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Brandy has lived in Colorado for most of her life. After working for over four years in the Colorado State University Critical Care Unit, she moved to Parker, CO, where she has worked at the Animal Emergency & Specialty Center for the past nine years. She became a member of the Academy of Veterinary Emergency and Critical Care Technicians in 2008 and was recently named the 2014 co-chair of the academy's credentialing committee.

Brandy has a passion for writing and has written several papers for *Veterinary Technician* magazine including 'Recognizing and Treating Diabetic Ketoacidosis', 'Diabetic Ketoacidosis', 'Canine Parvovirus', 'Heatstroke in Dogs', 'All Things Considered: Thromboelastography', and 'Osteoarthritis'.

# Veterinary technology in the United States – an overview

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### **Introduction**

The job growth in the field of veterinary technology is astounding. In 2012, according to the Bureau of Labor Statistics, there were approximately 85,000 technicians working in the United States and the field is growing at such a fast rate that the projected number of technicians in 2022 is expected to be close to 110,000.

### **Education**

There are several educational options for someone who wants to work in the United States as a veterinary technician. There are numerous four-year university courses, two-year college courses, and private colleges that offer a degree in veterinary technology. If these options are not suitable, several colleges offer distance learning programs in which the student can work from home.

In total, there are over 200 programs available in the United States with only Washington DC and the states of Montana and Arkansas with no offerings.

The difference between the two-year and four-year programs is primarily the degree received (Associate and Bachelor respectively). The Bachelor degree includes advanced courses in science and mathematics (such as physics and calculus) and/or provides more time for the student to work in the field in internships.

Costs vary from program to program, with community colleges being the least

expensive and private colleges the most expensive. At Bel-Rae, a private college in Colorado, for example, the cost for tuition (not including books and fees) is \$28,900 while Front Range Community College, also in Colorado, has a tuition cost of \$8,843. Both of these offer a two-year degree course.

There is also a great variation in the way that programs are delivered. Some have three semesters of coursework and, in the fourth semester, the student will move to a clinic and undertake an internship. Others have the student working in an externship focusing on the course they are currently taking. Occasionally, a program will require the student to do an internship during the summer between the first and second years. These internship and externships may be completed at the students' clinic of choice although most colleges work with certain clinics and hospitals in their area. An externship will last only a short period (a few days to a few weeks) while an internship will last much longer, often a full semester. They both provide the student with valuable work experience as well as exposure to a number of different disciplines.

Courses offered will naturally vary from program to program but they will usually include medical terminology, anatomy & physiology, pharmacology, microbiology, surgical nursing, radiology, anesthesiology, nutrition, and medicine. Most programs also offer electives including emergency medicine, large animal options and exotics. An example of the units offered by one Colorado college is shown in **Table 1**.

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**Table 1.** Front Range Community College, Colorado, required and elective units

Required	Elective
<ul style="list-style-type: none"> <li>• Exotic Animal Handling</li> <li>• Introduction to Laboratory Procedures</li> <li>• Surgical Nursing</li> <li>• Humane Treatment and Handling of Animals</li> <li>• Office Procedures and Relations</li> <li>• Diagnostic Imaging</li> <li>• Internship in Private Practice (Summer)</li> <li>• Veterinary Anatomy &amp; Physiology I</li> <li>• Veterinary Anatomy &amp; Physiology II</li> <li>• Pharmacology for Veterinary Technicians</li> <li>• Anesthesiology</li> <li>• Animal Nutrition</li> <li>• Veterinary Medicine and Surgery</li> <li>• Clinical Laboratory Procedures</li> <li>• Veterinary Diagnostic Microbiology</li> <li>• Clinical Competency Exam</li> <li>• Internship (4th Semester)</li> </ul>	<ul style="list-style-type: none"> <li>• Animal Behaviour</li> <li>• Lab Animal</li> <li>• Critical Care</li> </ul>

## Becoming a technician

When you graduate, you will be awarded an Associate or Bachelor degree but you will not yet be considered a technician. You must determine the requirements of the state in which you want to work to be considered a technician and be allowed to practise.

Most technicians move on to take the Veterinary Technician National Exam (VTNE), which is owned and administered by the American Association of Veterinary State Boards (AAVSB). The requirements to take this exam are determined by each state. To take the exam, the AAVSB requires that you graduate from an accredited program or a program approved by the state where you want to work.

Not all states require graduates to take the exam and some do not even require graduation from a program for you to work as a technician. This causes some confusion for the public because they assume that anyone called a veterinary technician has graduated from a program and passed an exam. There is an ongoing debate in the United States regarding the inconsistencies between states, which create confusion among technicians who move to another state and have to determine what is required for them to practise there. It cannot be assumed, therefore, that someone has graduated from a program if they call themselves a veterinary technician. In the United States, the term 'veterinary

technician' is not protected. Many people go through 'on-the-job training' but never graduate from an accredited veterinary technician program or pass the VTNE but still call themselves technicians. Unfortunately, this is not discouraged and some veterinary clinics appear to encourage the practice by calling these people veterinary technicians and even advertising them to the public as such.

There are several different terms used for technicians:

- **Certified (CVT):** recognition by a private organisation (rather than a government sector). For example, in Colorado technicians are governed and certified by the Colorado Association of Certified Veterinary Technicians (CACVT), which is a private organisation.
- **Registered (RVT):** recognition by a state organisation but may not be required in order to work as a technician. This term is used in California where the state veterinary board governs and registers technicians.
- **Licensed (LVT):** recognition by a state organisation that also indicates a person is qualified to work as a technician.

The terminology used is determined by each individual state (Table 2) although the National Association of Veterinary Technicians in America (NAVTA)

recommends using 'certified' in order to make things less confusing for the public.

## Specialties

Once a person graduates from a program and becomes a technician, they can choose to work in general practice or a specialty practice (emergency, oncology, cardiology, radiology, or dentistry, to name a few). They may also choose to continue their education and become a veterinary technician specialist (VTS).

In 1994, to allow technicians to be recognised for advanced knowledge or skills, NAVTA created the Committee on Veterinary Technician Specialists (CVTS). The CVTS is recognised by the American Veterinary Medical Association and regulates the specialties available to technicians. Currently there are 11 specialties: dentistry, anesthesia, emergency & critical care, behaviour, zoological medicine, equine nursing, surgery, clinical practice (for technicians in general practice), nutrition, clinical pathology, and internal medicine (which has several subspecialties including small animal, large animal, cardiology, neurology and oncology).

## Responsibilities and duties

No matter what state the technician works in, the veterinarian must supervise the technician while they perform procedures. There are several levels of supervision, and what a technician is allowed to do under each type of supervision is determined by each state.

- **Immediate supervision:** The veterinarian must be within audible or visual range.
- **Direct supervision:** The veterinarian must be on the premises and available, if needed.
- **Indirect supervision:** The veterinarian is not on the premises and is not able to be reached. In this instance, the veterinarian will have examined the patient and left orders for the technician.

In general, it is accepted that a technician can do anything except make diagnoses, prescribe drugs, initiate treatment and perform surgery. What constitutes surgery is an ongoing controversy. Is performing a venous cutdown to place a peripheral intravenous catheter surgery? The same can be asked about placing a central intravenous catheter, which often

**Table 2.** Terminology and requirements for technicians by US state

State	LVT/CVT/RVT	Graduation required	VTNE required	State exam required
Alabama	LVT	✓	✓	✗
Alaska	LVT	✗	✓	✗
Arizona	CVT	✓	✓	✓
Arkansas	CVT	✓	✓	✗
California	RVT	✓	✓	✓
Colorado	CVT	✓	✓	✗
Connecticut	CVT	UTO	UTO	UTO
Delaware	LVT	✓	✓	✗
Florida	CVT	✓	✓	✗
Georgia	LVT	✓	✓	✗
Hawaii	None	✗	✗	✗
Idaho	CVT	✓	✓	✓
Illinois	CVT	✓	✓	✗
Indiana	RVT	✓	✓	✗
Iowa	RVT	UTO	UTO	UTO
Kansas	RVT	✓	✓	✗
Kentucky	RVT	✓	UTO	UTO
Louisiana	RVT	✓	✓	✗
Maine	LVT	✓	✓	✗
Maryland	RVT	✓	✓	✗
Massachusetts	CVT	✓	✓	✗
Michigan	LVT	✓	✓	✓
Minnesota	CVT	✓	✓	✗
Mississippi	CVT	✓	✓	✗
Missouri	RVT	+/-	+/-	✓
Montana	UTO	UTO	UTO	UTO
Nebraska	CVT	UTO	✓	✗
Nevada	CVT	✓	✓	✓
New Hampshire	None	✗	✗	✗
New Jersey	CVT	✓	✓	✗
New Mexico	RVT	✓	✓	✓
New York	LVT	✓	✓	✗
North Carolina	RVT	✓	✓	✓
North Dakota	CVT	✓	✓	✗
Ohio	RVT	✓	✓	✗
Oklahoma	RVT	✓	✓	✓
Oregon	CVT	✓	✓	✓
Pennsylvania	CVT	✓	✓	✗
Rhode Island	CVT	UTO	UTO	UTO
South Carolina	LVT	✓	✓	✗
South Dakota	RVT	✓	✓	✓
Tennessee	CVT	UTO	UTO	UTO
Texas	LVT	✓	✓	✗
Utah	None	✗	✗	✗
Vermont	CVT	UTO	UTO	UTO
Virginia	LVT	+/-	+/-	✗
Washington	LVT	✓	✓	✗
West Virginia	RVT	✓	✓	✗
Wisconsin	CVT	+/-	+/-	✗
Wyoming	CVT	UTO	UTO	UTO

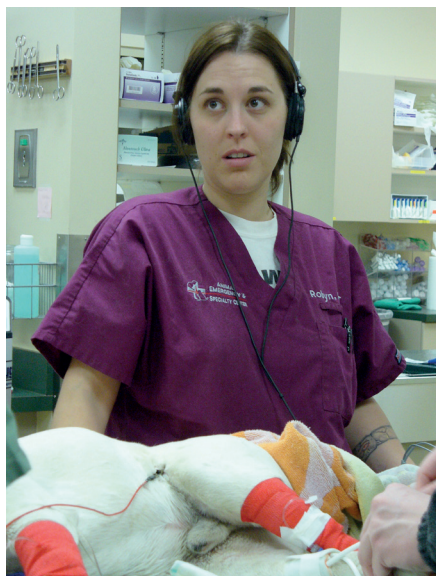
UTO: No information found; ✓:Yes; ✗:No; +/-: Either accepted; None: No technician regulation

requires the use of a scalpel blade and suture material.

The amount of responsibility given to technicians also varies from clinic to clinic. In some clinics technicians only check in-patients and assist the veterinarian with procedures. In other clinics, technicians are expected to do much more.

At the Animal Emergency & Specialty Center (AESC), where the author works, technicians have a significant level of responsibility. When a patient comes in as an emergency and is admitted to the hospital, the emergency technician will perform the tasks listed below. (There are several departments in the hospital including internal medicine, surgery and oncology but this list will focus on the emergency department.)

- Check the patient in (if no receptionist).
- Triage and get a history significant to the reason the patient presented. The technician is expected to distinguish between a patient that is in critical condition and one that is stable.
- Give the doctor a brief history (including signalment) and any concerns that have developed during the triage.
- Perform any diagnostics ordered by the vet:
  - draw blood and run bloodwork in house
  - obtain urine (via cystocentesis or free catch) and perform a urinalysis in house
  - obtain a faecal sample and run a faecal diagnostic test in-house
  - obtain radiographs
  - obtain a blood pressure (BP) (**Figure 1**), pulse oximetry (SpO<sub>2</sub>), or electrocardiogram (EKG).
- If the patient is treated on an outpatient basis, the technician will:
  - administer subcutaneous fluids
  - give injections (IM, IV, or SC)
  - generate a prescription label and fill the prescription
  - make sure charges are correct on the invoice
  - discharge the patient
  - discuss the invoice with the client and take payment.
- If the patient is hospitalised, the technician will:
  - place an intravenous catheter
  - start intravenous fluids
  - generate a treatment sheet, making sure to include the correct doses and times for medications



▲ **Figure 1.** Robyn Keiter, CVT, obtains a blood pressure on a critical patient

- enter any charges in the patient's invoice.
- Once the patient is hospitalised, the in-patient technician will:
  - calculate doses and administer injections (IM, IV or SC)
  - monitor the patient for any changes in status (**Figure 2**)
  - monitor BP, EKG, SpO<sub>2</sub> as ordered by the doctor
  - obtain vitals every six hours, more often if necessary
  - draw blood and run bloodwork
  - calculate and administer constant rate infusions
  - enter any charges in the patient's invoice
  - give the owner a financial update every 24 hours.

- Technicians are also responsible for:
  - placement of central intravenous catheters or arterial catheters
  - placement of male and female urinary catheters
  - placement of nasogastric feeding tubes, nasooesophageal feeding tubes and oxygen cannulas
  - induction and running of anaesthesia – technicians often choose induction drugs and calculate drug dosages which the vet will then review
  - prepping wounds for closure
  - placing splints and/or bandages (**Figure 3**)
  - administering chemotherapy (if the oncology technician is not available)
  - calling prescriptions into an outside pharmacy
  - taking phone calls from clients and answer medical questions
  - scheduling appointments.



▲ **Figure 3.** A technician has removed the bandage over a chest tube, examined the incision and now prepares to replace the bandage

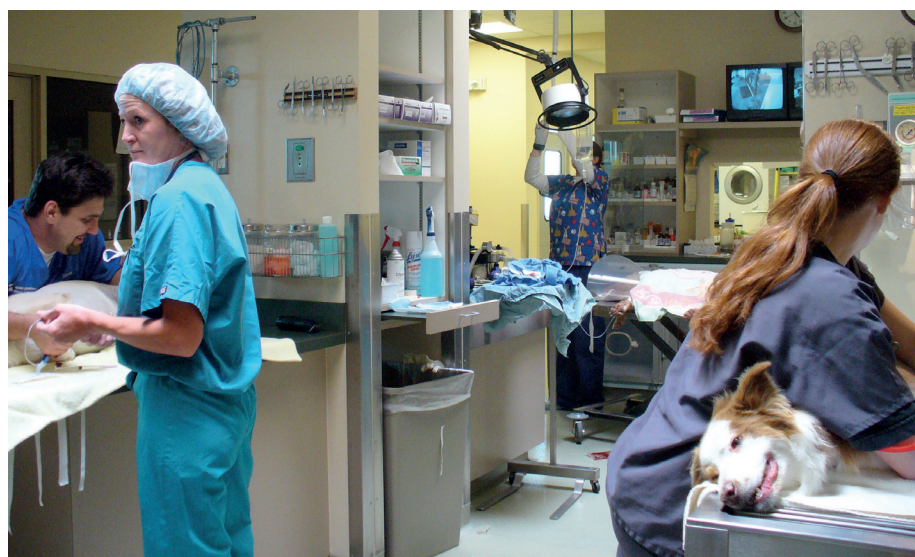
- Technicians also assist the doctor with the following procedures:
  - wound closure
  - unblocking of urinary obstructed cats
  - thoracocentesis
  - abdominocentesis
  - pericardiocentesis.
- The last three procedures may also be performed by the technician at the discretion of the vet.

If a critical emergency presents, the technician is expected to take responsibility for many of the procedures already listed, such as placing an intravenous catheter (and obtaining blood, if possible), and starting to monitor EKG, BP and SpO<sub>2</sub>. They are also expected to recognise and understand the disease process and anticipate the needs of the vet. If the vet is with another client when the patient presents, the technician is allowed to start the previously mentioned treatments and can also run basic bloodwork if they feel it is warranted (such as a blood glucose in a known diabetic or electrolytes in a cat with a possible urethral obstruction) while ensuring that the vet is informed that an emergency has arrived.

While this level of responsibility is unusual, it allows the technicians to keep their skills sharp and challenges them to continue to learn. The work does involve long hours and a stressful work environment but the majority of technicians who work at AESC (including the author) thrive in this environment and would never consider moving to a practice where their talents and knowledge were not utilised to their fullest extent.

## Conclusion

The opportunities for a veterinary technician in the United States are endless and it is important for people to realise that their education is not over when they graduate and become a veterinary technician. The only thing holding them back is themselves! [vni](#)



▲ **Figure 2.** Technicians and assistants perform several procedures in the ICU