publication of medical books that were used by students at medical universities. Knowledge spread more rapidly. Physicians were more educated.

The life span increased to an average age of 30 to 40 years during the Renaissance, but common infections still claimed many lives. At this point in time, the actual causes of disease were still a mystery.

TABLE 1-4 History of Health Care in the 16th, 17th, and 18th Centuries

Historical Events of Health Care in the 16th, 17th, and 18th Centuries	
16th and 17th Centuries	<p>Causes of disease were still not known and many people died from infections and puerperal (childbirth) fever</p> <p>Ambroise Paré (1510–1590), a French surgeon, known as the Father of Modern Surgery:</p> <ul style="list-style-type: none"> • Established the use of ligatures to bind (use of thread or suture to tie off) arteries and stop bleeding • Eliminated the use of boiling oil to cauterize (burning to remove or close off) wounds • Improved treatment of fractures and promoted use of artificial limbs <p>Gabriel Fallopius (1523–1562):</p> <ul style="list-style-type: none"> • Identified the fallopian tubes in the female • Described the tympanic membrane in the ear <p>William Harvey (1578–1657) described the circulation of blood to and from the heart in 1628</p> <p>Anton van Leeuwenhoek (1632–1723) invented the microscope in 1666</p> <p>First successful blood transfusion on animals performed in England in 1667</p> <p>Bartolomeo Eustachio identified the eustachian tube leading from the ear to the throat</p> <p>Scientific societies, such as the Royal Society of London, were established</p> <p>Apothecaries (early pharmacists) made, prescribed, and sold medications</p> <p>Average life span was 35 to 45 years</p>
18th Century	<p>Gabriel Fahrenheit (1686–1736) created the first mercury thermometer in 1714</p> <p>Joseph Priestley (1733–1804) discovered the element oxygen in 1774</p> <p>John Hunter (1728–1793), an English surgeon:</p> <ul style="list-style-type: none"> • Established scientific surgical procedures • Introduced tube feeding in 1778 <p>Benjamin Franklin (1706–1790) invented bifocals for glasses</p> <p>Dr. Jesse Benet performed the first successful Cesarean section operation to deliver an infant in 1794</p> <p>James Lind prescribed lime juice containing vitamin C to prevent scurvy in 1795</p> <p>Edward Jenner (1749–1823) developed a vaccination for smallpox in 1796</p> <p>Average life span was 40 to 50 years</p>

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The 16th, 17th, and 18th Centuries

Table 1-4 lists many of the historical events that occurred during the 16th, 17th, and 18th centuries. During this period, physicians gained an increased knowledge of the human body. William Harvey described the circulation of blood. Gabriel Fallopius described the tympanic membrane in the ear and the fallopian tubes of a female. Bartolomeo Eustachio identified the tube between the ear and throat. These discoveries allowed other physicians to see how the body functioned.

A major development was the invention of the microscope by Anton van Leeuwenhoek (See Biography box for more information about Anton van Leeuwenhoek). This allowed physicians to see organisms that are too small to be seen by the human eye. Even though they were not aware of it at the time, physicians were looking at many of the pathogenic organisms (germs) that cause disease. The microscope continues to be a major diagnostic tool.

This period also saw the start of drug stores, or pharmacies. Apothecaries (early pharmacists) made,

prescribed, and sold medications. Many of the medications were made from plants and herbs similar to those used in ancient times. At the end of the 18th century, Edward Jenner developed a vaccine to prevent smallpox, a deadly disease.

During this time, the average life span increased to 40 to 50 years. However, the causes of many diseases were still unknown, and medical care remained limited.

The 19th Century

Table 1-5 lists many of the historical events that occurred during the 19th century, a period also known as the Industrial Revolution. Major progress in medical science occurred because of the development of machines and ready access to books.

Early in the century, René Laënnec invented the stethoscope (See Biography box for more information about René Laënnec). This invention allowed physicians to listen to internal body sounds, which increased their knowledge of the human body.

TABLE 1-5 History of Health Care in the 19th Century

Historical Events of Health Care in the 19th Century	
19th Century	<p>Royal College of Surgeons (medical school) founded in London in 1800</p> <p>French barbers acted as surgeons by extracting teeth, using leeches for treatment, and giving enemas</p> <p>First federal vaccination legislation enacted in 1813</p> <p>First successful blood transfusion was performed on humans in 1818 by James Blundell</p> <p>René Laënnec (1781–1826) invented the stethoscope in 1816</p> <p>Dr. Philippe Pinel (1755–1826) began humane treatment for mental illness</p> <p>Pandemic of cholera in 1832</p> <p>Theodor Fliedner started one of the first training programs for nurses in Germany in 1836, which provided Florence Nightingale with her formal training</p> <p>In the 1840s, Ignaz Semmelweis (1818–1865) encouraged physicians to wash their hands with lime after performing autopsies and before delivering babies to prevent puerperal (childbirth) fever, but the idea was resisted by hospital and medical personnel</p> <p>Dr. William Morton (1819–1868), an American dentist, began using ether as an anesthetic in 1846</p> <p>Dr. James Simpson (1811–1870) began using chloroform as an anesthetic in 1847</p> <p>American Medical Association was formed in Philadelphia in 1847</p> <p>Elizabeth Blackwell (1821–1910) became the first female physician in the United States in 1849; started the first Women's Medical College in New York in 1868</p> <p>American Pharmaceutical Association held its first convention in 1853</p> <p>Florence Nightingale (1820–1910) was the founder of modern nursing:</p> <ul style="list-style-type: none"> Established efficient and sanitary nursing units during Crimean War in 1854 Opened Nightingale School and Home for Nurses at St. Thomas' Hospital in London in 1860 Began the professional education of nurses <p>Dorothea Dix (1802–1887) appointed Superintendent of Female Nurses of the Army in 1861</p> <p>International Red Cross was founded in 1863</p> <p>Joseph Lister (1827–1912) started using disinfectants and antiseptics during surgery to prevent infection in 1865</p> <p>Elizabeth Garrett Anderson (1836–1917) became the first female physician in Britain in 1870 and the first woman member of the British Medical Association in 1873</p> <p>Paul Ehrlich (1854–1915), a German bacteriologist, developed methods of detecting and differentiating between various diseases, developed the foundation for modern theories of immunity, and used chemicals to eliminate microorganisms</p> <p>Francis Clarke and M. G. Foster patented the first electrical hearing aid in 1880</p> <p>Clara Barton (1821–1912) founded the American Red Cross in 1881</p> <p>Robert Koch (1843–1910), another individual who is also called the "Father of Microbiology," developed the culture plate method to identify pathogens and in 1882 isolated the bacteria that causes tuberculosis</p> <p>Louis Pasteur (1822–1895) contributed many discoveries to the practice of medicine including:</p> <ul style="list-style-type: none"> Providing that microorganisms cause disease Pasteurizing milk to kill bacteria Creating a vaccine for rabies in 1885 <p>Gregory Mendel (1822–1884) established principles of heredity and dominant/recessive patterns</p> <p>Dimitri Ivanofsky discovered viruses in 1892</p> <p>Lillian Wald (1867–1940) established the Henry Street Settlement in New York City in 1893 (the start of public health nursing)</p> <p>Dr. Emile Roux of Paris developed a vaccine for diphtheria in 1894</p> <p>Wilhelm Roentgen (1845–1923) discovered roentgenograms (X-rays) in 1895</p> <p>Almroth Wright developed a vaccine for typhoid fever in 1897</p> <p>Bayer introduced aspirin in powdered form in 1899</p> <p>Bacteria causing gonorrhea and leprosy were discovered and identified</p> <p>Average life span was 40 to 60 years</p>

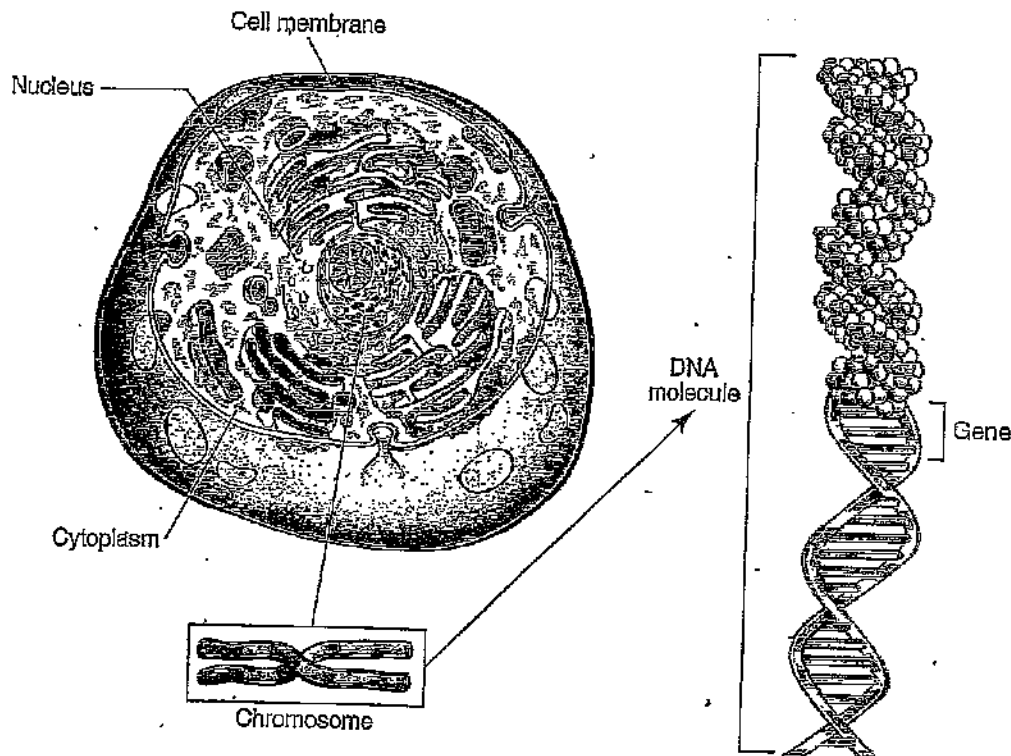


FIGURE 1-2 The discovery of the structure of DNA and how it carries genetic (Inherited) information was the beginning of research on how to cure inherited diseases by gene therapy. Copyright © Cengage Learning ©. All Rights Reserved.

TABLE 1-6 History of Health Care in the 20th Century

Historical Events of Health Care in the 20th Century	
20th Century	<p>Walter Reed demonstrated that mosquitoes carry yellow fever in 1900</p> <p>Carl Landsteiner classified the ABO blood groups in 1901</p> <p>Female Army Nurse Corps established as a permanent organization in 1901</p> <p>Miller Reese of New York patented the battery-driven hearing aid in 1901</p> <p>Dr. Harry Plotz developed a vaccine against typhoid in 1903</p> <p>Dr. Elie Metchnikoff (1845–1916) Identified how white blood cells protect against disease</p> <p>Marie Curie (1867–1934) Isolated radium in 1910</p> <p>Sigmund Freud's (1856–1939) studies formed the basis for psychology and psychiatry</p> <p>Influenza (flu) pandemic killed more than 21 million people in 1918</p> <p>Frederick Banting and Charles Best discovered and used insulin to treat diabetes in 1922</p> <p>Health Insurance plans and social reforms were developed in the 1920s</p> <p>Mary Breckinridge (1881–1965) founded Frontier Nursing Service in 1925 to deliver health care to rural Kentuckians</p> <p>Sir Alexander Fleming (1881–1955) discovered penicillin in 1928</p> <p>Buddy, a German shepherd, became the first guide dog for the blind in 1928</p> <p>The Ransdell Act reorganized the Laboratory of Hygiene that started in 1887 into the National Institute of Health (NIH) in 1930</p> <p>John Enders and Frederick Robbins developed methods to grow viruses in cultures in the 1930s</p> <p>Dr. Robert Smith (Dr. Bob) and William Wilson founded Alcoholics Anonymous in 1935</p> <p>President Franklin Roosevelt established the March of Dimes to fight poliomyelitis in 1937</p> <p>Gerhard Domagk (1895–1964) developed sulfa drugs to fight infections</p> <p>Dr. George Papanicolaou developed the Pap test to detect cervical cancer in females in 1941</p> <p>The first kidney dialysis machine was developed in 1944</p> <p>Jonas Salk (1914–1995) developed the polio vaccine using dead polio virus in 1952</p> <p>Francis Crick and James Watson described the structure of DNA and how it carries genetic information in 1953</p>

(continues)

TABLE 1-6 History of Health Care in the 20th Century (continued)

Historical Events of Health Care in the 20th Century
<p>The first heart-lung machine was used for open-heart surgery in 1953</p> <p>Conjoined (Siamese) twins were separated successfully for the first time in 1953</p> <p>The first successful kidney transplant in humans was performed by Joseph Murray in 1954</p> <p>Albert Sabin (1906–1993) developed an oral live-virus polio vaccine in the mid-1950s</p> <p>Birth control pills approved by the U.S. Food and Drug Administration (FDA) in 1960</p> <p>An arm severed at the shoulder was successfully reattached to the body in 1962</p> <p>The first liver transplant was performed by Thomas Starzl in 1963</p> <p>The first lung transplant was performed by James Hardy in 1964</p> <p>The Medicare and Medicaid 1965 Amendment to the Social Security Act marked the entry of the federal government into the health care arena as a major purchaser of health services</p> <p>The first successful heart transplant was performed by Christian Barnard in 1967</p> <p>The first hospice was founded in England in 1967</p> <p>The Uniform Anatomical Gift Act (UAGA) was passed in 1968 to allow individuals to authorize the donation of all or part of the human body after death for specified purposes</p> <p>Hargobind Khorana synthesized a gene in 1970</p> <p>The Health Maintenance Organization Act of 1973 established standards for HMOs and provided an alternative to private health insurance</p> <p>Physicians used amniocentesis to diagnose inherited diseases before birth in 1975</p> <p>Computerized axial tomography (CAT) scan was developed in 1975</p> <p>New Jersey Supreme Court ruled that parents of Karen Ann Quinlan, a comatose woman, had the power to remove life support systems in 1975</p> <p>The first "test tube" baby, Louise Brown, was born in England in 1978</p> <p>Genetic engineering led to development of vaccines against hepatitis, herpes simplex, and chicken pox in the 1980s</p> <p>Acquired immune deficiency syndrome (AIDS) was identified as a disease in 1981</p> <p>Dr. William DeVries implanted the first artificial heart, the Jarvik-7, in 1982</p> <p>Cyclosporine, a drug to suppress the immune system after organ transplants, approved in 1983</p> <p>The human immunodeficiency virus (HIV) causing AIDS was identified in 1984</p> <p>The Omnibus Budget Reconciliation Act (OBRA) of 1987 established regulations for the education and certification of nursing assistants</p> <p>The Clinical Laboratory Improvement Act (CLIA) was passed in 1988 to establish standards and regulations for performing laboratory tests</p> <p>The Omnibus Budget Reconciliation Act of 1989 created an agency for health care policy and research to develop outcome measures of health care quality</p> <p>The first gene therapy to treat disease occurred in 1990</p> <p>President George H. Bush signed the Americans with Disabilities Act in 1990</p> <p>The Patient Self-Determination Act was passed in 1990 to require health care providers to inform patients of their rights in regard to making decisions about their medical care and to provide information and assistance in preparing advance directives</p> <p>The National Center for Complementary and Alternative Medicine (NCCAM) was established by the National Institutes of Health (NIH) to research and establish standards of quality care in 1992</p> <p>A vaccine for chicken pox was approved in 1995</p> <p>The British government admitted that an outbreak of "mad cow" disease was linked to Creutzfeldt-Jacob disease in humans in 1996</p> <p>President Clinton signed the Health Insurance Portability and Accountability Act (HIPAA) of 1996 to protect patient privacy and to make it easier to obtain and keep health insurance</p> <p>Identification of genes causing diseases increased rapidly in the 1990s</p> <p>A sheep was cloned in 1997</p> <p>The first successful larynx (voice box) transplant was performed in 1998</p> <p>An international team of scientists sequenced the first human chromosome in 1999</p> <p>Average life span was 60 to 80 years</p>

Name _____

Date _____

TABLE 1-7 History of Health Care in the 21st Century

	Historical Events of Health Care in the 21st Century
21st Century	<p>Adult stem cells were used in the treatment of disease early in the 2000s</p> <p>The U.S. Food and Drug Administration (FDA) approved the use of the abortion pill RU-486 in 2000</p> <p>The FDA approved Da Vinci, the first robotic surgical system, which allowed for smaller surgical incisions, less pain, and faster recovery in 2000</p> <p>President George W. Bush approved federal funding for research using only existing lines of embryonic stem cells in 2001</p> <p>Advanced Cell Technology announced it cloned a human embryo in 2001 but the embryo did not survive</p> <p>The first totally implantable artificial heart was placed in a patient in Louisville, Kentucky, in 2001</p> <p>Smallpox vaccinations were given to military personnel and first responders to limit the effects of a potential bioterrorist attack in 2002</p> <p>The Netherlands became the first country in the world to legalize euthanasia in 2002</p> <p>The Human Genome Project to identify all of the approximately 20,000 to 25,000 genes in human DNA was completed in 2003</p> <p>The Standards for Privacy of Individually Identifiable Health Information, required under the Health Insurance Portability and Accountability Act (HIPAA) of 1996, went into effect in 2003</p> <p>The Medicare Prescription Drug Improvement and Modernization Act was passed in 2003</p> <p>The virus that causes severe acute respiratory syndrome (SARS) was identified in 2003 as a new coronavirus, never seen in humans previously</p> <p>National Institutes of Health (NIH) researchers discover that primary teeth can be a source of stem cells in 2003</p> <p>First face transplant was performed in France in 2005 on a woman whose lower face was destroyed by a dog attack</p> <p>Stem cell researchers at the University of Minnesota coaxed embryonic stem cells to produce cancer-killing cells in 2005</p> <p>The National Cancer Institute (NCI) and the National Human Genome Research Institute started a project in 2006 to map genes associated with cancer so mutations that occur with specific cancers can be identified</p> <p>The FDA approved the use of the AbioCor totally implantable artificial heart in 2006</p> <p>The first inhalable insulin product, Exubera, was approved by the FDA in 2006</p> <p>Researchers propose a new method to generate embryonic stem cells from a blastocyst without destroying embryos in 2006</p> <p>Gardasil, a vaccine to prevent cervical cancer, was approved by the FDA in 2006</p> <p>Zostavax, a vaccine to prevent herpes zoster (shingles), was approved by the FDA in 2006</p> <p>The Uniform Anatomical Gift Act (UAGA) was revised in 2006 to permit the use of life support systems at or near death for the purpose of maximizing the effectiveness of obtaining organs for transplantation</p> <p>In 2007, a Rhesus monkey was cloned and the resulting embryo created stem cells</p> <p>The FDA approved the first molecular test to detect metastatic breast cancer in 2007</p> <p>In 2007 All, the first over-the-counter weight loss pill, was approved</p> <p>The Cleveland Clinic successfully removed a diseased kidney through the navel in 2007 and through the vagina in 2009</p> <p>Scarless surgery using the body's own openings was first performed in 2008</p> <p>In 2008, a gene screen for cancer was developed allowing physicians to determine who would best respond to Herceptin, a breast cancer drug that targets the specific HER-2 gene</p> <p>Physicians at Johns Hopkins University removed a donor kidney through the vagina for a transplant in 2009</p> <p>In 2009, the funding ban on stem-cell research was lifted, leading to advancements that used adult skin stem cells to create the first stem-cell mice and to regenerate fully functioning teeth in rodents</p> <p>A new set of three genes linked to Alzheimer's disease was discovered in 2009</p> <p>By November of 2009, 71% of the population was banned from smoking in bars, restaurants, the workplace, or all three ←</p> <p>WHO declared a pandemic of the H1N1 virus, commonly called swine flu, in 2009</p> <p>The FDA approved Botox for migraines in 2010</p>

(continues)

TABLE 1-7 History of Health Care in the 21st Century (continued)

Historical Events of Health Care in the 21st Century	
Potential for the 21st Century	<p>In 2010, Dr. Craig Venter, co-mapper of the human genome, synthesized an entire genome of a bacterium that was then able to reproduce</p> <p>A major advancement in infertility research in 2010 was the creation of the first artificial ovary</p> <p>The Patient Protection and Affordable Care Act was signed into law in March of 2010</p> <p>An experimental vaccine for glioblastoma, a deadly brain tumor, was developed in 2011</p> <p>The FDA approved in 2011 an implant that is inserted through blood vessels without brain surgery to treat brain aneurysms</p> <p>A treatment called a "chemo-bath" that isolates the blood supply to the liver while delivering toxic cancer drugs to treat liver cancer without affecting the rest of the body was used for the first time in the United Kingdom in 2012</p>
	<p>Cures for AIDS, cancer, and heart disease are found</p> <p>Genetic manipulation to prevent inherited diseases is a common practice</p> <p>Development of methods to slow the aging process or stop aging are created</p> <p>Nerves in the brain and spinal cord are regenerated to eliminate paralysis</p> <p>Transplants of every organ in the body, including the brain, are possible</p> <p>Antibiotics are developed that do not allow pathogens to develop resistance</p> <p>Average life span is increased to 90 to 100 years and beyond</p>

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that might occur soon. The potential for the future of health care has unlimited possibilities.

1.2 Trends in Health Care

Health care has seen many changes during the past several decades, and many additional changes will occur in the years to come. An awareness of such changes and trends is important for any health care worker.

Cost Containment

Cost containment, a term heard frequently in health care circles, means trying to control the rising cost of health care and achieving the maximum benefit for every dollar spent. Some reasons for high health care costs include:

- **Technological advances:** highly technical procedures such as heart, lung, liver, or kidney transplants can cost hundreds of thousands of dollars. Even so, many of these procedures are performed daily throughout the United States. Artificial hearts are another new technology being used. Computers and technology that can be used to examine internal body parts are valuable diagnostic tools, but these devices can cost millions of dollars. Advanced technology does allow people to

survive illnesses that used to be fatal, but these individuals may require expensive and lifelong care.

- **The aging population:** older individuals use more pharmaceutical products (medications), have more chronic diseases, and often need frequent health care services.
- **Health-related lawsuits:** lawsuits force health care providers to obtain expensive malpractice insurance, order diagnostic tests even though they might not be necessary, and make every effort to avoid lawsuits by practicing defensive health care.

Because these expenses must be paid, a major concern is that health care costs could rise to levels that could prohibit providing services to all individuals. However, everyone should have equal access to care regardless of their ability to pay. Because of this, all aspects of health care focus on cost containment. Although there is no firm answer to controlling health costs, most agencies that deliver health care are trying to provide quality care at the lowest possible price. Some methods of cost containment that are used include:

- **Diagnostic related groups (DRGs):** one way Congress is trying to control costs for government insurance plans such as Medicare and Medicaid. Under this plan, patients with certain diagnoses who are admitted to hospitals are classified in one payment group. A limit is placed on the cost of care, and the agency providing care receives this set amount.