Executive Summary

Allied Health Professions: Overview, Certification, Licensure, and Program Accreditation Requirements

Abstract

This Executive Summary analyzes eight allied health professions and two additional professions. The eight allied health professions discussed are: [1] clinical laboratory technologist/technician, [2] diagnostic medical sonographer, [3] nuclear medicine technologist, [4] pharmacist, [5] physical therapist, [6] physician assistant, [7] radiologic technologist/technician, and [8] surgical technologist. The two additional professions are: [1] veterinarian, and [2] veterinary technologist/technician.

The summary discusses each profession in turn, providing an overview of each profession, including definition, career ladder development, and workforce demand; details concerning certification and licensure, broken down by state; and facts on accreditation requirements, and alternatives if available, for new educational programs in the profession.

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Executive Summary

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Introduction

The Association of Schools of Allied Health Professions (ASAHP) defines "allied health" as the cluster of professions engaged in "the delivery of health or related services pertaining to the identification, evaluation and prevention of diseases and disorders; dietary and nutrition services; [and] rehabilitation and health systems management."[1]

The U.S. Department of Labor's Bureau of Labor Statistics (BLS)[2] expects the allied health professions to experience significant growth through 2012, as the U.S. population ages and technology leads to new medical procedures and tests requiring allied health professionals who are properly educated and trained at accredited institutions and facilities, and certified or licensed to practice. The BLS projects that, during the 2002-2012 period, healthcare occupations, including those in allied health, will grow the fastest among U.S. occupations. So considerable will this growth be that healthcare occupations will account for 10 of the 20 fastest growing occupations during the 2002-2012 period.

To address the growing need for qualified allied health professionals, the U.S. Congress[3] is currently considering the Allied Health Reinvestment Act, a joint House and Senate Bill, now in committee, that seeks "to provide incentives for individuals to seek and complete high quality allied health education and training and provide additional funding to ensure that such education and training can be provided to allied health students." The Bill identifies an Allied Health Education Program as "any postsecondary program" that is offered by accredited "colleges, universities, or schools of allied health and equivalent entities" and which leads to a "certificate, associate, baccalaureate, or graduate level degree in an allied health profession."

The following summary addresses this growth in the allied health professions and in educational programs for these professions. Specifically, the summary analyzes eight allied health professions and two additional professions. The eight allied health professions discussed are: [1] clinical laboratory technologist/technician, [2] diagnostic medical sonographer, [3] nuclear medicine technologist, [4] pharmacist, [5] physical therapist, [6] physician assistant, [7] radiologic technologist/technician, and [8] surgical technologist. The two additional professions are: [1] veterinarian, and [2] veterinary technologist/technician.[*]

The following sections discuss each profession in turn, providing an overview of each profession, including definition, career ladder development, and workforce demand; details concerning certification and licensure, broken down by state; and facts on accreditation requirements, and alternatives if available, for new educational programs in the profession.

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[*] The profession names used in this summary match the profession names used in the Department of Labor's Bureau of Labor Statistics *Occupational Outlook Handbook, 2004-05 Edition.* A profession listed here may appear under a different name in another government, educational, or professional source.

Clinical Laboratory Technologist/Technician

Overview of the Profession. A Clinical Laboratory Technologist (also known as a Clinical Laboratory Scientist or Medical Technologist) and a Clinical Laboratory Technician (also known as a Medical Technician or Medical Laboratory Technician) help to detect, diagnose, and treat disease by examining body fluids, tissues, and cells using varied laboratory tests.[4] Part of the broader laboratory science field, CLT/Ts have several professional organizations open to them: the American Society for Clinical Laboratory Science (ASCLS), American Medical Technologists (AMT), American Society for Clinical Pathology (ASCP), and American Association of Bioanalysts (AAB). Clinical Laboratory Technologists have greater responsibility, education, and training than technicians, usually possessing bachelor's degrees in medical or science fields or a combination of education, experience, and training. Clinical Laboratory Technicians generally hold an associate degree or certificate or receive on-the-job training. The Department of Labor's Bureau of Labor Statistics (BLS)[4] notes that CLT/Ts are employed in hospitals, physicians' offices, laboratories, ambulatory healthcare services (blood banks, organ banks), and outpatient centers. Depending on their background, CLT/Ts may advance to supervisory or administrative positions or leave laboratories for medical and diagnostic manufacturing firms. The BLS states that, in 2002, about 297,000 jobs were held by CLT/Ts, over half in hospitals. The BLS projects average job growth for CLT/Ts through 2012, but job opportunities will be excellent since more positions will be created than CLT/Ts can fill. In 2002, median earnings for technologists were $42,910, while technicians earned $29,040.[4]

Certification. CLT/Ts can become certified through several different agencies: the National Credentialing Agency for Laboratory Personnel (NCA), American Medical Technologists (AMT), American Society for Clinical Pathology (ASCP) Board of Registry, and American Association of Bioanalysts (AAB) Board of Registry. Each agency has its own certification standards, but each requires that applicants meet eligibility requirements related to education and clinical or laboratory training or experience. Each agency also requires that applicants pass the agency's certification examination. Finally, the agencies specify that certified individuals must fulfill continuing education or other requirements to remain certified.

Licensure. Eleven states require licensure for CLT/Ts: California, Florida, Georgia, Hawaii, Louisiana, Montana, Nevada, North Dakota, Rhode Island, Tennessee, and West Virginia. Puerto Rico also requires licensure. The Illinois Legislature has proposed licensure for CLT/Ts. Each state has specific licensure requirements but, in general, states mandate specific educational and professional requirements, an examination, and continuing education for continued licensure.

Accreditation. The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) is the primary accrediting agency for CLT/T programs, accrediting 467 programs in CLT/T and related disciplines.[4] Recognized by the Council for Higher Education Accreditation (CHEA), NAACLS sets accreditation standards for CLT/T programs and their sponsoring institutions, clinical facilities, resources, curriculum, students, and faculty. Accreditation applicants progress from self-study to site visit to final NAACLS review and, after being awarded accreditation, must undergo NAACLS review near the end of their accreditation term to maintain accreditation. Finally, although NAACLS is the primary CLT/T accrediting agency, programs at the associate or technician level might consider accreditation through the Accrediting Bureau of Health Education Schools (ABHES), recognized by the Department of Education.

Diagnostic Medical Sonographer

Overview of the Profession. A Diagnostic Medical Sonographer (DMS), or ultrasonographer, operates imaging equipment that employs high frequency sound waves to generate images that assist physicians and other health specialists to diagnose and assess medical conditions.[5] The DMS profession encompasses several specialties, including abdominal sonography, cardiac sonography, neurosonography, obstetric/gynecologic sonography, ophthalmologic sonography, and vascular technology. The major professional organization for DMS is the Society of Diagnostic Medical Sonography (SDMS), with the American Society of Echocardiography (ASE) and the Society for Vascular Ultrasound (SVU) available for cardiovascular specialists. DMS professionals can follow several career development tracks, ranging from one- to four-year programs leading to a certificate, associate degree, or bachelor's degree.[5,6] DMS students include new high school graduates, health professionals from other fields, and DMS professionals seeking additional DMS specialties. The Department of Labor's Bureau of Labor Statistics (BLS)[5] states that 37,000 individuals held DMS positions in 2002. Three-quarters of DMS professionals work in urban areas. The BLS projects faster than average growth for DMS through 2012, although the high cost of new DMS technologies could impede growth. Hospitals employ over half of DMS professionals, although demand for DMS professionals will grow in physicians' offices, diagnostic laboratories, and imaging centers. In 2002, median earnings for DMS professionals were $48,660.[5]

Certification. The American Registry of Diagnostic Medical Sonographers (ARDMS) is the primary certification organization for DMS professionals, with Cardiovascular Credentialing International (CCI) offering an alternative for cardiovascular professionals. Applicants can earn ARDMS certification as a Registered Diagnostic Medical Sonographer (RDMS), Registered Diagnostic Cardiac Sonographer (RDCS), Registered Vascular Technologist (RVT), and/or Registered Ophthalmic Ultrasound Biometrist (ROUB). To become certified as an ARDMS "Registrant," an applicant must meet education and clinical experience requirements and then pass two exams (a physical principles/instrumentation exam plus a specialty area exam) within five years. ARDMS requires Registrants to earn 30 continuing medical education (CME) credits every three years to keep their registration active.

Licensure. No state currently requires DMS professionals to earn a license to practice.

Accreditation. Currently, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) is the primary accrediting agency for DMS programs, accrediting about 102 programs in 2003.[5] Recognized by the Council for Higher Education Accreditation (CHEA), CAAHEP grants accreditation on the recommendation of its Joint Review Committee on Education in Diagnostic Medical Sonography (JRCDMS). CAAHEP and JRCDMS have established an accreditation process (self-study, site visit, JRCDMS/CAAHEP review, subsequent review for accredited programs every three or more years) and minimum accreditation requirements for DMS programs and their sponsoring institutions and clinical education affiliates. In June 2005, JRCDMS will split from CAAHEP to become an independent DMS accreditation agency, and all future DMS accreditation will be handled through JRCDMS. JRCDMS[7] has stated that current CAAHEP DMS accreditations will continue and that accreditation standards will not change for the foreseeable future, including standards for distance learning. Although CAAHEP and, soon, JRCDMS are the primary DMS accrediting agencies, DMS programs at the associate level might consider accreditation through the Accrediting Bureau of Health Education Schools (ABHES), recognized by the Department of Education, while cardiovascular sonography programs might consider accreditation through CAAHEP's Joint Review Committee on Education in Cardiovascular Technology (JRCCVT).

Nuclear Medicine Technologist

Overview of the Profession. A Nuclear Medicine Technologist (NMT) creates images that physicians and other health specialists use to diagnose and treat medical conditions. In a highly controlled environment, the NMT administers radiopharmaceuticals or radioactive chemical compounds to patients and then monitors the drugs' effect on tissues and organs, operating cameras or "scanners" that create images by mapping the radioactive drugs' distribution in patients' bodies.[8,9] The Society of Nuclear Medicine-Technologist Section (SNM-TS) is the primary professional organization for NMT professionals. These professionals can choose one of several career development tracks, ranging from one- to two-year certificate degrees in hospitals or other medical facilities to two-year associate degree programs to four-year college/university programs.[8] NMT students include those new to the field as well as health professionals seeking the NMT specialty. Once these individuals become NMT professionals, they may opt for careers outside imaging as supervisors, directors, researchers, instructors, or sales representatives for NMT-related firms.[8] According to the Department of Labor's Bureau of Labor Statistics (BLS),[8] 17,000 NMTs were employed in 2002, two-thirds in hospitals and the rest in physicians' offices, diagnostic laboratories, and imaging centers. The BLS expects faster than average growth for NMT through 2012, although the actual number of positions created will remain small and the high cost of new NMT technology could affect growth. NMTs with expertise in other imaging methods will enjoy better employment opportunities. In 2002, median earnings for NMTs were $48,750.[8]

Certification. Certification in NMT is awarded by two organizations: the American Registry of Radiologic Technologists (ARRT) and the Nuclear Medicine Technology Certification Board (NMTCB). Each organization has specific requirements for certification, including educational and clinical experience requirements and an examination. Once they are certified, applicants become "registered" with the agency whose requirements they meet and must complete continuing education to maintain their registration. Both certification organizations are well respected; however, the ARRT has more stringent eligibility requirements, especially in education, and enjoys greater visibility, due to its connection to radiography, sonography, and radiation therapy, as well as to NMT.

Licensure. The following 26 states require licensure for NMTs: Arizona, Arkansas, California, Delaware, Florida, Hawaii, Illinois, Kansas (as of July, 2005), Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nebraska, New Jersey, New Mexico, New York, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, and Wyoming.[10] Each state has different requirements for licensure but, in general, a state exam, the ARRT or NMTCB exam, and continuing education are required for initial and continuing licensure. However, if the Consumer Assurance of Radiologic Excellence (CARE) Bill is passed by Congress, all states would require licensure for NMTs.[11]

Accreditation. The main accrediting agency for NMT programs is the Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT), which accredited 92 programs in 2002.[8] Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), JRCNMT mandates minimum standards for NMT programs and their sponsoring institutions and clinical education affiliates. The accreditation process begins with the program's application and self-study, followed by a site visit and then review by JRCNMT. JRCNMT requires accredited programs to undergo additional review at cycles of three, five, or seven years, depending on the length of time the program has been accredited.

Pharmacist

Overview of the Profession. Pharmacists perform many tasks: dispensing drugs in pharmacies, hospitals, and other healthcare facilities; counseling patients and advising medical staff; performing research and developing new drugs; serving as college faculty; and working in pharmaceutical sales and marketing.[12] The primary professional organizations for pharmacists are the American Pharmacists Association (APhA) and, for pharmacists in healthcare facilities, the American Society of Health-System Pharmacists (ASHP). Entry into the pharmacy profession is a rigorous process. An earlier Bachelor of Pharmacy (BPharm) will be phased out after 2005, replaced by the PharmD, a four-year professional degree requiring at least two years of college study before admission.[12] All future pharmacists will be required to have the PharmD for licensure and practice. Once the PharmD is earned, pharmacists can pursue a variety of education and career paths. Pharmacists interested in research or teaching pursue master's and PhD degrees, as well as postgraduate residency or fellowship experiences.[12] In addition, APhA offers specialized certificate training programs to pharmacists. Although commonly associated with community pharmacies, pharmacists can also work in hospitals, other healthcare facilities, and research laboratories, as well as for the government and drug companies. The Department of Labor's Bureau of Labor Statistics (BLS)[12] identifies pharmacy as a fast growing employment area through 2012. Shortages of as many as 157,000 pharmacists are predicted by 2020.[13] The BLS adds that job growth will be most rapid in non-hospital healthcare facilities while new opportunities will emerge in managed care and drug companies. Hospital job growth will not be as strong, and mail-order pharmacies may diminish overall job growth. In 2002, median earnings for pharmacists were $77,050.[12]

Certification. General certification for pharmacists does not exist, since graduation from accredited pharmacy programs and mandatory state licensure are perceived as ensuring pharmacist credentials. Nevertheless, APhA's Board of Pharmaceutical Specialties (BPS) offers specialty certification to pharmacists in five areas (pharmacotherapy and nuclear, nutrition, oncology, and psychiatric pharmacy). Certification applicants must pass an examination and recertify every seven years.

Licensure. All states, the District of Columbia, and U.S. territories require a license to practice pharmacy. Each jurisdiction sets its own requirements, but all require candidates to pass the National Association of Boards of Pharmacy (NABP) National Association of Boards of Pharmacy Licensing Examination (NAPLEX). Other requirements include either the NABP's Multistate Pharmacy Jurisprudence Examination (MPJE) or the state's own jurisprudence exam, graduation from an accredited pharmacy program, internship experience, and additional requirements. In addition, 51 jurisdictions require continuing education units (CEUs) for license renewal.[14]

Accreditation. The Accreditation Council for Pharmacy Education (ACPE) accredits pharmacy programs, accrediting 85 colleges of pharmacy in 2002.[12] ACPE also accredits providers of continuing pharmacy education. Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), ACPE sets accreditation standards for the College or School of Pharmacy and its sponsoring university, curriculum, students, faculty, facilities, and resources. Accreditation applicants progress through stages, from self-study to on-site review to ACPE recommendation. Applicants may earn pre-accreditation status before initial accreditation. After awarding initial accreditation, ACPE conducts subsequent evaluations, including on-site reviews that typically take place every six years. Finally, ACPE[15] acknowledges distance learning's growing importance in pharmacy degree and continuing education, applauding these programs but maintaining that they must meet established ACPE accreditation standards.

Physical Therapist

Overview of the Profession. Physical therapists rehabilitate individuals experiencing pain and reduced function or mobility due to injuries, disease, or disability. Physical therapists work directly with patients and also examine, test, and measure patients' physical ability, develop treatment plans, and monitor patients' progress.[16] The primary professional organization for PTs is the American Physical Therapy Association (APTA). Potential PTs face stiff competition from others seeking to enter PT degree programs, with some programs requiring volunteer PT-related work as one criterion for admission.[16] It is now expected, if not yet explicitly required, that PTs will earn at least a master's degree from an accredited PT program in order to practice. After graduation, PTs can opt for general practice or specialize in areas such as sports medicine, pediatrics, geriatrics, or cardiac PT. PTs can work in hospitals, clinics, offices of physicians and other health specialists, nursing care facilities, schools, and homes. Two-thirds of PT jobs are in hospitals or offices. The Department of Labor's Bureau of Labor Statistics (BLS)[16] puts the number of PT jobs in 2002 at 137,000. The BLS expects PT job growth to be greater than the average through 2012, with demand for PT services rising as the number of individuals with disabilities due to age, disease, or other factors increases. The BLS cautions, though, that limits on therapy reimbursements could affect growth. In 2002, median earnings for PTs were $57,330.[16]

Certification. General certification for entry-level PTs does not exist, since mandatory state licensure is perceived as ensuring PT qualifications. Nevertheless, licensed, practicing PTs can earn specialist certification through APTA's American Board of Physical Therapy Specialties (ABPTS) Clinical Specialization Program. This program requires licensed PTs with 2000 hours of specialized clinical experience to pass a specialty exam to be certified in areas such as geriatric, pediatric, and sports therapy. Certified PTs must recertify every ten years.

Licensure. All states, plus the District of Columbia, Puerto Rico, and the Virgin Islands, require PTs to earn a license to practice. Each jurisdiction sets different requirements for licensure, but a standard requirement is a passing score on the National Physical Therapy Examination (NPTE) administered by the Federation of State Boards of Physical Therapy (FSBPT). APTA[17] asserts that states, the District of Columbia, and Puerto Rico require graduation from an *accredited* PT program for licensure, but FSBPT literature[18] suggests that PT licensure may be possible for graduates of non-accredited programs.

Accreditation. PT degree programs are accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), an APTA-affiliated agency that accredits both PT and PT Assistant programs. The BLS[16] states that 203 PT programs were CAPTE-accredited in 2003, 113 offering master's degrees, 90 offering doctoral degrees. Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), CAPTE sets accreditation standards for PT programs and their sponsoring institutions, clinical education sites, curriculum, faculty, students, and resources. PT programs seeking accreditation progress from self-study to site visit to evaluation by CAPTE, also progressing through stages such as "Candidate for Accreditation" as they move toward accreditation. CAPTE also provides accreditation information to programs making a transition from PT Assistant to PT, or from PT to Doctoral PT. After initial accreditation, programs are reviewed by CAPTE every five to ten years. Finally, PT accreditation has changed in the past decade, as new PT programs proliferate and groups like APTA push for stricter qualifications for PTs. One change has been that, as of 2002, CAPTE will only accredit PT programs that offer at least a master's degree.

Physician Assistant

Overview of the Profession. A Physician Assistant (PA) provides diagnostic, therapeutic, and preventive health services, under a physician's supervision.[19] Formally trained and educated, PAs examine and treat patients, order and interpret tests, order or carry out therapy, make diagnoses and, in 48 states, the District of Columbia, and Guam, prescribe medications. The main professional organization for PAs is the American Academy of Physician Assistants (AAPA). To become a PA, an individual completes an intensive two-year education program that leads to a certificate of completion but also, typically, to a degree (master's, bachelor's, associate, certificate).[20] Many PA programs require two years of college and previous healthcare experience for admission, and the typical applicant already has a bachelor's degree and two to four years of experience.[20,21] PAs are expected to continue their education throughout their careers through continuing education, specialty education, and postgraduate residency programs. According to the Department of Labor's Bureau of Labor Statistics (BLS),[19] there were 63,000 PA jobs in 2002, over half in offices of physicians and other specialists, with the rest in hospitals, outpatient centers, government, and other services. At times, PAs are the primary care providers in rural or inner city clinics, where physicians may not always be present. Regardless, PA duties are always determined by a supervising physician and state law. The BLS[19,22] expects much faster than average job growth for PAs through 2012, listing PAs as the third fastest growing profession for the 2002-2012 period. Cost-effective and productive, PAs will find work in offices, hospitals, clinics, and other settings. In 2002, median earnings for PAs were $64,670.[19]

Certification. PAs become certified with the credential Physician Assistant-Certified (PA-C) through the National Commission on Certification of Physician Assistants (NCCPA). Applicants become certified once they pass the NCCPA's Physician Assistant National Certifying Examination (PANCE). Only graduates of accredited PA programs are eligible to take the exam. Once certified, PAs must log 100 continuing medical education (CME) hours every two years and pass a recertification exam at the end of six years. Moreover, so critical are NCCPA certification and the PANCE that all state licensure depends on this certification and exam.

Licensure. All states, the District of Columbia, and the U.S. territories require licensure for PAs. Each jurisdiction has different requirements, but all typically require applicants to graduate from an accredited PA program and hold NCCPA certification/pass the PANCE exam. Forty-six states allow new PAs to practice to some degree before passing the PANCE. Finally, 48 states, the District of Columbia, and Guam allow PAs to prescribe medications.

Accreditation. PA programs are accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), which accredited 133 programs in 2002. Recognized by the Council for Higher Education Accreditation (CHEA), ARC-PA sets accreditation standards for PA programs and their sponsoring institutions, curriculum, faculty, and clinical and other resources—standards that the PA program must meet as it moves toward provisional accreditation or accreditation. ARC-PA's policies require that PA programs progress from an initial application through a self-study and site visit to final consideration by ARC-PA. Once accredited, PA programs must maintain their accreditation, submitting to ARC-PA reports and information about programmatic changes and undergoing a comprehensive review.

Radiologic Technologist/Technician

Overview of the Profession. A Radiologic Technologist/Technician (RT/T), also known as a radiographer, uses x-ray technology to create black-and-white diagnostic images or "radiographs" that physicians such as radiologists and other health specialists use to diagnose and assess medical conditions.[23,24] Radiologic technologists/technicians are part of the larger field of "radiologic technology," whose members are also called "radiologic technologists" but who work in areas beyond x-ray technology (computed tomography, MRI, nuclear medicine technology, etc.). The largest professional organization for X-ray RT/Ts and other radiologic professionals is the American Society of Radiologic Technologists (ASRT), which requires that its members be registered/certified. X-ray RT/Ts can choose from several education and career paths. Education programs exist in hospitals, vo-tech schools, colleges/universities, and the military, with programs leading to one- or two-year certificates, two-year associate degrees, or bachelor's degrees.[23,25] In general, technologists have received more education while technicians have received less. Students range from high school graduates to health professionals seeking a radiologic specialty. After graduation, new professionals can serve as lab RT/Ts or move into roles as supervisors, administrators, instructors, and sales representatives.[23] The Department of Labor's Bureau of Labor Statistics (BLS)[23] states that 174,000 individuals held RT/T positions in 2002, with half of RT/Ts working in hospitals and the rest in physicians' offices, diagnostic laboratories, imaging centers, and outpatient care centers. The BLS forecasts faster than average growth for RT/Ts through 2012, with multi-specialized RT/Ts enjoying greater prospects. Still, RT/T technology costs may hamper job growth. In 2002, median earnings for RT/Ts were $38,970.[23] In 2004, on average, professionals in *all* radiologic technology fields (not just x-ray) earned $65,401.[26]

Certification. The American Registry of Radiologic Technologists (ARRT) certifies x-ray RT/Ts as well as many other radiologic technology specialists. To be certified, an applicant must meet educational requirements, including graduation from an ARRT-approved program, and possible clinical requirements and pass an ARRT exam. Once applicants meet these requirements, they are certified and become "registered" with ARRT. To maintain their registration, individuals must complete 24 continuing education credits over two years or pass an ARRT exam in a different specialty area.

Licensure. The following 35 states require state licensure for RT/Ts: Arizona, Arkansas, California, Connecticut, Delaware, Florida, Hawaii, Illinois, Indiana, Iowa, Kansas (as of July, 2005), Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Montana, Nebraska, New Jersey, New Mexico, New York, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wyoming.[10] In addition, Puerto Rico requires licensure to practice, while two additional states (Colorado, Pennsylvania) without overall radiologic licensure still require licensure for "limited scope" practice, or radiography restricted to the chest and extremities.[10] Each state has different requirements for licensure but, in general, a state exam, the ARRT exam, and continuing education are required for initial and continuing licensure. However, if the Consumer Assurance of Radiologic Excellence (CARE) Bill is passed by Congress, all states would require licensure for RT/Ts.[11]

Accreditation. The Joint Review Committee on Education in Radiologic Technology (JRCERT) accredits RT/T programs, accrediting 587 radiologic technology programs in 2003.[23] Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), JRCERT sets minimum standards for RT/T programs and their sponsoring institutions and clinical education affiliates. The accreditation process begins with the program's application and self-study, followed by a site visit and then review by JRCERT. JRCERT requires accredited programs to undergo additional review at set intervals, depending on the accreditation term set by JRCERT. Finally, although JRCERT is the primary RT/T accrediting agency, programs at the associate level might consider accreditation through the Accrediting Bureau of Health Education Schools (ABHES), recognized by the Department of Education.

Surgical Technologist

Overview of the Profession. A Surgical Technologist (ST), also known as a scrub or surgical/operating room technician, assists surgeons and other personnel during operations.[27] STs help prepare the operating room, patients, and surgical team. During surgery, they pass instruments, operate equipment, and perform other duties. They also perform post-operative procedures related to patient care and the operating room. The Association of Surgical Technologists (AST) is the primary professional organization for STs. Persons wishing to become STs complete a nine- to twenty-four-month program that is offered in a college/university, hospital, vo-tech school, or the military and which leads to a certificate, diploma, or associate degree. After graduation, STs can progress from entry-level STs to STs who specialize in a particular surgical area, to circulating or "unsterile" members of the surgical team, or to surgical first assistants. The Department of Labor's Bureau of Labor Statistics (BLS)[27] states that STs held about 72,000 jobs in 2002, three-quarters of which were in hospitals, with the remaining in physicians' or dentists' offices and in outpatient care centers. The BLS posits faster than average ST job growth through 2012, with hospitals remaining the primary employer but faster job growth expected in offices and outpatient centers. In 2002, median earnings for STs were $31,210.[27]

Certification. Two organizations certify STs: the Liaison Council on Certification for the Surgical Technologist (LCC-ST) and National Center for Competency Testing (NCCT). LCC-ST offers the credentials Certified Surgical Technologist (CST) and the more advanced Certified First Assistant (CST/CFA) while NCCT offers the Tech in Surgery-Certified (TS-C) and more advanced Assistant in Surgery-Certified (AS-C). Certification is crucial in the ST field because states do not currently license the profession. Certification offers an independent, national standard of quality, and the majority of ST employers require certification for employment. Both LCC-ST and NCCA have established requirements for certification, including an examination, clinical or surgical experience, and graduation from an ST program accredited by, in NCCT's case, the Department of Education or, in the case of LCC-ST, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or Accrediting Bureau of Health Education Schools (ABHES). LCC-ST has stricter policies governing graduation from an accredited program while NCCT offers alternate routes for graduates of non-accredited programs as well as applicants with experience but without formal education. Certification must be renewed every four years (LCC-ST) or every five years (NCCT), either through continuing education or re-examination.

Licensure. The states do not require STs to have a license to practice, though the State of Tennessee has proposed legislation to license STs.

Accreditation. ST programs are accredited by either the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or Accrediting Bureau of Health Education Schools (ABHES). Recognized by the Council for Higher Education Accreditation (CHEA), CAAHEP accredited 361 ST programs in 2002.[27] Recognized by the Department of Education, ABHES currently accredits 18 ST programs. Both CAAHEP and ABHES have an established accreditation process, encompassing self-study by the program, site visit by the accrediting agency, and the agency's final review and decision. To become accredited, programs must meet requirements related to their sponsoring institution, clinical/hospital affiliations, curriculum, faculty, students, and resources. Finally, accredited programs must maintain accreditation by providing information, including financial, annual, and other reports, to the accrediting agency and undergoing additional reviews, including, in CAAHEP's case, a comprehensive review at least once every ten years.

Veterinarian

Overview of the Profession. A Veterinarian serves the health needs of pets and livestock as well as animals in zoos, laboratories, and other environments.[28] Veterinarians in clinical practice diagnose and treat animal health conditions, vaccinate and medicate animals, perform surgery, and advise owners on animal health. Veterinarians outside clinical practice fill a variety of roles in research, food safety, and public health. Veterinarians might be self-employed or employees of another veterinarian, the government, or industry. The American Veterinary Medical Association (AVMA) is the major professional organization for veterinarians. Prospective veterinarians complete a four-year post-baccalaureate program leading to the Doctor of Veterinary Medicine (DVM). Applicants with research interests can earn a concurrent PhD. Applicants face stiff competition to enter one of only 28 accredited veterinary medicine programs in the U.S. After graduation, veterinarians can begin clinical practice (usually as employees of established practices) or pursue other options. Graduates can also pursue education in a veterinary specialty through two-year internships or through longer residency programs that lead to board certification in a specialty. According to the Department of Labor's Bureau of Labor Statistics (BLS),[28] there were 58,000 veterinarian jobs in 2002, the majority in small-animal, private clinical practice. The BLS projects faster than average job growth through 2012, with positive growth continuing in clinical practice but less vigorous growth in large-animal veterinary work and public health, food safety, and related areas. In 2002, median earnings for veterinarians were $63,090.[28]

Certification. General certification for veterinarians does not exist, since graduation from an accredited veterinary medicine program and mandatory state licensure are perceived as ensuring veterinary credentials.

Licensure. All states, the District of Columbia, and U.S. territories require licensure for veterinary practice. Licensure is managed by Boards of Veterinary Medicine in states and other jurisdictions. Licensure requirements vary among the jurisdictions, but all jurisdictions require graduation from an accredited veterinary medicine program (or, for foreign candidates, equivalent programs) plus a passing score on the North American Veterinary Licensing Examination (NAVLE) administered by the National Board of Veterinary Medical Examiners (NBVME). Many states also demand a state jurisprudence exam and other requirements. Once licensed, veterinarians in about half the jurisdictions must meet continuing education requirements to renew their licenses.[29]

Accreditation. The American Veterinary Medical Association (AVMA) accredits the 28 veterinary medicine programs in the U.S. Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), AVMA sets accreditation standards that assess a veterinary medicine program and its sponsoring institution, curriculum, faculty, students, research programs, and clinical and other resources. To earn accreditation, a program must follow an application process that involves a self-study, site visit, and final review by AVMA, which awards different categories of accreditation (reasonable assurance, provisional accreditation, full accreditation, limited accreditation, terminal accreditation). Once accredited, a program must be reevaluated at least once every seven years to maintain its accreditation.

Veterinary Technologist/Technician

Overview of the Profession. A Veterinary Technologist and Veterinary Technician are often both referred to as Veterinary Technicians since technologists and technicians perform many of the same duties.[30] Under the supervision of veterinarians, VT/Ts perform medical and laboratory tests, treat and diagnose medical conditions in animals, operate medical equipment, and develop x-rays. The primary professional organization for VT/Ts is the National Association of Veterinary Technicians in America (NAVTA), with the American Association for Laboratory Animal Science (AALAS) available for VT/Ts who work with laboratory research animals. In terms of education, Veterinary Technologists earn a four-year degree in veterinary technology while Veterinary Technicians earn a two-year degree in veterinary technology. After graduation, VT/Ts can progress from routine entry-level work under direct supervision to tasks requiring less supervision and more responsibility, including supervisory roles.[30] Some VT/Ts may choose to specialize in certain areas (clinical practice, small or large animal care, surgery, research). VT/Ts can also choose from a variety of work settings: private clinics, animal hospitals, shelters, research facilities and laboratories, government offices, zoos, and pharmaceutical companies. The Department of Labor's Bureau of Labor Statistics (BLS)[30] sets the number of VT/T jobs in 2002 at 53,000, most in veterinary services such as private clinics, the rest in shelters, kennels, stables, zoos, and government agencies. The BLS expects much faster than average job growth through 2012 and has listed[22] VT/Ts as the 13th fastest growing profession for the 2002-2012 period. In 2002, median earnings for VT/Ts were $22,950.[30]

Certification. For VT/Ts specializing in laboratory science or research, the American Association for Laboratory Animal Science (AALAS) offers certification at three levels: Assistant Laboratory Animal Technician (ALAT), Laboratory Animal Technician (LAT), and Laboratory Animal Technologist (LATG). To become certified by AALAS, an applicant must meet education and work experience requirements and pass a certification examination. To remain registered as a certified professional, an individual must meet continuing education requirements. Mainstream "certification" for VT/Ts occurs, though in a less formal way than certification for other professions, through the National Association of Veterinary Technicians in America (NAVTA). NAVTA itself only admits to full membership graduates of accredited veterinary technology programs who are state licensed/registered/certified. Moreover, NAVTA considers a VT/T "credentialed" (NAVTA's preferred word) when the VT/T has passed the Veterinary Technician National Examination (VTNE) administered by the American Association of Veterinary State Boards (AAVSB). Finally, specialist certification is available for VT/Ts in emergency critical care, anesthesiology, and dentistry through various VT/T "Academies."

Licensure. Only seven states do not regulate VT/T practice: Delaware, Hawaii, New Hampshire, Rhode Island, Utah, Vermont, Wyoming.[31] The District of Columbia and Puerto Rico also do not regulate VT/Ts. In the remaining states, VT/Ts are regulated and must be licensed, certified, or registered. The name of the designation (licensed, certified, or registered) and eligibility requirements for the designation depend on a particular state's laws and policies. Still, a considerable number of states require graduation from an accredited VT/T program, a passing score on the Veterinary Technician National Examination (VTNE), and continuing education to renew their designation.

Accreditation. The American Veterinary Medical Association (AVMA) accredits veterinary technology programs. Recognized by the U.S. Department of Education and Council for Higher Education Accreditation (CHEA), AVMA accredited more than 80 programs in 2003, including five distance learning programs.[30] To become accredited, a veterinary technology program must meet requirements related to its sponsoring institution, curriculum, faculty, students, clinical instruction resources, and other resources. Programs seeking accreditation must follow an application process that requires a self-study, site visit, and final review by AVMA. Moreover, after earning accreditation, the program must maintain its accreditation through annual reports and complete review every five or six years.

Conclusion

The ten professions discussed in this summary are all expected to enjoy strong job growth and job opportunities over the next decade, due to the rising need and desire for healthcare, especially among an aging population. Even now, there are not enough individuals graduating from programs at all levels (certificate, associate, baccalaureate, graduate/professional) to fill the number of job positions being created.

The ten professions vary in terms of certification and licensure requirements for members of their field. For most of the professions, opportunities for certification correlate with the amount of licensure regulation imposed by the states. In other words, strong certification opportunities exist in professions that are not highly regulated by the states while certification is not a priority in professions heavily controlled by the states. Thus, the professions of Clinical Laboratory Technologist/Technician, Diagnostic Medical Sonographer, and Surgical Technologist have strong certification organizations but little or no state regulation. Professions such as Pharmacist, Physical Therapist, and Veterinarian, whose members are required to have state licensure, have little or no certification opportunities, at least at the entry (non-specialty) level of practice. Similarly, the profession of Veterinary Technologist/Technician requires that VT/Ts be licensed/registered/certified in most states but offers few certification opportunities for non-laboratory research VT/Ts. Physician Assistants have both certification and licensure, but the two are so closely linked that the certification exam is also the state licensure exam. Two more professions—Nuclear Medicine Technologist and Radiologic Technologist/Technician—have both strong certification organizations and considerable state licensure, perhaps due to the nature of the work with radioactive materials. Finally, despite the lack of state regulation for several of the ten professions, the legislative trend is toward more, not less, regulation.

Each of the ten professions has an established accrediting agency (or agencies) recognized by either the U.S. Department of Education, the Council for Higher Education Accreditation (CHEA), or both. The majority of the professions recognize one accrediting agency as the premiere accreditor for programs in their field. However, programs at the associate or two-year level might want to consider an alternative accrediting agency, the Accrediting Bureau of Health Education Schools (ABHES), an institutional and programmatic accreditor for schools at the predominantly associate level.

The requirements for accreditation, as well as the application process for accreditation, are similar across the accrediting agencies. Most, if not all, accrediting agencies require a self-study followed by a site visit followed by a final review and decision by the accrediting agency. The self-studies ask programs in different fields to look at many of the same factors: sponsoring institution, clinical resources, curriculum, faculty, etc. After accreditation is awarded, the agencies also require ongoing reviews at set intervals to maintain accreditation. One critical factor in accrediting decisions seems to be the accreditation status of the institution sponsoring the program applying for accreditation. The accrediting agencies expect that the sponsoring institution will have institutional accreditation with a recognized institutional accrediting agency, usually one recognized by the Department of Education. Agencies require this institutional accreditation before they will grant programmatic accreditation to the applicant, though several agencies suggest that they will consider institutions with "equivalent" accreditation outside the established institutional accrediting agencies. In general, though, in their stated policies and guidelines, the accrediting agencies do not seem open to alternatives to their requirements for accreditation.

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