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Sonography test charges

What is the disadvantage of ultrasound? The sound waves used in an ultrasound scan don’t penetrate well through bone, air or gas (eg gas in your bowels), which reduces the image quality. Being obese can also reduce the image quality. MRI and CT scans produce more detailed, clearer images. What does a liver ultrasound scan show? A liver ultrasound scan can help diagnose a range of conditions affecting the liver, such as liver cancer, liver cirrhosis and non-alcoholic fatty liver disease (NAFLD). Do you need to shave before an ultrasound scan? No, you do not need to shave before an ultrasound scan. Why have an ultrasound after a CT scan? An ultrasound scan and a CT scan are both effective tools for imaging the inside of your body. However, they produce different types of images, which can reveal different things about your body. Your doctor may therefore refer you for an ultrasound scan after a CT scan if the necessary information wasn’t apparent on your CT scan. What is the POD in an ultrasound scan? POD refers to the Pouch of Douglas in women, also known as the recto-uterine pouch, which sits between the womb and the rectum (back passage). Fluid naturally collects here. If you have endometriosis an ultrasound scan may reveal that it has spread to the POD. Can I eat before an ultrasound scan? Depending on the area being scanned, you may be asked not to eat for several hours beforehand if, for example, you are having an ultrasound scan of your digestive system, liver or gallbladder. This is because eating will increase the amount of gas in your gut, which can reduce the quality of images produced during your ultrasound scan. For most ultrasound scans, you can eat, drink and take your medications as usual. Can you see inflammation on an ultrasound scan? Yes, an ultrasound scan can detect inflammation eg inflammation of your joints or gut. Why is watery jelly used in ultrasound scans? If you are having an external ultrasound scan, a watery jelly (a lubricating gel) will be placed on the part of your body to be scanned. This helps the ultrasound transducer (a handheld probe) remain in contact with your body as it is moved across it — this is necessary to ensure the sound waves effectively pass into your body and are detected as they bounce back. Healthcare is expected to have 1.9 million openings annually between 2023 and 2033, according to the U.S. Bureau of Labor Statistics (BLS 2024) —more than any other occupational grouping. Demand for clinical laboratory technologists and technicians is expected to increase 5 percent by 2033, more than the expected average for all careers (4 percent). Better access to health insurance and advances in technology are making once-expensive tests and procedures affordable, and the aging Baby Boomer generation is requiring more of them. Furthermore, hospitals and other healthcare facilities generally pay less for the expertise of a technologist than they would for a registered nurse or physician, making these technologist roles economically desirable for employers. Discover what to expect from medical technologist programs, which are shorter and more affordable than many other programs in the thriving healthcare sector. New on MTS How to Become a Radiologic Technologist May 15, 2025 Radiologic technologists—also known as rad techs— provide an important service in the healthcare industry. With skills learned in either a two-year or four-year program, they work closely with radiologists to take images of patients and determine the suitability of those images for diagnostic purposes. Learn more about the requirements to become a rad tech, and the reasons why one might consider it (starting with the competitive salary). Ophthalmic Technician May 14, 2025 Ophthalmic technicians have completed training and education in patient care, eye care, eye anatomy, and lens dispensing. They are critical to the smooth running of an eye care clinic as they prepare patients for a meeting with the physician by administering basic tests and taking patient health histories. In some offices, ophthalmic technicians may also assist with procedures. Anesthesia technicians work in fast-paced environments where they play a critical role in saving and improving lives. Learn more about what it takes to become an anesthesia technician and discover the programs that can help you get there. Audiologists and speech-language pathologists (SLPs) specialize in the medical complexities of communication. Audiologists focus on diagnosing, preventing, and treating hearing and balance problems. Speech-language pathologists specialize in diagnosing and treating speech, language, and swallowing disorders. These are two separate professions, but they’re strongly connected. The human heart is a powerful organ. Cardiovascular technologists deploy technology to identify and diagnose heart-related issues and can begin work with as little as one year of intensive training. To start work as a cardiovascular technologist, some background education is necessary. The most prevalent degree program for this field culminates in an associate of science (AS) or an associate of applied science (AAS) degree and takes two years to complete. However, there is an increasing number of cardiovascular technology schools that offer bachelor of science degrees (BS) in cardiovascular technology. Dental assistants support dentists in tending to patients' dental care and oral health needs, running the office, and processing laboratory work. General dental assisting duties involve preparing and sterilizing instruments and equipment, assisting dentists with treatments and procedures, gathering patient information and histories, and communicating post-surgery instructions to patients. In addition to completing a dental hygiene program at an ADA-accredited school, aspiring hygienists must pass state exams on how to provide dental hygiene and education to patients, and (in most states) must pass the National Board Dental Hygiene Examination as well. Upon receiving their license, hygienists become Registered Dental Hygienists (RDH's) and qualify to enter this high-growth occupation. Sonographers (i.e., ultrasound technicians) work closely with trained physicians in capturing and interpreting sonographic images. The Society of Diagnostic Medical Sonography (SDMS) adds that by using high-frequency sound waves to elucidate structures such as organs or blood flow patterns, practitioners get deeper insights into whether a person’s body is functioning properly. There are many good reasons to pursue a career in healthcare, but perhaps none is so noble as wanting to spend your career helping others live a happier, healthier life. As a dialysis technician, a position also referred to as a hemodialysis technician; you can truly make a difference in the lives of those with chronic kidney failure and end-stage renal disease. It is a career in high demand, as the population in the United States continues to age and the incidence of Type 2 diabetes, a significant risk factor for kidney disease, continues to climb. Becoming an EKG technologist can be as simple as completing on-the-job training. However, most employers require applicants to have completed a training program and have obtained certification. A career as an EMT begins with emergency medical technician training. Most programs only require that students be 18 years of age with either a high school diploma or a GED. EMT courses can take a few months, depending on the school and schedule, and include both classroom and practical instruction on the basics of anatomy, trauma care, and emergency management. At the end of the training, new EMTs are eligible to take the exam given by the National Registry of Emergency Medical Technicians (NREMT). Upon passing the exam, candidates are awarded a nationally recognized certification. The entire field of kinesiology (exercise science) is dedicated to examining how people move, how movement affects well-being, and how to help people move better. This broad field encompasses a variety of different careers, including fitness trainers, occupational therapists, physical therapists, and other movement-related professions. Kinesiologists are employed at hospitals, clinics, gyms, rehab centers, and long-term care facilities to help patients and clients reach their mobility and fitness goals. Mammography technicians play a vital role in this important patient care. They are responsible for creating images of patients’ breasts using a piece of specialized medical equipment that produces X-rays. A mammography unit is only used for breast X-rays and has special features to hold and compress the breast to take pictures of the breast from positioning at different angles. According to the American Association of Medical Assistants, medical assistants typically work in physicians’ offices, hospitals, and outpatient care centers. They’re responsible for both clinical and administrative tasks, taking on varied responsibilities such as answering phones, managing appointment schedules, maintaining patient records, greeting patients, coding medical information, processing billing and bookkeeping, coordinating services with other healthcare providers, recording medical histories, collecting lab samples, cleaning examination rooms, and doing basic lab tests. MRI technologists are in high demand. Find schools that offer accredited MRI technologist programs, learn how to get certified, and discover what the career outlook is for this exciting and advanced technology career. Most aspiring neurodiagnostic technicians (NDTs) opt to pursue two-year AAS degrees, although seasoned healthcare professionals may pursue a shorter certification program instead. Both certification and degree programs prepare students to perform neurological scans, capture brain information, and analyze it in order to help those with neurological disorders. Becoming a nuclear medicine technologist (NMT) is a unique career for people with technical precision and supportive and pleasant bedside manners. This job leverages a savviness with cutting-edge medical equipment and medicine to treat patients undergoing radiology and MRI (magnetic resonance imaging). Learn to operate equipment like computed tomography (CT) machines, radiation-sensitive cameras, and dosage meters to help young and old patients get the care they need for potentially life-threatening illnesses. Pursuing a career as an OTA requires specialized education and training. Aspiring OTAs must enroll in an accredited associate degree program, which usually takes two years to complete. The curriculum covers a mix of coursework, including anatomy, psychology, and occupational therapy principles, as well as hands-on training through supervised fieldwork. Ophthalmic technicians have completed training and education in patient care, eye care, eye anatomy, and lens dispensing. They are critical to the smooth running of an eye care clinic as they prepare patients for a meeting with the physician by administering basic tests and taking patient health histories. In some offices, ophthalmic technicians may also assist with procedures. As pharmaceutical companies continue to innovate and the population continues to age, demand for prescription medication continues to rise. Pharmacy technicians are uniquely positioned to serve this demand and in a matter of months, aspiring pharmacy techs can be certified to assist pharmacists in measuring and distributing essential medications to patients in need. Phlebotomy programs tend to be year-long programs, although that may vary by school and state. A handful of states require certification as well, which generally entails not only completing an accredited program from a phlebotomy school, but also gaining some clinical experience (e.g., externship), and then taking a certification exam involving a written portion and a practical component to demonstrate efficacy at drawing blood. Physical therapy is the treatment of injuries, disorders, and other issues by using non-surgical methods, such as massage, heat treatment, exercises, assistive equipment (such as walkers), and more. Accordingly, PTAs and PT aides may work with patients of all ages and abilities. Learn how you can help mental health patients and the developmentally disabled as a psychiatric or mental health technician. While the field is not projected to grow too quickly, those projections may change as more Americans gain access to healthcare that covers mental health treatment. Radiation therapists help patients who are undergoing radiation therapy by explaining procedures, calibrating machinery to proper doses, and ensure that everyone is safe from improper levels of exposure. Students who complete a program that qualifies them for certification through the American Registry of Radiology Technologists (ARRT) must have completed at minimum an associate’s degree in any field and an educational program in radiation therapy. These radiologic professionals may specialize in various methods and types of treatment, including radiation therapy, medical dosimetry, mammography, bone densitometry, cardiovascular-interventional radiography, magnetic resonance imaging (MRI), computed tomography (CT), nuclear medicine, or sonography. Rehabilitation technician programs are critical components of the healthcare system, designed to restore and enhance the physical capabilities and quality of life for individuals recovering from injuries, surgeries, or chronic conditions. Respiratory therapy students have several educational options: they may begin with an accredited two-year associate degree, which allows them to receive the Certified Respiratory Therapist (CRT) certification, complete a four-year degree and attain the higher Registered Respiratory Therapist (RRT) designation, or even pursue a master’s degree in respiratory management or education. Surgical technologists (STs), or "scrubs", are an integral part of a surgical team that also includes surgeons, anesthesiologists, and registered nurses. Amongst other responsibilities, STs are commonly responsible for preparing operating rooms and handing tools and instruments to surgical assistants and surgeons. Many students interested in cytology decide in college to complete a bachelor’s degree in cytology while others get degrees in related disciplines and then complete a post-baccalaureate cytology certificate. Aspiring cytogenetic technologists may have to complete a more rigorous course of study to be able to delve more deeply into whether DNA or chromosomal structures genetically predispose patients for specific conditions. As the profession's name may imply, dental lab technicians work in laboratories, where they help to create restorative devices for individuals’ teeth. The role involves a high degree of precision and attention to detail. The dental lab tech programs profiled help prepare students who are so inclined for entry into the career. In the histotechnology field, educational options range from histotechnician (HT) or histology technician programs, which are typically certificate or associate degree programs, to bachelor's degree programs for aspiring histotechnologists (HTLs), or even master's degree programs for more advanced histological study. Medical laboratory assistants are critical members of the healthcare system. They strike a balance of medical care, technology, and science as they are responsible for interacting with patients but also must be able to help a lab run smoothly. Typical duties can include taking blood, gathering specimens, preparing samples for testing, running routine tests, sterilizing equipment, and recording results. Medical lab technicians, or MLTs, conduct a variety of lab tests that can help with the diagnosis, treatment and monitoring of various conditions and diseases. While MLTs typically need to complete a two-year associate degree program to obtain entry-level work in the field, some fast-track programs may be available to students who have already received training in a related healthcare field, such as nursing. A bachelor's degree is typically required to pursue a career as a medical laboratory scientist, and there are MLS programs available in states ranging from Washington to Vermont, as well as online programs specifically developed to help the working MLT become an MLS. Ophthalmic laboratory technicians play a vital role in eye care by crafting and assembling prescription eyeglasses and contact lenses. They work closely with opticians and optometrists to ensure accurate and precise lens fabrication, improving patients' vision and eye health. With their technical expertise and attention to detail, ophthalmic laboratory technicians play a crucial part in helping individuals see the world more clearly. With a degree in biology or biochemistry, one can have a significant impact on the physical world as well as improve the everyday lives of thousands of people. Many students who major in biology or biochemistry for their undergraduate degree may plan to go on to become doctors, scientists, or researchers. Because biomedical science explores knowledge, practices, and technologies related to diagnosing, analyzing, and treating disease, the number of specializations and practical applications of a biomedical science degree are vast. Depending on each student's career path, aspirations, professional experience, academic background, and time commitment, students can choose to enroll in a bachelor's or master's program in biotechnology that can be completed online, on-campus, or as a hybrid of both. Health science includes a multitude of healthcare specialties and subspecialties, including biotechnology research and development, diagnostic services, health informatics, support services, and therapeutic services, among many other subfields. This guide explores the multifaceted world of infection prevention programs ranging from continuing education to graduate certificates and degrees, unraveling their essential components, core courses, and program accreditation. Nutritionists do more than help people manage chronic health conditions. People seek nutritional help for various health-related reasons, such as addressing digestive problems, athletic performance, and preparing healthy meals for family members. Nutritionists with master’s or doctoral degrees may specialize in nutritional health and are positioned to earn higher salaries in leadership or supervisory roles. Pathologists’ assistants have a deep understanding of human anatomy and diseases. Through education and training, they learned specialized clinical skills to assist in autopsies and examinations. The most common majors for pre-vet degree programs are animal science, biology, chemistry, and biochemistry. Many schools also offer specializations, concentrations, and emphases in pre-veterinary science, on top of the awarded degree. Working with machinery may call to mind the idea of loud warehouses or greasy garages. The world of biomedical technicians, although also focused on machinery repair and maintenance, is generally much more sterile. Studying to become a biomedical technician is a great way to use your mechanical knowledge to improve the lives of patients while working closely with other medical personnel in an exciting healthcare environment. Biomedical informatics may be used in a research setting in which large data sets about a population are evaluated to look for common trendlines. An example of this would be an academic using data collected from local hospitals to analyze the effects of the Covid-19 epidemic on a specific group of people. Beyond compiling and sorting information, biomedical informatics can point out trendlines or even make its evaluations and conclusions through artificial intelligence. A healthcare informatics degree program equips students to gather healthcare information, manage different healthcare computer programs, and monitor medical records to ensure that they remain secure. American Health Information Management Association (AHIMA) is the most prestigious and well-known licensing body for healthcare informatics, and they provide students with a standardized test to demonstrate their mastery of the field. Health information managers often work closely with information technology staff as well as clinical staff to ensure workflows that maximize the efficacy of data collection. Health information managers are able to weigh in on how to improve patient outcomes as well as clinical efficiency by analyzing the data available to them and applying their knowledge. Health information technology as field is booming due not only to the aging of the population, but also to the complexity of medical records compliance, accuracy, and security. Learn more about the educational programs that help prepare you to enter this growing field. Healthcare administration is one of the fastest growing fields in the United States. With a large aging population and increased access to healthcare with the implementation of the Affordable Healthcare Act, the field of healthcare administration is predicted to grow rapidly in the next ten years. Medical billers and coders ensure that health services, diagnoses, and clinical procedures are recorded properly in patients’ health records. Their important work requires a thorough and working knowledge of the unique codes used for patient care, insurance, and billing documentation. Nursing informatics programs prepare students to manage complex healthcare delivery systems, integrating nursing and science with communication and information technology. Sterile processing technicians assist in preparing, sterilizing, and distributing medical instruments and devices so that contagion is contained and medical supplies are free of contamination. Sterile processing tech programs generally culminate in a certificate, and in some cases include a clinical internship for real-world training. An Overview of Ultrasound History and Discovery The technology used in medical ultrasound is continuously evolving and currently contributing to important improvments in patient diagnosis and treatment. The science and technologies employed in sonography have a long and interesting history. This story begins with the women and men (and yes animals) from across the world who have contributed to the evolution of ultrasound over the past 225+ years. Let’s take a look back at the history of ultrasound and learn how the use of sound waves as a diagnostic tool made their way into clinics and hospitals across the globe. Echolocation and Ultrasound’s Early Beginnings Lazzaro Spallanzani Many ask, who invented the ultrasound? Italian biologist, Lazzaro Spallanzani is most often credited person for discovering ultrasonography. Lazzaro Spallanzani (1729-1799) was a physiologist, professor and priest who carried out numerous experiments that led to great insights in human and animal biology. In 1794 Spallanzani performed studies on bats that concluded that they could navigate using sound rather than sight. This is now known as echolocation where locations are determined or identified through sound waves being reflected or bounced back from objects in an environment. These same principles are how medical ultrasound technology functions today. RELATED: 7 Female Pioneers in Medical Imaging Ultrasound is characterized as sound waves with a frequency higher than what is audible to the human ear. “The first detailed experiments that indicated that non-audible sound might exist were performed on bats by Lazzaro Spallanzani,” states D. Kane, W. Grassi, R. Sturrock, P. V. Balint; A brief history of musculoskeletal ultrasound: ‘From bats and ships to babies and hips’, Rheumatology, Volume 43, Issue 7, 1 July 2004. What is Echolocation? We can find several additional examples of echolocation in nature. Echolocation pulses are short bursts of sound at frequencies that span from about 1,000 hertz in birds to at more than 200,000 hertz in whales. Early Experiments in Ultrasound Gerald Neuweiler, in his book The Biology of Bats, describes how Spallanzani brought owls into his lab and observed that they would not fly around the room if there was no source of light. “When he repeated the same experiment using bats, these small mammals flew confidently around the bishop’s study, even in total darkness, managing to avoid the wires that Spallanzani had hung from the ceiling,” wrote Neuweiler. Neuweiler adds that the Italian scientist even blinded the bats by burning them with a “red-hot needle” and still they were able to avoid the wires. Spallanzani knew this because bells were attached to the ends of the wires. The physiologist gained insight that the bats were relying on the sense of sound for navigation because when he placed closed brass tubes inside the mammals’ ears, they could not navigate the room properly and would fly into the wires. Although he did not know that the bats were emitting their own sound for orientation, sound higher than he or any human would be able to hear, Spallanzani was able to conclude that the creatures were using their ears to navigate their environment. Medicine Benefits from Developments in Ultrasound As time passed, others continued to build on Spallanzani’s work. It was in 1942 that Neurologist Karl Dussik is credited with being the first to use ultrasonic waves as a diagnostic tool. He transmitted an ultrasound beam through the human skull in attempts of detecting brain tumors. This is still very early in the history of diagnostic medical sonography, but it was clear that this noninvasive technology had tremendous possibility. Ultrasound technology and its application in healthcare have continued to mature. The advancement of tools and refinement of procedures are happening everyday. Most recently, smaller portable scanners have become more widespread, and have helped further integrate the use of ultrasound in more areas and stages of patient care. Ultrasound History Timeline Here’s a look back at some of the key milestones in the development and history of ultrasound technology. Date Historical Achievement or Event 1794 Physiologist Lazzaro Spallanzani was the first to study echolocation among bats, which forms the basis for ultrasound physics. 1877 Brothers Pierre and Jacques Currie discover piezoelectricity. Ultrasound transducers (probes) emit and receive sound waves by way of the piezoelectric effect. 1915 Inspired by the sinking of the Titanic, Physicist Paul Langevin was commissioned to invent a device that detected objects at the bottom of the sea. Laugevin invented a hydrophone – what the World Congress Ultrasound in Medical Education refers to as the “first transducer”. 1920s-1940s Sonography was used to treat members of European soccer teams as a form of physical therapy, to appease arthritic pain and eczema and to sterilize vaccines, states Joan Baker who holds several ARDMS ultrasound certifications. 1942 Neurologist Karl Dussik is credited with being the first to use sonography for medical diagnoses. He transmitted an ultrasound beam through the human skull in attempts of detecting brain tumors. 1948 George D. Ludwig, M.D., an Internist at the Naval Medical Research Institute, developed A-mode ultrasound equipment to detect gallstones. 1949-1951 Douglas Howry and Joseph Holmes, from the University of Colorado, were some of the leading pioneers of B-mode ultrasound equipment, including the 2D B-mode linear compound scanner. John Reid and John Wild invented a handheld B-mode device to detect breast tumors. 1953 Physician Inge Edler and Engineer C. Hellmuth Hertz performed the first successful echocardiogram by employing an echo test control device from a Siemens shipyard. 1958 Dr. Ian Donald incorporated ultrasound into the OB/GYN field of medicine. 1966 Don Baker, Dennis Watkins, and John Reid designed pulsed Doppler ultrasound technology; their developments led to imaging blood flow in various layers of the heart. 1970s The 1970s saw many developments including the continuous wave Doppler, spectral wave Doppler and color Doppler ultrasound instruments. 1980s Kazunori Baba of the University of Tokyo developed 3D ultrasound technology and captured three-dimensional images of a fetus in 1986. 1989 Professor Daniel Lichtenstein began incorporating lung and general sonography in intensive care units. 1990s Starting in the 1980s, ultrasound technology became more sophisticated with improved image quality and 3D imaging capabilities. These improvements continued into the 1990s with the adoption of 4D (real time) capabilities. Ultrasound guided biopsies (endoscopic ultrasounds) also began in the 1990s. 2000s – present Just like personal communication devices are continuously evolving and becoming more convenient, so are ultrasound technologies. A variety of compact, handheld devices have come onto the market in recent years. The iPhone now has a telesonography app and NASA has developed a virtual guidance program for non-sonographers to perform ultrasounds in space. History of Sonography in Obstetrics and Gynaecology In our current culture, ultrasounds might best known for their use during pregnancy to produce a sonogram, a visual image produced from an ultrasound examination. Within the larger ultrasound family of specializations, Obstetrics and Gynaecology have seen some important historical moments as well. You’ll find some of the more notable developments in the OB/GYN specialization below. Date Historical Event 1958 This year marked the publication of the first paper in Obstetric Ultrasound “Investigation Of Abdominal Masses By Pulsed Ultrasound” by Ian Donald, M.B.E., B.A. Cape Town, M.D. Lond., F.R.F.P.S., F.R.C.O.G. J Macvicar, M.B. Glasg., M.R.C.O.G. T.G Brown. This study marked the first ultrasound image of a fetal head. 1962 – late 1960’s George Kossoff of Australia engineers the Octason static scanner. The Octason mark 2 images allow us to see detailed fetal anatomy, and marks an important time in the development of ultrasound. 1970’s Advancements in sonography equipment and techniques progressed throughout the late 1960’s and into the 1970’s. Methods to determine the fetal biometry and fetal abnormalities continued to advance and be refined with the adaption and replacement of various techniques. 1983 Sam Maslak develops a machine that sets new standards in both spatial and contrast resolution. If you would like to become a part of this evolving field, you can complete a degree at one of the numerous ultrasound schools across the country.