HEALTH OCCUPATIONS

Exploration and Career Planning

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To our families
for their patience, sacrifice,
understanding, and support

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Preface

TO THE STUDENT

Many students considering a career in the health field base their choice on a romantic notion about a specific career or on idealized feelings of wanting to help others. Unless they have had some contact with a variety of health workers, they are not aware of the number of career opportunities in this field. Some people still believe that pursuing the traditional careers of medicine, dentistry, and nursing is limited according to one's sex. Doctors and dentists are males; nurses are females. In addition, the media tend to present a distorted picture of health workers, their duties and relationships with colleagues and with the public. These misconceptions, and the idea that *all* health careers require excellent skills in mathematics and the sciences, complicate the student's career decision-making process.

To most people, health careers are associated with hospital employment and involvement in caring for the sick. Many do not know that employment in the health field can take place in a variety of settings outside a health care institution. Health workers are involved, not only in caring for the sick, but also in assisting all of us to maintain our health and to prevent illness.

The purpose of **Health Occupations — Exploration and Career Planning** is to provide reliable and realistic information about health careers. A variety of exploratory learning experiences are suggested to help you make tentative career choices based on fact, not fantasy. The book also provides a basic foundation of knowledge to build upon as you progress to the next step in developing skills in a particular health career.

Part One of the book is devoted to exploring careers. Chapter 1 discusses how the "knowledge explosion" with its technological advances has influenced the growth of health careers and has brought about radical

changes in health care through the years. Chapter 2 describes the misconceptions and realities about health careers as well as practical steps to take in the career decision-making process. The next five chapters describe the five major groups of health careers. Related careers in each group are clustered to show the interrelationships between and among them. Careers with similar job responsibilities are grouped together so that you may see how each worker interacts with the others, as members of a team. The narratives in Chapters 3, 4, 5, 6, and 7 describe situations where members of the various career groups work together to meet a common goal.

Part Two, Chapters 8 to 16, lays the foundations for future employment in a variety of health occupations. The chapters include basic information about the computer and its valuable use in the health field. Other topics include communicating effectively with co-workers and clients, medical terminology and abbreviations, and essentials for maintaining a safe environment. A review of nutrition and growth and development is also given.

The last two chapters give important information to help you find and keep a job in the career of your choice. Tips to follow for advancing in your job or selecting the right educational program after high school are included. The privileges and responsibilities as a member of the health occupations family are also discussed.

At the end of each chapter, Student Activities are suggested to help you gain additional experiences. They are offered as ways to increase your understanding of the chapter and to help the book become more "alive."

If **Health Occupations — Exploration and Career Planning** provides a better understanding of careers in health and assists you to develop your career goals, the authors will consider their efforts successful.

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Contents

Chapter 1

Health Careers in Review

Objectives

After completing this chapter, you should be able to:

- Discuss four factors that have influenced the growth of the health services industry.
- List five places where health workers are employed.
- Discuss how health care has changed to meet the needs of modern society.
- Define 70 percent of the key terms listed for this chapter.

Key Terms

aseptic Sterile; free from living microorganisms

community health The state of health of a particular community

diagnostician One skilled in the use of scientific methods to determine the cause and nature of a sick person's disease

monitoring To check the heartbeat, blood pressure, and body functions by use of electronic devices

mortality rate The death rate; ratio of number of deaths to a given population

rehabilitation The process of restoring to useful life a person who has been ill or who is handicapped

stethoscope Instrument used to listen to sound within the body

telemetry Transmission of information to a distant point by using electronic devices

trephination Surgical removal of a disc of bone from the skull

EARLY CONCEPTS OF HEALTH CARE

Long before there were written records, people cared for their sick. Archaeologists have unearthed prehistoric skulls that show evidence of trephination — the surgical removal of a disc of bone from the skull. Scientists today think that trephining may have been practiced because the ancients thought this would permit evil, disease-producing spirits to escape from the body of a sick person. Was this thought to be treatment for a headache? Other bones excavated by scientists demonstrate the remarkable ability of primitive people to set broken bones so skillfully that fractures healed without deformity.

Prehistoric drawings found on cave walls emphasize certain body parts, such as hands, ears, and sex organs; some drawings depict horses and other animals, as well as human figures and weapons. Scientists have speculated about the meaning and purpose of these drawings and, as you may imagine, many theories have been proposed to explain the drawings. Were the paintings merely decorations? Or were they records of daily life in the caves? Did they have a magical purpose, such as

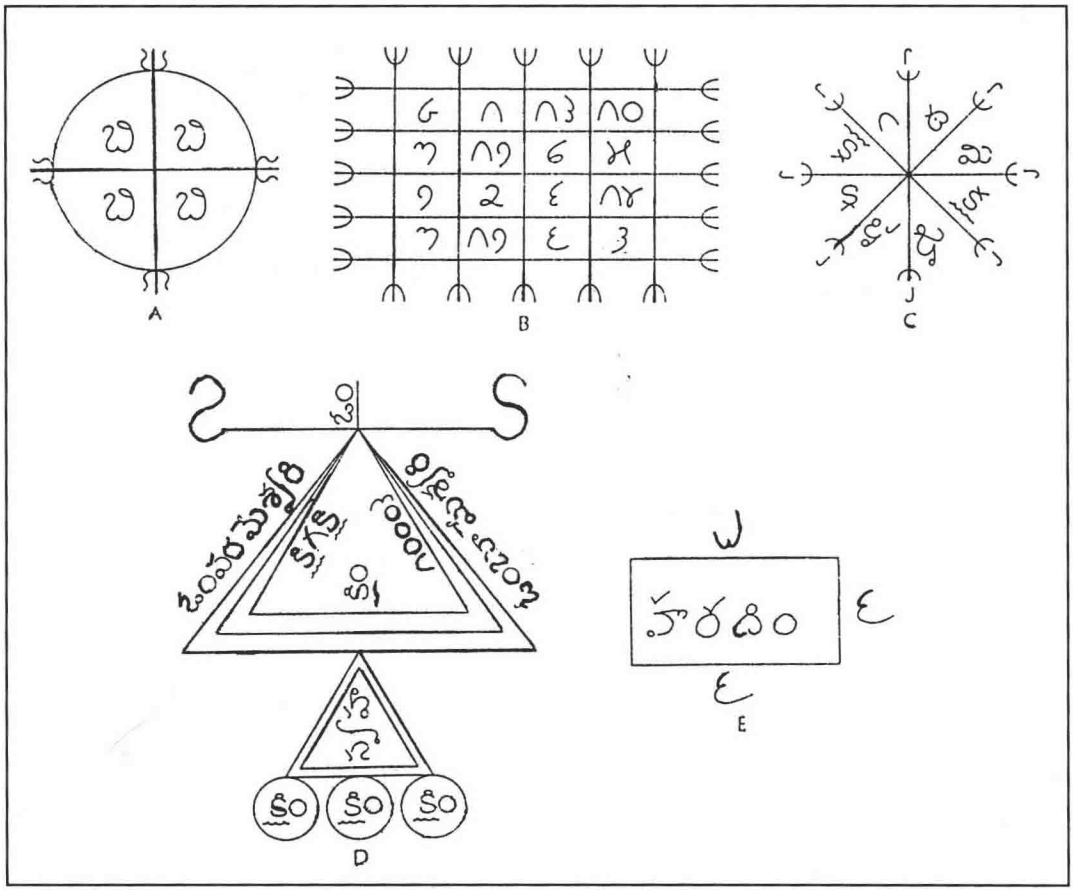

Figure 1–1. Magical charms such as these were believed to produce the desired results. These charms supposedly cured headache, assured conception, and treated malaria. (From *Konduru,* Paul G. Hiebert, University of Minnesota Press, 1971.)

protection from evil spirits that were believed to cause harm and illness? Many scientists accept the "magical" theory, but, unfortunately, there is no way to discover the true answer (**Fig. 1–1**).

We know from examination of ancient bones and fossils that people suffered from a variety of diseases and injuries, such as cancer, arthritis, tooth decay, and fractured bones. Illness was thought to be caused by forces beyond their control, and a variety of unearthly or supernatural treatments were used as cures (among them trephination, as described above). The tribe's medicine man "cured" illnesses through charms,

spells, and trances as well as ritual songs and dances. The medicine man administered all of the "treatments," while the patient's family gave personal care.

Modern health care is a far cry from the days of the medicine man. There are now more than 300 different job titles to describe the health workers who help modern people to recover from illness, to maintain health, to promote wellness, and to prevent disease. In many ways, the development of health careers has paralleled the expansion of knowledge. A brief survey of the history of health care and a review of a few of the milestones will help you to further understand how civilization and health careers developed side by side.

The importance of protecting health through hygiene and sanitation was appreciated even thousands of years ago. Ruins of ancient Babylonian sewers and toilets have been found in archaeologic digs. The Bible reveals Moses as an early **sanitarian**; in fact, the Mosaic laws regarding food storage, leprosy, quarantine, and refuse disposal form the basis of modern sanitary science. Remnants of Roman sanitation methods can be seen in the ruins of the aqueducts, sewers, and baths of that period. In cities as large as Rome, Athens, and Alexandria, disease prevention and community health were as essential as they are today.

The first hospitals were established in Rome by the early Christians as their way of carrying out the teachings of Christ. Churchwomen established and staffed these institutions known as hospices, and deaconesses visited the sick and poor. Nursing sisterhoods and brotherhoods were founded to care for the hospitalized sick. During the Dark Ages, hospitals continued to develop, but these were primarily institutions that offered hospitality to the old, disabled, and homeless.

During the Middle Ages, the character of the hospice slowly changed from that of a charity to that of a medical institution. In general, this change occurred as governments (city or state) began to take an active role in the provision of medical and health care.

By the end of the Middle Ages — about A.D. 1450 — the care being given to the sick declined in quality. This was a reflection of the general decline in European society caused by endless wars and great plagues.

Eighteenth century industrialization brought with it widespread unemployment and slums. Illness, crime, and disease flourished. The time was ripe for social changes that would bring with them reforms in the care of the sick. In 1836, the modern deaconess movement was established at Kaiserwerth, Germany. The instruction in nursing provided at Kaiserwerth

was so outstanding that the fame of the deaconesses spread throughout Europe. In 1850, Florence Nightingale visited and received training at the school. This upper-class Englishwoman revolutionized the care of sick and wounded British soldiers during the Crimean War, and by her practices of cleanliness, skill, and organization she was able to bring about a significant reduction in the mortality (death) rate.

OF STETHOSCOPES, ANESTHETICS, AND OTHER MILESTONES

In the early 1800s, the world saw tremendous advances in medical knowledge that produced far-reaching effects. The invention of the stethoscope — said to be one of the eight or ten greatest contributions to the science of medicine — revolutionized the diagnosis of disease. Before its discovery, diagnosing disease was done by the "hit or miss" method, otherwise known as "guessing." The invention of the hypodermic needle, the discovery of ether and chloroform, and the aseptic technique introduced by Doctor Joseph Lister, a British surgeon, influenced the development of surgical procedures. Anesthesia permitted pain-free surgery and produced the need for new kinds of health workers. People were needed to administer the anesthetic, to hold the lamp, and to assist in many other ways.

About the time that Lister's antiseptic technique was introduced, Oliver Wendell Holmes, a poet and physician in the United States, and Ignaz Semmelweis, a Hungarian physician, made an important discovery. They observed that the simple measure of handwashing, when performed by attendants between their examinations of women who had just delivered their babies, dramatically reduced the number of deaths due to puerperal (childbed) fever.

By the end of the 1800s, there were further discoveries and inventions: the clinical thermometer, aspirin, rubber gloves for surgical use, and the x-ray machine. Shortly after Dr. Roentgen invented the x-ray machine, a London firm advertised x-ray-proof underwear! Since this new invention was a tool in diagnosis, new workers were needed: to prepare patients, take x-rays, and develop them. The modern hospital radiology department grew out of this modest beginning. Sweeping social changes also occurred during the nineteenth century, and these, in turn, brought their share of change to the health care scene.

MEDICAL PROGRESS IN THE SERVICE OF SOCIETY

When the American frontier pushed westward during the nineteenth century, the need for physicians increased. Railroad companies recruited at least one physician to care for the residents of each town along the railroad line. The frontier physician also acted as the dentist until the traveling dentist arrived. As communities grew, more and more health workers were needed to serve the population. Nurses, pharmacists, dentists, and veterinarians moved into the towns and cities of the West.

Our recent exploration of space involved a small army of health workers representing diverse skills. No longer could the physician accompany the explorers into the unknown and foreign territory. Instead, information about the explorers' state of health (in this case, the astronauts) was relayed from outer space to a receiving station on earth by means of radio signals. The process is called telemetry. The design and development of the system of telemetry required a combination of engineering ability and medical knowledge provided by **biomedical engineers**. These health workers develop the techniques and design for the equipment needed by modern medicine.

Like most concepts that change people's lives, telemetry was considered revolutionary only a few years ago. Today, however, many ambulances are equipped with machines to take **electrocardiograms** (electrical tracings of the heartbeat) and to transmit these to a nearby hospital where a cardiac specialist can make a preliminary diagnosis. The physician can also talk to the ambulance personnel — called emergency medical technicians (EMTs) — and prescribe emergency treatment.

Something as commonplace as the telephone becomes a diagnostic aid when it is connected to a medical computer system. The electrocardiogram can be converted into electronic signals and transmitted by the telephone system to a hospital computer center hundreds of miles away. A diagnosis is made, or a treatment evaluated by the computer at the distant **cardiac** center. This is almost the same as having an expert **cardiac diagnostician** in constant attendance at the patient's bedside.

Of course, medical progress has not been limited to the invention and development of new techniques and equipment (**Figs. 1–2a** and **1–2 b**). To list and describe the drugs and vaccines that have been introduced in recent years would fill many books. Several once-dreaded diseases

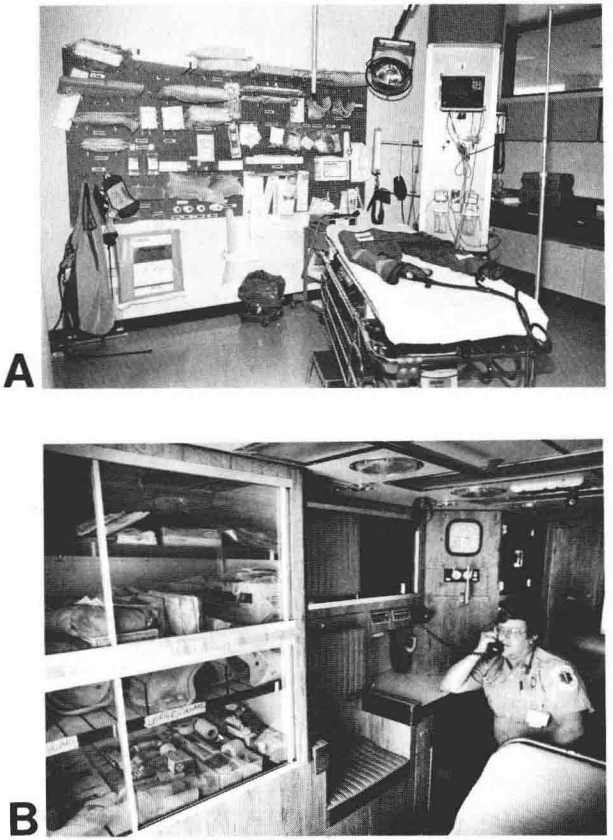

Figure 1–2. "High-tech" equipment, shown here in an emergency room (A) and mobile intensive care unit (B) is just one of the ways in which medical care had progressed. (Photo 1–2A courtesy of St. Mary Hospital. Photo 1–2B by Michael Mancuso. Courtesy of Rusling Hose Ambulance Corps and Rescue Squad, Hamilton Township Dir. of Health, N.J.)

such as measles, mumps, and poliomyelitis — are no longer life-threatening because of preventive vaccines and improved hygiene and nutrition. Drugs have brought **tuberculosis** under control and have made it possible to close sanatariums where patients formerly had to spend many months or years. The discovery of insulin has extended the life span of countless diabetics. Insulin, once obtained only from animal organs, can

now be produced in the laboratory. This new form of insulin has several advantages: it does not require the sacrifice of an animal; it eliminates allergies to the animal source; and it ensures an adequate supply.

"Human glue" (scientific name: autologous fibrinogen adhesive) has been developed for use in ear surgery. It is injected into the ear through a thin needle. A clot forms quickly and keeps a broken middle ear bone in position until healing takes place. It is projected that the "glue" will be used in many delicate operations where the use of ordinary sutures is not possible. The adhesive is made from agents which are taken from the patient's own blood supply. Therefore, they cannot spread infectious diseases, for example, acquired immune deficiency syndrome (AIDS) and hepatitis.

THE HEALTH WORKER DURING TIMES OF WAR

Americans have been involved in four wars in the twentieth century, an involvement that has created a need for rehabilitation services to help the wounded and disabled. Thus, more opportunities in the health field opened. Wars have also given rise to critical situations and health workers have had to find ways to meet them.

For example, advances in plastic surgery were a direct result of the needs of wounded soldiers during World War I. Years later, on the home front during World War II, Americans had to make do with many fewer physicians, surgeons, nurses, and other health personnel because so many of these were needed in the war effort. Since hospitals were forced to operate with a minimum of trained personnel, nurses began to instruct others in handling some of their duties. Programs for educating practical nurses and nursing aides were started in local hospitals. The era of "assistants" began in the 1940s because the available health workers could no longer carry the heavy workload.

During the Korean Conflict, Mobile Army Surgical Hospitals (MASH), located a short distance from the battle lines, developed specialized emergency techniques for caring for the injured with multiple life-threatening wounds. Procedures used for emergency airlifting of the wounded from the battlefields of Korea and Vietnam are being used today. Now, helicopters are used as ambulances in the air, transporting victims from the scene of an accident to a medical center equipped to provide care to those with massive, critical injuries. More and more veterans returned from battle with