



Cardiovascular Technologists and Technicians and Vascular Technologists

Course Overview: Focuses on careers in planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

Career Goal (O*NET Code): (29-2031) - Cardiovascular technologists may assist physicians with cardiac catheterization procedures in which a small tube is threaded through a patient's artery. They use imaging technology to help physicians diagnose cardiac (heart) and peripheral vascular (blood vessel) ailments in patients. They also help physicians treat problems with cardiac and vascular systems, such as blood clots.

Student Name: _____
Grade: _____
School: _____

SUGGESTED COURSEWORK

EXTENDED LEARNING EXPERIENCES

Middle School	8th	HS Courses:	(Local districts may list high school credit courses here)		Curricular Experiences: *** Health Occupations Students of America	Extracurricular Experiences:*** Language Immersion Programs National Youth Leadership Forum on Medicine School Newspaper Student Council UIL Academic Competitions Yearbook
	High School	9th	Courses*:	English I Algebra I or Geometry Biology		
Career-Related Electives:			Principles of Health Science		Service Learning Experiences: Boy/Girl Scouts Campus Service Organizations Community Service Volunteer Medical Mission Trips Peer Mentoring / Peer Tutoring Special Olympics	
10th	Courses:	English II Geometry or Algebra II Chemistry	World History Foreign Language II Elective	COLLEGE CREDIT OPPORTUNITIES -- High School Students should take Advanced Placement (AP), International Baccalaureate (IB), dual credit, Advanced Technical Credit (ATC), or locally articulated courses (Tech Prep), if possible. List those courses that count for college credit on your campus.		
	Career-Related Electives:	Medical Terminology and Pathophysiology				
11th	Core Courses:	English III Algebra II or Pre-Calculus Physics	United States History Foreign Language III ** Professional Communications or Speech	Professional Associations: • Alliance of Cardiovascular Professionals • Commission on Accreditation of Allied Health Education Programs • Society for Vascular Ultrasound • Cardiovascular Credentialing International • American Registry for Diagnostic Medical Sonography		
	Career-Related Electives:	Health Science				
12th	Core Courses:	English IV Pre-Calculus or Calculus 4th Science	Government/Economics Elective Elective			
	Career-Related Electives:	Practicum in Health Science				

How to Become a Cardiovascular Technologist or Technician
 There are several ways to become a cardiovascular technologist or technician or vascular technologist. Although some technologists and technicians are trained on the job, the most common path is formal education that leads to an associate's degree. Many employers also require professional certification.

Carrer Options (Sample of reported job titles)

- Cardiovascular Technologist
- Cardiovascular Technician
- Cardiac Technician
- Registered Cardiovascular Invasive Specialist
- Electrocardiogram Technician
- Registered Cardiac Sonographer
- Cardiopulmonary Technician

Postsecondary		Texas Southmost College	South Texas College	Texas State Technical College
		The University of Texas at Brownsville	The University of Texas - Pan American	

* Students must meet local & state high school graduation requirements. ** Required course for the Distinguished Graduation Plan (in addition to other measures). *** Based on campus availability. Students may select other elective courses for personal enrichment purposes.

This plan of study serves as a guide, along with other career planning materials, for pursuing a career path and is based on the most recent information as of 2009. All plans meet high school graduation requirements as well as college entrance requirements.



Cardiovascular Technologists and Technicians and Vascular Technologists

TEA Industry Cluster	Health Science
SOC Code	29-2031
Identified by	Tech Prep Occupations
Projected Growth (2018)	50%
BISD Magnet School Available	Yes

Source: Demand Occupations by Cluster, updated *June 27, 2012*

Description

What Cardiovascular Technologists and Technicians and Vascular Technologists Do

Cardiovascular technologists may assist physicians with cardiac catheterization procedures in which a small tube is threaded through a patient's artery. Cardiovascular technologists and technicians and vascular technologists use imaging technology to help physicians diagnose cardiac (heart) and peripheral vascular (blood vessel) ailments in patients. They also help physicians treat problems with cardiac and vascular systems, such as blood clots.

Duties

Cardiovascular technologists and technicians and vascular technologists typically do the following:

- Prepare patients for procedures by taking their medical history and answering their questions
- Prepare and maintain imaging equipment
- Perform noninvasive procedures, such as taking ultrasound images
- Analyze the images to check for quality and to ensure adequate coverage of the area being diagnosed
- Recognize the difference between normal and abnormal images
- Discuss image results with the physician
- Help physicians during invasive procedures, such as inserting catheters (small tubes)
- Record findings and track patient records

Technologists and technicians do or help do tests that can be either invasive or noninvasive. An invasive procedure requires inserting probes or other instruments into a patient's body, and a noninvasive procedure does not.

Cardiology technologists monitor patients' heart rates and help diagnose and treat problems with patients' hearts. The procedures can be invasive (such as inserting catheters) or noninvasive (such as using ultrasound equipment to take images of the heart).

Cardiac catheterization involves helping a physician thread a catheter through a patient's artery to the heart. The procedure determines whether a blockage exists in the blood vessels that supply the heart muscle or helps to diagnose other problems. Some of these procedures may involve balloon angioplasty, which can be used to treat blockages of blood vessels or heart valves without the need for heart surgery.

Technologists prepare patients for these procedures by shaving and cleansing the area where the catheter will be inserted and administering topical anesthesia. During the procedure, they monitor the patient's blood pressure and

heart rate. Some cardiology technologists also prepare and monitor patients during open-heart surgery and during the insertion of pacemakers and stents that open blockages in arteries to the heart and other major blood vessels.

An EKG, or electrocardiogram, monitors the heart's performance through electrodes attached to a patient's chest, arms, and legs while the patient is lying on a table. To test a physically active patient, the cardiac technologist uses a Holter monitor or stress test. The technologist puts electrodes on the patient's chest and attaches a portable EKG monitor to the patient's belt. The Holter monitor records normal activity for 24 or more hours, and the technologist then removes the tape from the monitor, places the monitor in a scanner, checks its quality, and prints the image for later analysis by a physician. For a stress test, the patient walks on a treadmill and the technologist gradually increases the speed to observe the effect of increased exertion.

Vascular technologists (Vascular sonographers) help physicians diagnose disorders affecting blood flow. Vascular technologists listen to the blood flow in the arteries and veins to check for abnormalities. They do noninvasive procedures using ultrasound instruments to record information, such as blood flow in veins, blood pressure, and oxygen saturation. Many of these tests are done during or immediately after surgery.

Cardiac sonographers (Echocardiographers) use ultrasound to examine the heart's chambers, valves, and vessels. They use ultrasound instruments to create images called echocardiograms. The echocardiogram may be done while the patient is either resting or physically active.

Cardiovascular technicians work closely with cardiovascular technologists. Technicians who specialize in electrocardiogram (EKG) testing are known as cardiographic or electrocardiogram (EKG) technicians.

Technologists and technicians often work closely with diagnostic medical sonographers. For more information, see the profile on [diagnostic medical sonographers](#).

Training Opportunities Linked to Those Jobs (Degree Types and Colleges/Universities)

How to Become a Cardiovascular Technologist or Technician

Cardiovascular technologists operate and care for testing equipment, explain testing procedures, and monitor patients during tests.

There are several ways to become a cardiovascular technologist or technician or vascular technologist. Although some technologists and technicians are trained on the job, the most common path is formal education that leads to an associate's degree. Many employers also require professional certification.

Education

Most cardiovascular technologists and technicians and vascular technologists get an associate's degree by completing a 2-year community college program. However, some 4-year programs that lead to bachelor's degree are available at colleges and universities.

Programs include coursework in either invasive or noninvasive cardiovascular or vascular technology. Most programs also include a clinical component in which students earn credit while working under a more experienced technologist in a hospital, physician's office, or imaging laboratory.

One-year certificate programs are also available from community colleges. Certificate programs are often helpful to those who have already received education or training in related healthcare jobs.

Some technologists graduate with an associate's or bachelor's degree in radiologic technology or nursing and then are

trained on the job. Employers prefer candidates who have a degree or certificate from an accredited institute or hospital program.

Cardiovascular technicians who work as electrocardiogram (EKG) technicians are typically trained on the job by their employer. These programs usually take 4 to 6 weeks to complete. One-year certification programs are also available from community colleges and may substitute for on-the-job training.

Certification

Although certification is not required to enter the occupation, employers prefer to hire certified technologists or technicians. Certification is considered the standard by professionals and the ultrasound community. Many insurance providers, including Medicare, pay for procedures only if a certified technologist or technician did the work.

Cardiovascular technologists and technicians and vascular technologists earn various certifications, depending on their clinical focus. To take the certification exam, technologists and technicians usually must complete an accredited education program. In most cases, technologists and technicians must take continuing education to keep their certification. Cardiovascular technologists and technicians and vascular technologists can be certified in several areas.

Important Qualities

Detail oriented. Cardiovascular technologists and technicians and vascular technologists must follow exact instructions from physicians.

Interpersonal skills. Cardiovascular technologists and technicians and vascular technologists must work closely with patients. Sometimes patients are in extreme pain or under mental stress, and the technologist or technician must get patients to cooperate to do the procedures.

Physical stamina. Cardiovascular technologists and technicians and vascular technologists work on their feet for long periods and must be able to lift and move patients who need help.

Technical skills. Cardiovascular technologists and technicians and vascular technologists must understand how to operate complex machinery to provide useful diagnostic information to physicians and other healthcare workers.

Texas Southmost College	South Texas College	Texas State Technical College	University of Texas at Brownsville	University of Texas - Pan American

Local Employer

Employer	City		Employer	City
Abc Pediatrics	Brownsville		Cardiovascular Associates	Harlingen
Anesthesia Consultants	Brownsville		Children's Clinic-Harlingen	Harlingen
Asthma Center	Brownsville		Clark Orthopedics	Harlingen
Boys & Girls Pediatric Clinic	Brownsville		Family Medical Ctr	Harlingen
Brownsville Care Ctr	Brownsville		Family Practice Residency Ctr	Harlingen

Career Options (Specific Job Types)

Sample of reported job titles:

- Cardiovascular Technologist (CVT)
- Cardiovascular Technician
- Cardiology Technician
- Cardiac Technician
- Registered Cardiovascular Invasive Specialist (RCIS)
- EKG/ECG Technician (Electrocardiogram Technician)
- Echocardiographer
- Electrocardiogram Technician (EKG Technician)
- Registered Cardiac Sonographer (RCS)
- Cardiopulmonary Technician

Salary Ranges

Wages for Cardiovascular Technologists and Technicians

Location	Pay Period	2011				
		10%	25%	Median	75%	90%
United States	Hourly	\$13.19	\$17.42	\$24.53	\$31.88	\$38.12
	Yearly	\$27,400	\$36,200	\$51,000	\$66,300	\$79,300
Texas	Hourly	\$13.20	\$17.51	\$24.70	\$31.54	\$36.24
	Yearly	\$27,500	\$36,400	\$51,400	\$65,600	\$75,400
Brownsville-Harlingen, TX MSA	Hourly	\$9.56	\$10.45	\$12.84	\$20.35	\$30.90
	Yearly	\$19,900	\$21,700	\$26,700	\$42,300	\$64,300
McAllen-Edinburg-Mission, TX MSA	Hourly	\$11.59	\$16.37	\$20.59	\$26.36	\$34.74
	Yearly	\$24,100	\$34,000	\$42,800	\$54,800	\$72,300

Professional Associations Linked to the Careers

For more information about cardiovascular technologists and technicians, visit

[Alliance of Cardiovascular Professionals](#)

For a list of accredited programs in cardiovascular or vascular technology, visit

[Commission on Accreditation of Allied Health Education Programs](#)
[Society for Vascular Ultrasound](#)

For information about registration and certification, visit

[Cardiovascular Credentialing International](#)
[American Registry for Diagnostic Medical Sonography](#)

Sources

The information provided in this document was collected from the following sources:

- Occupational Outlook Handbook (<http://www.bls.gov/ooh/>)

- O*NET OnLine (<http://www.onetonline.org/>)
- Texas CARES (<http://www.texascaresonline.com/>)
- CareerOneStop (<http://www.careeronestop.org/>)