

Veterinary Medicine



Career Description

Veterinarians play a major role in the health care 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.

Veterinarians 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.

Veterinarians who treat animals use medical equipment such as stethoscopes, surgical instruments, and diagnostic equipment, including radiographic and ultrasound equipment. Veterinarians working in research use a full range of sophisticated laboratory equipment.

Most veterinarians perform clinical work in private practices. More than 50 percent 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. About one fourth of all veterinarians work in mixed animal practices, where they see pigs, goats, sheep, and some nondomestic animals in addition to companion animals.

A small number of private-practice veterinarians work exclusively with large animals, mostly horses or cows; some 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 animals. These veterinarians test for and vaccinate against diseases and consult with farm or ranch owners and managers regarding animal production, feeding, and housing issues. They also treat and dress wounds, set fractures, and perform surgery, including cesarean sections on birthing animals. Veterinarians euthanize animals when necessary. Other veterinarians care for zoo, aquarium, or laboratory animals.

In addition to self-employment in a solo or group practice and working as salaried employees of another practice, veterinarians are employed by the federal government, state and local governments, colleges of veterinary medicine, medical schools, research laboratories, animal food companies, and pharmaceutical companies. A few veterinarians work for zoos, but most veterinarians caring for zoo animals are private practitioners who contract with the zoos to provide services, usually on a part-time basis. In addition, many veterinarians hold faculty positions in colleges and universities.



Employment Characteristics

Veterinarians often work long hours. Those in group practices may take turns being on call for evening, night, or weekend work; solo practitioners may work extended and weekend hours, responding to emergencies or squeezing in unexpected appointments. The work setting often can be noisy.

Veterinarians in large-animal practice spend time driving between their office and farms or ranches. They work outdoors in all kinds of weather and may have to treat animals or perform surgery under unsanitary conditions. When working with animals that are frightened or in pain, veterinarians risk being bitten, kicked, or scratched.

Veterinarians working in nonclinical areas, such as public health and research, have working conditions similar to those of other professionals in those lines of work. In these cases, veterinarians enjoy clean, well-lit offices or laboratories and spend much of their time dealing with people rather than animals.

Some veterinarians are involved in food safety. Veterinarians who are livestock inspectors check animals for transmissible diseases, advise owners on the treatment of their animals and may quarantine animals. Veterinarians who are meat, poultry, or egg product inspectors examine slaughtering and processing plants, check live animals and carcasses for disease, and enforce government regulations regarding food purity and sanitation.

Veterinarians can contribute to human as well as animal health. A number of veterinarians work with physicians and scientists as they research ways to prevent and treat various human health problems. For example, veterinarians contributed greatly in conquering malaria and yellow fever, solved the mystery of botulism, produced an anticoagulant used to treat some people with heart disease, and defined and developed surgical techniques for humans, such as hip and knee joint replacements and limb and organ transplants. Today, some determine the effects of drug therapies, antibiotics, or new surgical techniques by testing them on animals.

At its 2007 annual meeting, the American Medical Association (AMA) House of Delegates voted to adopt new policy supporting more educational and research collaborations between the medical and veterinary professions to help with assessing, treating, and preventing cross-species disease transmission. Benefits of current collaborative efforts include rabies control efforts and foodborne illness evaluations. "Many infectious diseases can infect both humans and animals," said AMA Board Member Duane M. Cady, MD. "New infections continue to emerge and with threats of cross-species disease transmission and pandemic in our global health environment, the time has come for the human and veterinary medical professions to work closer together for the greater protection of the public health in the 21st Century."



Salary

Median annual earnings of veterinarians were \$66,590 in 2004. The middle 50 percent earned between \$51,420 and \$88,060. The lowest 10 percent earned less than \$39,020, and the highest 10 percent earned more than \$118,430.

According to a survey by the American Veterinary Medical Association, average starting salaries of veterinary medical college graduates in 2004 varied by type of practice as follows:

- Small animals, predominantly \$50,878
- Small animals, exclusively \$50,703
- Large animals, exclusively \$50,403
- Private clinical practice \$49,635
- Large animals, predominantly \$48,529
- Mixed animals \$47,704
- Equine (horses) \$38,628

The average annual salary for veterinarians in the federal government in nonsupervisory, supervisory, and managerial positions was \$78,769 in 2005.

Refer to Section IV, Table 5 of this *Directory* for more information, or see www.ama-assn.org/go/hpsalary.



Employment Outlook

Currently more than 86,000 veterinarians actively practice in the United States. Employment of veterinarians is expected to increase as fast as average for all occupations through 2014. Despite this average growth, very good job opportunities are expected because the 28 schools of veterinary medicine, even at full capacity, produce a limited number of graduates each year. At the same time, admission to veterinary school is highly competitive.

Most veterinarians practice in animal hospitals or clinics and care primarily for companion animals. Recent trends indicate particularly strong interest in cats as pets. Faster growth of the cat population is expected to increase the demand for feline medicine and veterinary services, while demand for veterinary care for dogs should grow at a more modest pace.

As pets are increasingly viewed as a member of the family, pet owners will be more willing to spend on advanced veterinary medical care, creating further demand for veterinarians. More pet owners even purchase pet insurance, increasing the likelihood that a considerable amount of money will be spent on veterinary care for their pets. More pet owners also will take advantage of nontraditional veterinary services, such as preventive dental care.

New graduates continue to be attracted to companion-animal medicine because they prefer to deal with pets and to live and work near heavily populated areas. This situation will not necessarily limit the ability of veterinarians to find employment or to set up and maintain a practice in a particular area. Rather, beginning veterinarians may take positions requiring evening or weekend work to accommodate the extended hours of operation that many practices are offering. Some veterinarians take salaried positions in retail stores offering veterinary services. Self-employed veterinarians usually have to work intensively for several years to build a sufficient client base.

The number of jobs for large-animal veterinarians is likely to grow more slowly than that for veterinarians in private practice who care for companion animals. Nevertheless, job prospects may be better for veterinarians who specialize in farm animals than for companion-animal practitioners because of low earnings in the former specialty and because many veterinarians do not want to work in rural or isolated areas.

Continued support for public health and food safety, national disease control programs, and biomedical research on human health problems will contribute to the demand for veterinarians, although positions in these areas of interest are few in number. Homeland security also may provide opportunities for veterinarians involved in efforts to minimize animal diseases and prevent them from entering the country. Veterinarians with training in food safety, animal health and welfare, and public health and epidemiology should have the best opportunities for a career in the federal government.



Educational Programs

Award, Length. Graduates earn a Doctor of Veterinary Medicine (DVM or VMD) degree from a 4-year program at an accredited college of veterinary medicine.

Prerequisites. Prerequisites for admission vary. For example, many colleges do not require a bachelor's degree for entrance, but

all require a significant number of credit hours—ranging from 45 to 90 semester hours—at the undergraduate level. Nonetheless, most of the students admitted have completed an undergraduate program, and those without a bachelor's degree face a difficult task gaining admittance. Competition for admission to veterinary school is keen. The number of accredited veterinary colleges has remained largely the same since 1983, whereas the number of applicants has risen significantly. Only about one in three applicants was accepted in 2004; approximately 80 percent of entering students are female.

Students interested in a career in veterinary medicine should perform well in general science and biology in junior high school and pursue a strong science, mathematics, and biology program in high school. Before applying to veterinary college/school, students must successfully complete university-level preveterinary undergraduate course work. Each college or school of veterinary medicine establishes its own preveterinary requirements, but typically these include demonstrating basic language and communication skills and completion of courses in the social sciences, humanities, mathematics, biology, chemistry, and physics.

In addition to satisfying preveterinary course requirements, applicants must submit test scores from the Graduate Record Examination (GRE), the Veterinary College Admission Test (VCAT), or the Medical College Admission Test (MCAT), depending on the preference of the college to which they are applying. Currently, 22 schools require the GRE, 4 require the VCAT, and 2 accept the MCAT.

In admittance decisions, some veterinary medical colleges place heavy consideration on a candidate's veterinary and animal experience. Formal experience, such as work with veterinarians or scientists in clinics, agribusiness, research, or some area of health science, is particularly advantageous. Less formal experience, such as working with animals on a farm or ranch or at a stable or animal shelter, also is helpful. Students must demonstrate ambition and an eagerness to work with animals.

Prospective veterinarians must have good manual dexterity, as well as an inquiring mind, keen powers of observation, and aptitude and interest in the biological sciences. Veterinarians must maintain a lifelong interest in scientific learning. They should have an affinity for animals and the ability to get along with their owners and express compassion. Veterinarians who intend to go into private practice should possess excellent communication, managerial, leadership, and business skills, because they will need to manage their practice and employees successfully and promote, market, and sell their services.

Curriculum. Veterinary medical colleges typically require classes in organic and inorganic chemistry, physics, biochemistry, general biology, animal biology, animal nutrition, genetics, vertebrate embryology, cellular biology, microbiology, zoology, and systemic physiology. Some programs require calculus; some require only statistics, college algebra and trigonometry, or precalculus. Most veterinary medical colleges also require core courses, including some in English or literature, the social sciences, and the humanities. Increasingly, courses in practice management and career development are becoming a standard part of the curriculum, to provide a foundation of general business knowledge for new graduates.

Advanced Training. Veterinary specialties—such as pathology, internal medicine, dentistry, nutrition, ophthalmology, surgery, radiology, preventive medicine, and laboratory animal medicine—are usually in the form of a 2-year internship. Interns receive a small salary but usually find that their internship experience leads to a higher beginning salary relative to those of other

starting veterinarians. Veterinarians who seek board certification in a specialty also must complete a 3- to 4-year residency program that provides intensive training in specialties such as internal medicine, oncology, radiology, surgery, dermatology, anesthesiology, neurology, cardiology, ophthalmology, and exotic small-animal medicine.



Licensure

All states and the District of Columbia require that veterinarians be licensed before they can practice. The only exemptions are for veterinarians working for some federal agencies and some state governments. Licensing is controlled by the states and is not strictly uniform, although all states require the successful completion of the DVM degree—or equivalent education—and a passing grade on a national board examination. The Educational Commission for Foreign Veterinary Graduates (ECFVG) grants certification to individuals trained outside the United States who demonstrate that they meet specified requirements for the English language and for clinical proficiency. ECFVG certification fulfills the educational requirement for licensure in all states. Applicants for licensure satisfy the examination requirement by passing the North American Veterinary Licensing Exam (NAVLE), an 8-hour computer-based examination consisting of 360 multiple-choice questions covering all aspects of veterinary medicine. Administered by the National Board of Veterinary Medical Examiners (NBVME), the NAVLE includes visual materials designed to test diagnostic skills and constituting 10 percent of the total examination.

The majority of states also require candidates to pass a state jurisprudence examination covering state laws and regulations. Some states do additional testing on clinical competency as well. There are few reciprocal agreements between states, making it difficult for a veterinarian to practice in a different state without first taking that state's examination.

Nearly all states have continuing education requirements for licensed veterinarians. Requirements differ by state and may

involve attending a class or otherwise demonstrating knowledge of recent medical and veterinary advances.



Inquiries

Education, Careers, Resources

American Veterinary Medical Association
1931 North Meacham Road, Suite 100
Schaumburg, IL 60173-4360
www.avma.org

Association of American Veterinary Medical Colleges
1101 Vermont Avenue NW, Suite 710
Washington, DC 20005
www.aavmc.org

Licensure

National Board of Veterinary Medical Examiners
PO Box 1356
Bismarck, ND 58502
<http://www.nbvme.org/>

Program Accreditation

American Veterinary Medical Association, Council on Education
1931 North Meacham Road, Suite 100
Schaumburg, IL 60173-4360
www.avma.org/education/cvea/about_accred.asp

Note: Adapted in part from the Bureau of Labor Statistics, US Department of Labor, *Occupational Outlook Handbook*, 2006-07 Edition, Veterinarians, on the Internet at www.bls.gov/oco/ocos076.htm (visited September 06, 2007).