Opportunities are expected to be favorable for respiratory therapists with cardiopulmonary care skills and experience working with infants.

Although hospitals will continue to employ the vast majority of therapists, a growing number of therapists can expect to work outside of hospitals in respiratory therapy clinics, offices of physicians, nursing homes, or homecare.

Earnings

Median annual earnings of respiratory therapists were $37,680 in 2000. The middle 50 percent earned between $32,140 and $43,430. The lowest 10 percent earned less than $28,620, and the highest 10 percent earned more than $50,660. In hospitals, median annual earnings of respiratory therapists were $38,040 in 2000.

Median annual earnings of respiratory therapy technicians were $32,860 in 2000. The middle 50 percent earned between $27,280 and $39,740. The lowest 10 percent earned less than $22,830, and the highest 10 percent earned more than $46,800. Median annual earnings of respiratory therapy technicians employed in hospitals were $32,830 in 2000.

Related Occupations

Respiratory therapists, under the supervision of a physician, administer respiratory care and life support to patients with heart and lung difficulties. Other workers who care for, treat, or train people to improve their physical condition include registered nurses, occupational therapists, physical therapists, and radiation therapists.

Sources of Additional Information

Information concerning a career in respiratory care is available from:

➤ American Association for Respiratory Care, 11030 Ables Ln., Dallas, TX 75229-4593. Internet: **http://www.aarc.org**

For the current list of CoARC-accredited educational programs for respiratory care practitioners, write to:

➤ Committee on Accreditation for Respiratory Care, 1248 Harwood Rd., Bedford, TX 76021-4244. Internet: **http://www.coarc.com**

Information on gaining credentials in respiratory care and a list of State licensing agencies can be obtained from:

➤ The National Board for Respiratory Care, Inc., 8310 Nieman Rd., Lenexa, KS 66214-1579. Internet: **http://www.nbrc.org**

Speech-Language Pathologists and Audiologists

(O*NET 29-1121.00, 29-1127.00)

Significant Points

- Employment of speech-language pathologists and audiologists is expected to grow rapidly because the growing population in older age groups is prone to medical conditions that result in hearing and speech problems.
- About half work in schools, and most others are employed by healthcare facilities.
- A master's degree in speech-language pathology or audiology is the standard credential.

Nature of the Work

Speech-language pathologists assess, diagnose, treat, and help to prevent speech, language, cognitive, communication, voice, swallowing, fluency, and other related disorders; audiologists identify, assess, and manage auditory, balance, and other neural systems.

Speech-language pathologists work with people who cannot make speech sounds, or cannot make them clearly; those with speech rhythm and fluency problems, such as stuttering; people with voice quality problems, such as inappropriate pitch or harsh voice; those with problems understanding and producing language; those who wish to improve their communication skills by modifying an accent; and those with cognitive communication impairments, such as attention, memory, and problem solving disorders. They also work with people who have oral motor problems causing eating and swallowing difficulties.

Speech and language problems can result from a variety of problems including hearing loss, brain injury or deterioration, cerebral palsy, stroke, cleft palate, voice pathology, mental retardation, or emotional problems. Problems can be congenital, developmental, or acquired. Speech-language pathologists use written and oral tests, as well as special instruments, to diagnose the nature and extent of impairment and to record and analyze speech, language, and swallowing irregularities. Speech-language pathologists develop an individualized plan of care, tailored to each patient's needs. For individuals with little or no speech capability, speech-language pathologists may select augmentative or alternative communication methods, including automated devices and sign language, and teach their use. They teach these individuals how to make sounds, improve their voices, or increase their language skills to communicate more effectively. Speech-language pathologists help patients develop, or recover, reliable communication skills so patients can fulfill their educational, vocational, and social roles.

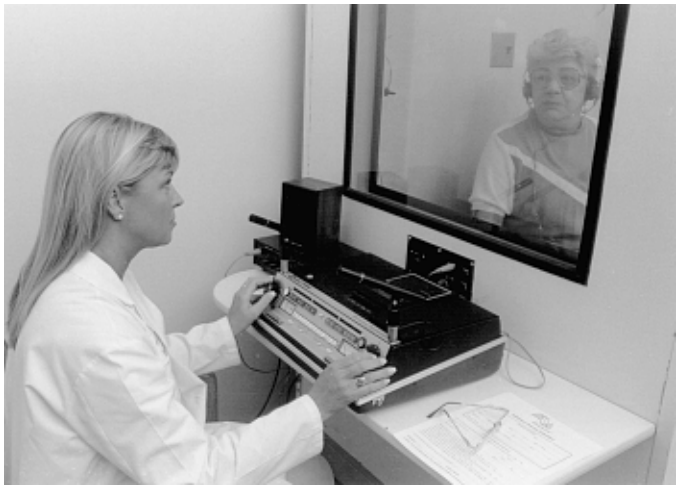
Most speech-language pathologists provide direct clinical services to individuals with communication or swallowing disorders. In speech and language clinics, they may independently develop and carry out treatment programs. In medical facilities, they may work with physicians, social workers, psychologists, and other therapists. Speech-language pathologists in schools develop individual or group programs, counsel parents, and may assist teachers with classroom activities.

Speech-language pathologists keep records on the initial evaluation, progress, and discharge of clients. This helps pinpoint problems, tracks client progress, and justifies the cost of treatment when applying for reimbursement. They counsel individuals and their families concerning communication disorders and how to cope with the stress and misunderstanding that often accompany them. They also work with family members to recognize and change behavior patterns that impede communication and treatment and show them communication-enhancing techniques to use at home.

Some speech-language pathologists conduct research on how people communicate. Others design and develop equipment or techniques for diagnosing and treating speech problems.

Audiologists work with people who have hearing, balance, and related problems. They use audiometers, computers, and other testing devices to measure the loudness at which a person begins to hear sounds, the ability to distinguish between sounds, and the nature and extent of hearing loss. Audiologists interpret these results and may coordinate them with medical, educational, and psychological information to make a diagnosis and determine a course of treatment.

Hearing disorders can result from a variety of causes including trauma at birth, viral infections, genetic disorders, exposure to loud noise, or aging. Treatment may include examining and cleaning the ear canal, fitting and dispensing hearing aids or other assistive devices, and audiologic rehabilitation (including auditory training or instruction in speech or lip reading). Audiologists may recommend, fit, and dispense personal or large area amplification systems, such as hearing aids and alerting devices. Audiologists provide fitting and tuning of cochlear implants and provide the



Using sophisticated equipment, an audiologist measures a patient's hearing ability.

necessary rehabilitation for adjustment to listening with implant amplification systems. They also measure noise levels in workplaces and conduct hearing protection programs in industry, as well as in schools and communities.

Audiologists provide direct clinical services to individuals with hearing or balance disorders. In audiology (hearing) clinics, they may independently develop and carry out treatment programs. Audiologists, in a variety of settings, work as members of interdisciplinary professional teams in planning and implementing service delivery for children and adults, from birth to old age. Similar to speech-language pathologists, audiologists keep records on the initial evaluation, progress, and discharge of clients. These records help pinpoint problems, track client progress, and justify the cost of treatment, when applying for reimbursement.

Audiologists may conduct research on types of, and treatment for, hearing, balance, and related disorders. Others design and develop equipment or techniques for diagnosing and treating these disorders.

Working Conditions

Speech-language pathologists and audiologists usually work at a desk or table in clean comfortable surroundings. The job is not physically demanding but does require attention to detail and intense concentration. The emotional needs of clients and their families may be demanding. Most full-time speech-language pathologists and audiologists work about 40 hours per week; some work part time. Those who work on a contract basis may spend a substantial amount of time traveling between facilities.

Employment

Speech-language pathologists and audiologists held about 101,000 jobs in 2000. Speech-language pathologists held about 88,000 jobs; and audiologists held about 13,000. About one-half of jobs for speech-language pathologists and audiologists were in preschools, elementary and secondary schools, or colleges and universities. Others were in offices of speech-language pathologists and audiologists; hospitals; offices of physicians; speech, language, and hearing centers; home health agencies; or other facilities. Audiologists are more likely to be employed in independent healthcare offices, while speech-language pathologists are more likely to work in school settings.

A small number of speech-language pathologists and audiologists are self-employed in private practice. They contract to provide services in schools, physician's offices, hospitals, or nursing homes, or work as consultants to industry.

Training, Other Qualifications, and Advancement

Of the States that regulate licensing (45 for speech-language pathologists and 47 for audiologists), almost all require a master's degree or equivalent. Other requirements are 300 to 375 hours of supervised clinical experience, a passing score on a national examination, and 9 months of postgraduate professional clinical experience. Forty-one States have continuing education requirements for licensure renewal. Medicaid, medicare, and private health insurers generally require a practitioner to be licensed to qualify for reimbursement.

About 242 colleges and universities offer graduate programs in speech-language pathology. Courses cover anatomy and physiology of the areas of the body involved in speech, language, and hearing; the development of normal speech, language, and hearing; the nature of disorders; acoustics; and psychological aspects of communication. Graduate students also learn to evaluate and treat speech, language, and hearing disorders and receive supervised clinical training in communication disorders.

About 112 colleges and universities offer graduate programs in audiology in the United States. Course work includes anatomy; physiology; basic science; math; physics; genetics; normal and abnormal communication development; auditory, balance and neural systems assessment and treatment; audiologic rehabilitation; and ethics.

Speech-language pathologists can acquire the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) offered by the American Speech-Language-Hearing Association, and audiologists can earn the Certificate of Clinical Competence in Audiology (CCC-A). To earn a CCC, a person must have a graduate degree and 375 hours of supervised clinical experience, complete a 36-week postgraduate clinical fellowship, and pass a written examination. According to the American Speech-Language-Hearing Association, as of 2007, audiologists will need to have a bachelor's degree and complete 75 hours of credit toward a doctoral degree in order to seek certification. As of 2012, audiologists will have to earn a doctoral degree in order to be certified.

Speech-language pathologists and audiologists should be able to effectively communicate diagnostic test results, diagnoses, and proposed treatment in a manner easily understood by their clients. They must be able to approach problems objectively and provide support to clients and their families. Because a client's progress may be slow, patience, compassion, and good listening skills are necessary.

Job Outlook

Employment of speech-language pathologists and audiologists is expected to grow much faster than the average for all occupations through the year 2010. Because hearing loss is strongly associated with aging, rapid growth in the population age 55 and over will cause the number of persons with hearing impairment to increase markedly. In addition, baby boomers are now entering middle age, when the possibility of neurological disorders and associated speech, language, and hearing impairments increases. Medical advances are also improving the survival rate of premature infants and trauma and stroke victims, who then need assessment and possible treatment. In health services facilities, Federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for therapy providers over the near term.

Employment in schools will increase along with growth in elementary and secondary school enrollments, including enrollment of special education students. Federal law guarantees special education and related services to all eligible children with disabilities.

Greater awareness of the importance of early identification and diagnosis of speech, language, and hearing disorders will also increase employment.

The number of speech-language pathologists and audiologists in private practice will rise due to the increasing use of contract services by hospitals, schools, and nursing homes. In addition to job openings stemming from employment growth, some openings for speech-language pathologists and audiologists will arise from the need to replace those who leave the occupation.

Earnings

Median annual earnings of speech-language pathologists were $46,640 in 2000. The middle 50 percent earned between $37,670 and $56,980. The lowest 10 percent earned less than $30,720, and the highest 10 percent earned more than $69,980. Median annual earnings in the industries employing the largest numbers of speech-language pathologists in 2000 were as follows:

Hospitals	$49,960
Offices of other health practitioners	47,170
Elementary and secondary schools	43,710

Median annual earnings of audiologists were $44,830 in 2000. The middle 50 percent earned between $37,000 and $55,290. The lowest 10 percent earned less than $30,850, and the highest 10 percent earned more than $68,570.

According to a 2000 survey by the American Speech-Language-Hearing Association, the median annual salary for full-time certified speech-language pathologists who worked 11 or 12 months annually was $44,000; for audiologists, $48,000. For those who worked 9 or 10 months annually, the median annual salary for speech-language pathologists was $41,000; for audiologists, $45,000. Speech-language pathologists with doctorate degrees who worked 11 or 12 months annually earned $62,500; and audiologists, $70,000.

Related Occupations

Speech-language pathologists and audiologists specialize in the prevention, diagnosis, and treatment of speech and language and hearing problems. Workers in related occupations include occupational therapists, optometrists, physical therapists, psychologists, recreational therapists, and rehabilitation counselors.

Sources of Additional Information

State licensing boards can provide information on licensure requirements. State departments of education can supply information on certification requirements for those who wish to work in public schools.

General information on careers in speech-language pathology and audiology is available from:

➤ American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852. Internet: **http://professional.asha.org**

Information on a career in audiology is also available from:

➤ American Academy of Audiology, 8201 Greensboro Dr., Suite 300, McLean, VA 22102.

Veterinarians

(O*NET 29-1131.00)

Significant Points

- Graduation from an accredited college of veterinary medicine and a license to practice are required.
- Competition for admission to veterinary school is keen.

Nature of the Work

Veterinarians play a major role in the healthcare of pets, livestock, and zoo, sporting, and laboratory animals. Some veterinarians use their skills to protect humans against diseases carried by animals and conduct clinical research on human and animal health problems. Others work in basic research, broadening the scope of fundamental theoretical knowledge, and in applied research, developing new ways to use knowledge.

Most veterinarians perform clinical work in private practices. More than one-half of these veterinarians predominately, or exclusively, treat small animals. Small animal practitioners usually care for companion animals, such as dogs and cats, but also treat birds, reptiles, rabbits, and other animals that can be kept as pets. Some veterinarians work in mixed animal practices where they see pigs, goats, sheep, and some nondomestic animals, in addition to companion animals. Veterinarians in clinical practice diagnose animal health problems; vaccinate against diseases, such as distemper and rabies; medicate animals suffering from infections or illnesses; treat and dress wounds; set fractures; perform surgery; and advise owners about animal feeding, behavior, and breeding.

A small number of private practice veterinarians work exclusively with large animals, focusing mostly on horses or cows but may also care for various kinds of food animals. These veterinarians usually drive to farms or ranches to provide veterinary services for herds or individual animals. Much of this work involves preventive care to maintain the health of the food animals. These veterinarians test for

Veterinarians perform a variety of medical services on animals such as cats and dogs.