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## Veterinarians

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### Significant Points

- Graduation from an accredited college of veterinary medicine and a State license are required.
- Employment opportunities are expected to be very good, but competition for admission to veterinary school is keen.
- Veterinarians should have an affinity for animals and the ability to get along with animal owners.

### 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. 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. 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; 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 food animals. These veterinarians test for and vaccinate against diseases and consult with farm or ranch owners and managers on animal production, feeding, and housing issues. They also treat and dress wounds, set fractures, and perform surgery—including cesarean sections on birthing animals. Veterinarians also euthanize animals when necessary. Other veterinarians care for zoo, aquarium, or laboratory animals.

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

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.

Some veterinarians are involved in food safety at various levels. Veterinarians who are livestock inspectors check animals for transmissible diseases, advise owners on treatment, 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.

### Working Conditions

Veterinarians often work long hours. Those in group practices may take turns being on call for evening, night, or weekend work; and solo practitioners can 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 also 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, veteri-



*Most veterinarians perform clinical work in private practices on animals such as cats and dogs.*

narians enjoy clean, well-lit offices or laboratories and spend much of their time dealing with people rather than animals.

### **Employment**

Veterinarians held about 58,000 jobs in 2002. About 28 percent were self-employed in solo or group practices. Most others were salaried employees of another veterinary practice. The Federal Government employed about 1,100 civilian veterinarians, chiefly in the U.S. Departments of Agriculture and Health and Human Services. Other employers of veterinarians are 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 zoos to provide services, usually on a part-time basis.

In addition, many veterinarians hold veterinary faculty positions in colleges and universities. (See the statement on teachers—postsecondary elsewhere in the *Handbook*.)

### **Training, Other Qualifications, and Advancement**

Prospective veterinarians must graduate from a 4-year program at an accredited college of veterinary medicine with a Doctor of Veterinary Medicine (D.V.M. or V.M.D.) degree and obtain a license to practice. There are 28 colleges in 26 States that meet accreditation standards set by the Council on Education of the American Veterinary Medical Association (AVMA). The prerequisites for admission vary by veterinary medical college. Many of these 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. However, most of the students admitted have completed an undergraduate program. Applicants without a bachelor's degree face a difficult task gaining admittance.

Preveterinary courses emphasize the sciences. 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.

In addition to satisfying preveterinary course requirements, applicants also 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 each college. Currently, 21 schools require the GRE, 5 require the VCAT, and 2 accept the MCAT.

Some veterinary medical colleges place heavy consideration on a candidate's veterinary and animal experience in admittance decisions. 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.

There is keen competition for admission to veterinary school. The number of accredited veterinary colleges has largely re-

mained the same since 1983, whereas the number of applicants has risen significantly. Only about 1 in 3 applicants was accepted in 2002. Most veterinary medical colleges are public, State-supported institutions and reserve the majority of their openings for instate residents, making admission for out-of-state applicants difficult.

While in veterinary medical college, students receive additional academic instruction in the basic sciences for the first 2 years. Later in the program, students are exposed to clinical procedures, such as diagnosing and treating animal diseases and performing surgery. They also do laboratory work in anatomy, biochemistry, medicine, and other scientific subjects. At most veterinary medical colleges, students who plan a career in research can earn both a D.V.M. degree and a Doctor of Philosophy (Ph.D.) degree at the same time.

Veterinary graduates who plan to work with specific types of animals typically choose to pursue additional education in 1 of 20 AVMA-recognized veterinary specialties—such as pathology, internal medicine, dentistry, ophthalmology, surgery, radiology, preventive medicine, or laboratory animal medicine—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 must also 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.

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 successful completion of the D.V.M. degree—or equivalent education—and passage of 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 clinical proficiency. ECFVG certification fulfills the educational requirement for licensure in all States except Nebraska. Applicants for licensure satisfy the examination requirement by passing the North American Veterinary Licensing Exam (NAVLE). The NAVLE, administered by computer, takes 1 day to complete and consists of 360 multiple-choice questions, covering all aspects of veterinary medicine. The NAVLE also includes visual materials designed to test diagnostic skills, comprising 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 also do additional testing on clinical competency. There are few reciprocal agreements between States, making it difficult for a veterinarian to practice in a different State without first taking another State 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.

Most veterinarians begin as employees in established practices. Despite the substantial financial investment in equipment, office space, and staff, many veterinarians with experience set up their own practice or purchase an established one.

Newly trained veterinarians can become U.S. Government meat and poultry inspectors, disease-control workers, animal welfare and safety workers, epidemiologists, research assistants, or commissioned officers in the U.S. Public Health Service or various branches of the U.S. Armed Forces. A State license may be required.

Prospective veterinarians must have good manual dexterity. They should have an affinity for animals and the ability to get along with animal owners, especially when working with pet owners, who tend to form a strong bond with their pet. Veterinarians who intend to go into private practice should possess excellent communication and business skills because they will need to successfully manage their practice and employees and will need to promote, market, and sell their services.

### Job Outlook

Very good opportunities are expected because the number of graduates from veterinary school is not expected to increase significantly over the 2002-12 period. However, as mentioned earlier, there is keen competition for admittance to veterinary school. Employment of veterinarians is expected to increase faster than the average for all occupations through the year 2012. As pets are increasingly viewed as a member of the family, pet owners will be more willing to spend increasing amounts on advanced veterinary medical care, creating more demand for veterinarians.

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 continue to grow at a more modest pace.

Pet owners are becoming more aware of the availability of advanced care and are more willing to pay for intensive veterinary care than in the past because many pet owners are more affluent, and because they consider their pet part of the family. 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 small-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 hard and long 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 small-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 public health and epidemiology should have the best opportunities for a career in the Federal Government.

### Earnings

Median annual earnings of veterinarians were \$63,090 in 2002. The middle 50 percent earned between \$49,050 and \$85,770. The lowest 10 percent earned less than \$38,000, and the highest 10 percent earned more than \$123,370.

According to a survey by the American Veterinary Medical Association, average starting salaries of 2002 veterinary medical college graduates varied by type of practice as follows:

All private clinical practices .....	\$46,339
Large animals, exclusively .....	48,303
Small animals, exclusively .....	48,178
Small animals, predominantly .....	46,582
Large animals, predominantly .....	45,087
Mixed animals .....	43,948
Equine (horses) .....	34,273

The average annual salary for veterinarians in the Federal Government in nonsupervisory, supervisory, and managerial positions was \$72,208 in 2003.

### Related Occupations

Veterinarians prevent, diagnose, and treat diseases, disorders, and injuries in animals. Those who do similar work for humans include chiropractors, dentists, optometrists, physicians and surgeons, and podiatrists. Veterinarians have extensive training in physical and life sciences, and some do scientific and medical research, closely paralleling the work of biological scientists and medical scientists.

Animal care and service workers and veterinary technologists and technicians work extensively with animals. Like veterinarians, they must have patience and feel comfortable with animals. However, the level of training required for these occupations is substantially less than that needed by veterinarians.

### Sources of Additional Information

For additional information on careers in veterinary medicine, a list of U.S. schools and colleges of veterinary medicine, and accreditation policies, send a letter-size, self-addressed, stamped envelope to:

► American Veterinary Medical Association, 1931 N. Meacham Rd., Suite 100, Schaumburg, IL 60173-4360. Internet: <http://www.avma.org>

For information on veterinary education, write to:

► Association of American Veterinary Medical Colleges, 1101 Vermont Ave. NW., Suite 710, Washington, DC 20005. Internet:

<http://www.aavmc.org>

For information on scholarships, grants, and loans, contact the financial aid officer at the veterinary schools to which you wish to apply.

Information on obtaining a veterinarian position with the Federal Government is available from the U.S. Office of Personnel Management (OPM) through a telephone-based system. Consult your telephone directory under U.S. Government for a local number or call (703) 724-1850; Federal Relay Service: (800) 877-8339. The first number is not tollfree, and charges may result. Information also is available from the OPM Internet site: <http://www.usajobs.opm.gov>.