

only in hospitals, are being performed in physicians' offices and clinics, including ambulatory surgicenters and emergency medical centers, due largely to advances in technology. As a result, employment of LPNs is projected to grow much faster than average in these places as healthcare expands outside the traditional hospital setting.

Employment of LPNs is expected to grow much faster than average in home healthcare services. This is in response to a growing number of older persons with functional disabilities, consumer preference for care in the home, and technological advances, which make it possible to bring increasingly complex treatments into the home.

Earnings

Median annual earnings of licensed practical nurses were \$29,440 in 2000. The middle 50 percent earned between \$24,920 and \$34,800. The lowest 10 percent earned less than \$21,520, and the highest 10 percent earned more than \$41,800. Median annual earnings in the industries employing the largest numbers of licensed practical nurses in 2000 were as follows:

Personnel supply services	\$35,750
Home health care services	31,220
Nursing and personal care facilities	29,980
Hospitals	28,450
Offices and clinics of medical doctors	27,520

Related Occupations

LPNs work closely with people while helping them. So do emergency medical technicians and paramedics, social and human service assistants, surgical technologists, and teacher assistants.

Sources of Additional Information

For information about practical nursing, contact:

- National League for Nursing, 61 Broadway, New York, NY 10006. Internet: <http://www.nln.org>
- National Association for Practical Nurse Education and Service, Inc., 1400 Spring St., Suite 330, Silver Spring, MD 20910.
- National Federation of Licensed Practical Nurses, Inc., 893 US Highway 70 West, Suite 202, Garner, NC 27529-2597.

Medical Records and Health Information Technicians

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Significant Points

- Medical records and health information technicians are projected to be one of the fastest growing occupations.
- High school students can improve chances of acceptance into a medical record and health information education program by taking anatomy, physiology, medical terminology, and computer courses.
- Most technicians will be employed by hospitals, but job growth will be faster in offices and clinics of physicians, nursing homes, and home health agencies.

Nature of the Work

Every time health care personnel treat a patient, they record what they observed, and how the patient was treated medically. This record includes information the patient provides concerning their symptoms and medical history, the results of examinations, reports

of x rays and laboratory tests, diagnoses, and treatment plans. Medical records and health information technicians organize and evaluate these records for completeness and accuracy.

Medical records and health information technicians begin to assemble patients' health information by first making sure their initial medical charts are complete. They ensure all forms are completed and properly identified and signed, and all necessary information is in the computer. Sometimes, they communicate with physicians or others to clarify diagnoses or get additional information.

Technicians assign a code to each diagnosis and procedure. They consult classification manuals and rely, also, on their knowledge of disease processes. Technicians then use a software program to assign the patient to one of several hundred "diagnosis-related groups," or DRG's. The DRG determines the amount the hospital will be reimbursed if the patient is covered by Medicare or other insurance programs using the DRG system. Technicians who specialize in coding are called health information coders, medical record coders, coder/abstractors, or coding specialists. In addition to the DRG system, coders use other coding systems, such as those geared towards ambulatory settings.

Technicians also use computer programs to tabulate and analyze data to help improve patient care, control costs, for use in legal actions, in response to surveys, or for use in research studies. *Tumor registrars* compile and maintain records of patients who have cancer to provide information to physicians and for research studies.

Medical records and health information technicians' duties vary with the size of the facility. In large to medium facilities, technicians may specialize in one aspect of health information, or supervise health information clerks and transcriptionists while a *medical records and health information administrator* manages the department. (See the statement on medical and health services managers elsewhere in the *Handbook*.) In small facilities, a credentialed medical records and health information technician sometimes manages the department.

Working Conditions

Medical records and health information technicians usually work a 40-hour week. Some overtime may be required. In hospitals—where health information departments often are open 24 hours a day, 7 days a week—technicians may work day, evening, and night shifts.

Medical records and health information technicians work in pleasant and comfortable offices. This is one of the few health occupations in which there is little or no physical contact with



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patients. Because accuracy is essential, technicians must pay close attention to detail. Technicians who work at computer monitors for prolonged periods must guard against eyestrain and muscle pain.

Employment

Medical records and health information technicians held about 136,000 jobs in 2000. About 4 out of 10 jobs were in hospitals. The rest were mostly in nursing homes, medical group practices, clinics, and home health agencies. Insurance firms that deal in health matters employ a small number of health information technicians to tabulate and analyze health information. Public health departments also hire technicians to supervise data collection from health care institutions and to assist in research.

Training, Other Qualifications, and Advancement

Medical records and health information technicians entering the field usually have an associate degree from a community or junior college. In addition to general education, coursework includes medical terminology, anatomy and physiology, legal aspects of health information, coding and abstraction of data, statistics, database management, quality improvement methods, and computer training. Applicants can improve their chances of admission into a program by taking biology, chemistry, health, and computer courses in high school.

Hospitals sometimes advance promising health information clerks to jobs as medical records and health information technicians, although this practice may be less common in the future. Advancement usually requires 2 to 4 years of job experience and completion of a hospital's in-house training program.

Most employers prefer to hire Registered Health Information Technicians (RHIT), who must pass a written examination offered by AHIMA. To take the examination, a person must graduate from a 2-year associate degree program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) of the American Medical Association. Technicians trained in non-CAAHEP accredited programs, or on the job, are not eligible to take the examination. In 2001, CAAHEP accredited 177 programs for health information technicians. Technicians who specialize in coding may also obtain voluntary certification.

Experienced medical records and health information technicians usually advance in one of two ways—by specializing or managing. Many senior technicians specialize in coding, particularly Medicare coding, or in tumor registry.

In large medical records and health information departments, experienced technicians may advance to section supervisor, overseeing the work of the coding, correspondence, or discharge sections, for example. Senior technicians with RHIT credentials may become director or assistant director of a medical records and health information department in a small facility. However, in larger institutions, the director is usually an administrator, with a bachelor's degree in medical records and health information administration. (See the statement on health services managers elsewhere in the *Handbook*.)

Job Outlook

Job prospects for formally trained technicians should be very good. Employment of medical records and health information technicians is expected to grow much faster than the average for all occupations through 2010, due to rapid growth in the number of medical tests, treatments, and procedures which will be increasingly scrutinized by third-party payers, regulators, courts, and consumers.

Hospitals will continue to employ a large percentage of health information technicians, but growth will not be as fast as in other areas. Increasing demand for detailed records in offices and clinics

of physicians should result in fast employment growth, especially in large group practices. Rapid growth is also expected in nursing homes and home health agencies.

Earnings

Median annual earnings of medical records and health information technicians were \$22,750 in 2000. The middle 50 percent earned between \$18,700 and \$28,590. The lowest 10 percent earned less than \$15,710, and the highest 10 percent earned more than \$35,170. Median annual earnings in the industries employing the largest numbers of medical records and health information technicians in 2000 were as follows:

Nursing and personal care facilities	\$23,760
Hospitals	23,540
Offices and clinics of medical doctors	21,090

Related Occupations

Medical records and health information technicians need a strong clinical background to analyze the contents of medical records. Workers in other occupations requiring knowledge of medical terminology, anatomy, and physiology without physical contact with the patient are medical secretaries and medical transcriptionists.

Sources of Additional Information

Information on careers in medical records and health information technology, including a list of CAAHEP-accredited programs is available from:

- American Health Information Management Association, 233 N. Michigan Ave., Suite 2150, Chicago, IL 60601-5800. Internet: <http://www.ahima.org>

Nuclear Medicine Technologists

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Significant Points

- Faster-than-average growth will arise from an increase in the number of middle-aged and elderly persons, who are the primary users of diagnostic procedures.
- Technologists with cross training in radiologic technology or other modalities will have the best prospects.

Nature of the Work

In nuclear medicine, radionuclides—unstable atoms that emit radiation spontaneously—are used to diagnose and treat disease. Radionuclides are purified and compounded like other drugs to form radiopharmaceuticals. Nuclear medicine technologists administer these radiopharmaceuticals to patients, then monitor the characteristics and functions of tissues or organs in which they localize. Abnormal areas show higher or lower concentrations of radioactivity than normal.

Nuclear medicine technologists operate cameras that detect and map the radioactive drug in the patient's body to create an image on photographic film or a computer monitor. Radiologic technologists and technicians also operate diagnostic imaging equipment, but their equipment creates an image by projecting an x ray through the patient. (See the statement on radiologic technologists and technicians elsewhere in the *Handbook*.)

Nuclear medicine technologists explain test procedures to patients. They prepare a dosage of the radiopharmaceutical and administer it