

technology programs; others take jobs as sales representatives or instructors with equipment manufacturers.

Job Outlook

Employment of radiologic technologists and technicians is expected to grow faster than the average for all occupations through 2010, as the population grows and ages, increasing the demand for diagnostic imaging. Opportunities are expected to be favorable. Some employers report shortages of radiologic technologists and technicians. Imbalances between the supply of qualified workers and demand should spur efforts to attract and retain qualified radiologic technologists and technicians. For example, employers may provide more flexible training programs, or improve compensation and working conditions.

Although physicians are enthusiastic about the clinical benefits of new technologies, the extent to which they are adopted depends largely on cost and reimbursement considerations. For example, digital imaging technology can improve quality and efficiency, but remains expensive. Some promising new technologies may not come into widespread use because they are too expensive and third-party payers may not be willing to pay for their use.

Radiologic technologists who are educated and credentialed in more than one type of diagnostic imaging technology, such as radiography and sonography or nuclear medicine, will have better employment opportunities as employers look for new ways to control costs. In hospitals, multi-skilled employees will be the most sought after, as hospitals respond to cost pressures by continuing to merge departments.

Hospitals will remain the principal employer of radiologic technologists and technicians. However, a greater number of new jobs will be found in offices and clinics of physicians, including diagnostic imaging centers. Health facilities such as these are expected to grow very rapidly through 2010 due to the strong shift toward outpatient care, encouraged by third-party payers and made possible by technological advances that permit more procedures to be performed outside the hospital. Some job openings will also arise from the need to replace technologists and technicians who leave the occupation.

Earnings

Median annual earnings of radiologic technologists and technicians were \$36,000 in 2000. The middle 50 percent earned between \$30,220 and \$43,380. The lowest 10 percent earned less than \$25,310, and the highest 10 percent earned more than \$52,050. Median annual earnings in the industries employing the largest numbers of radiologic technologists and technicians in 2000 were:

Medical and dental laboratories	\$39,400
Hospitals	36,280
Offices and clinics of medical doctors	34,870

Related Occupations

Radiologic technologists and technicians operate sophisticated equipment to help physicians, dentists, and other health practitioners diagnose and treat patients. Workers in related occupations include cardiovascular technologists and technicians, clinical laboratory technologists and technicians, diagnostic medical sonographers, nuclear medicine technologists, radiation therapists, and respiratory therapists.

Sources of Additional Information

For career information, send a stamped, self-addressed business size envelope with your request to:

► American Society of Radiologic Technologists, 15000 Central Ave. SE., Albuquerque, NM 87123-3917. Internet: <http://www.asrt.org/asrt.htm>

For the current list of accredited education programs in radiography, write to:

► Joint Review Committee on Education in Radiologic Technology, 20 N. Wacker Dr., Suite 600, Chicago, IL 60606-2901. Internet: <http://www.jrcert.org>

For information on certification, contact:

► American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120-1155. Internet: <http://www.arrt.org>

Surgical Technologists

(O*NET 29-2055.00)

Significant Points

- Most educational programs for surgical technologists last approximately 1 year and result in a certificate.
- Employment of surgical technologists is expected to grow faster than average as the number of surgical procedures grows.

Nature of the Work

Surgical technologists, also called *scrubs* and *surgical or operating room technicians*, assist in surgical operations under the supervision of surgeons, registered nurses, or other surgical personnel. Surgical technologists are members of operating room teams, which most commonly include surgeons, anesthesiologists, and circulating nurses. Before an operation, surgical technologists help prepare the operating room by setting up surgical instruments and equipment, sterile drapes, and sterile solutions. They assemble both sterile and nonsterile equipment, as well as adjust and check it to ensure it is working properly. Technologists also get patients ready for surgery by washing, shaving, and disinfecting incision sites. They transport patients to the operating room, help position them on the operating table, and cover them with sterile surgical "drapes." Technologists also observe patients' vital signs, check charts, and assist the surgical team with putting on sterile gowns and gloves.

During surgery, technologists pass instruments and other sterile supplies to surgeons and surgeon assistants. They may hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments. Surgical technologists help prepare, care for, and dispose of specimens taken for laboratory analysis and help apply dressings. Some operate sterilizers, lights, or suction machines, and help operate diagnostic equipment.



Surgical technologists prepare operating rooms and assist surgical personnel during operations.

After an operation, surgical technologists may help transfer patients to the recovery room and clean and restock the operating room.

Working Conditions

Surgical technologists work in clean, well-lighted, cool environments. They must stand for long periods and remain alert during operations. At times they may be exposed to communicable diseases and unpleasant sights, odors, and materials.

Most surgical technologists work a regular 40-hour week, although they may be on call or work nights, weekends and holidays on a rotating basis.

Employment

Surgical technologists held about 71,000 jobs in 2000. Almost three-quarters are employed by hospitals, mainly in operating and delivery rooms. Others are employed in clinics and surgical centers, and in the offices of physicians and dentists who perform outpatient surgery. A few, known as private scrubs, are employed directly by surgeons who have special surgical teams, like those for liver transplants.

Training, Other Qualifications, and Advancement

Surgical technologists receive their training in formal programs offered by community and junior colleges, vocational schools, universities, hospitals, and the military. In 2001, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) recognized 350 accredited programs. High school graduation normally is required for admission. Programs last 9 to 24 months and lead to a certificate, diploma, or associate degree.

Programs provide classroom education and supervised clinical experience. Students take courses in anatomy, physiology, microbiology, pharmacology, professional ethics, and medical terminology. Other studies cover the care and safety of patients during surgery, aseptic techniques, and surgical procedures. Students also learn to sterilize instruments; prevent and control infection; and handle special drugs, solutions, supplies, and equipment.

Technologists may obtain voluntary professional certification from the Liaison Council on Certification for the Surgical Technologist by graduating from a CAAHEP-accredited program and passing a national certification examination. They may then use the designation Certified Surgical Technologist, or CST. Continuing education or reexamination is required to maintain certification, which must be renewed every 6 years. Certification may also be obtained from the National Center for Competency Testing. To qualify to take the exam, candidates follow one of three paths: complete an accredited training program, undergo a 2-year hospital on-the-job training program, or acquire seven years experience working in the field. After passing the exam, individuals may use the designation National Certified Technician O.R. This certification may be renewed every 5 years through either continuing education or reexamination. Most employers prefer to hire certified technologists.

Surgical technologists need manual dexterity to handle instruments quickly. They also must be conscientious, orderly, and emotionally stable to handle the demands of the operating room environment. Technologists must respond quickly and know procedures well to have instruments ready for surgeons without having to be told. They are expected to keep abreast of new developments in the field. Recommended high school courses include health, biology, chemistry, and mathematics.

Technologists advance by specializing in a particular area of surgery, such as neurosurgery or open heart surgery. They also may work as circulating technologists. A circulating technologist is the “unsterile” member of the surgical team who prepares patients; helps with anesthesia; obtains and opens packages for the “sterile” persons to remove the sterile contents during the procedure; interviews the patient before surgery; keeps a written account of the surgical procedure; and answers the surgeon’s questions about the patient during the surgery. With additional training, some technologists advance to first assistants, who help with retracting, sponging, suturing, cauterizing bleeders, and closing and treating wounds. Some surgical technologists manage central supply departments in hospitals, or take positions with insurance companies, sterile supply services, and operating equipment firms.

Job Outlook

Employment of surgical technologists is expected to grow faster than the average for all occupations through the year 2010 as the volume of surgery increases. The number of surgical procedures is expected to rise as the population grows and ages. As the “baby boom” generation enters retirement age, the over 50 population will account for a larger portion of the general population. Older people require more surgical procedures. Technological advances, such as fiber optics and laser technology, will also permit new surgical procedures to be performed.

Hospitals will continue to be the primary employer of surgical technologists, although much faster employment growth is expected in offices and clinics of physicians, including ambulatory surgical centers.

Earnings

Median annual earnings of surgical technologists were \$29,020 in 2000. The middle 50 percent earned between \$24,490 and \$34,160. The lowest 10 percent earned less than \$20,490, and the highest 10 percent earned more than \$40,310. Median annual earnings of surgical technologists in 2000 were \$31,190 in offices and clinics of medical doctors and \$28,340 in hospitals.

Related Occupations

Other health occupations requiring approximately 1 year of training after high school include dental assistants, licensed practical and licensed vocational nurses, medical and clinical laboratory technicians, medical assistants, and respiratory therapy technicians.

Sources of Additional Information

For additional information on a career as a surgical technologist and a list of CAAHEP-accredited programs, contact:

► Association of Surgical Technologists, 7108-C South Alton Way, Englewood, CO 80112. Internet: <http://www.ast.org>

For information on becoming a Certified Surgical Technologist, contact:

► Liaison Council on Certification for the Surgical Technologist, 7790 East Arapahoe Rd., Suite 240, Englewood, CO 80112-1274. Internet: http://www.lcc-st.org/index_ie.htm

For information on becoming a National Certified Technician O.R., contact:

► National Center for Competency Testing, 7007 College Blvd., Suite 250, Overland Park, KS 6621. Internet: <http://www.ncctinc.com>