

Medical Sonography

- A sonographer uses high frequency sound waves to create detailed images of various areas of the human anatomy. The sound waves bounce off of internal organs and return to an ultrasound device, which transforms them into real-time images. As an imaging modality, ultrasound has very specific uses, providing information that X-rays or other radiologic procedures often cannot. Ultrasound is most commonly known for producing amazing pictures of a fetus in the womb, and is used to detect and monitor many types of pregnancy complications and fetal abnormalities. However, sonography is used for so much more than pregnancies.
- Ultrasound is often a doctor's first choice to view fluid-filled or soft tissue structures in the body, such as the heart, kidneys, liver, and most internal organs. It also is highly valuable when looking at blood vessels and detecting problems with blood flow and blockages within arteries and veins. The images that sonographers create help radiologists and other physicians pinpoint the locations of soft tissue problems that can't be seen well using other medical imaging techniques. Because ultrasonography uses simple, high-frequency sound waves, it is safe to use on all patients, from pregnant women to babies, children, and the elderly.
- Ultrasound has so many specialized uses that sonographers usually specialize in one or two areas of the body, such as the abdomen, breast, urology, musculoskeletal system, or obstetrics and gynecology. They direct the ultrasound waves to the region under examination via a handheld device known as a transducer. Sonographers must be tech-savvy enough to apply this sophisticated technology to manipulate and optimize the images, yet also be personable enough to put patients at ease who might be nervous or uncomfortable. These professionals use their own judgment and understanding of pathology to record images that represent possible abnormalities. What looks like a grainy image to the rest of us provides a wealth of valuable information to a skilled sonographer.
- Turning sound waves into images sounds like magic, but that's what diagnostic medical sonographers do on a daily basis. Their skills and expertise help the medical team to safely and painlessly assess and diagnose medical conditions that otherwise could only be detected with more invasive and often risky procedures.
- **Work Environment**
 - Most sonographers (about 60 percent) work in hospitals. Often, hospital-based sonographers will get rotations of being on-call, which means they will have to be ready to return to the hospital at any hour of the night, weekend, or holiday if an emergency ultrasound is needed. Most other sonographers work in doctors' offices, diagnostic facilities and outpatient centers where the hours are predictable and shifts can be anywhere from a few hours a week to full-time work, depending on the job.

Requirements

- **Education**

- Aspiring sonographers have a number of educational routes available which can be quite confusing. When looking at programs, the most important thing to verify is whether or not it is an accredited program. Unlike X-ray, ultrasound is considered non-hazardous, which unfortunately means that there isn't enough state or federal regulation of ultrasound schools. A student may be drawn to a school that offers a part-time degree in a short period of time, but finding a job after graduation will be nearly impossible. Most employers will only hire sonographers who have attended an accredited program. Accreditation information can be found at the Commission on Accreditation of Allied Health Education Programs and the Joint Review Committee on Education in Diagnostic Medical Sonography. Verify that your school is on this list!
- Many two-year colleges offer an associate degree program, which often follows completion of an X-ray or other allied health program. There are also four-year bachelor's degree programs, which are going to give students the most exposure to the various ultrasound specialties and a strong knowledge of other imaging modalities. If a student already has some healthcare education and experience, there are 12 to 15 month ultrasound-specific programs, often university- or hospital-based. Sonography programs include classes in related health topics such as anatomy and physiology, ultrasound physics, and clinical training in the interpretation of sonographic images.

- **Training**

- To become a sonographer, both classroom and clinical training is required. Students take general courses in anatomy and physiology as well as ultrasound-specific imaging. Students are also required to take ultrasound physics courses, which can be quite challenging. In addition to classroom time, most accredited schools require and provide over 1000 hours of on-site, hands-on clinical training, where students work side by side with qualified sonographers and doctors to learn the equipment, techniques, and necessary protocols to perform ultrasound examinations.

- **Licensing and/or Certification**

- In some US states, sonographers must have a license that proves they graduated with a certificate from an ultrasound school to practice ultrasound. However, most employers are less interested in the certificate of graduation and will only hire students who have passed either the ARDMS (American Registry for Diagnostic Medical Sonography) or ARRT (American Registry of Radiologic Technologists) specialty exams. Once a student passes these exams, they are considered

“Registered” with the credential RDMS (Registered Diagnostic Medical Sonographer). Sonographers can obtain a single registered certification by passing an exam in any one of the multiple specialty areas, such as fetal ultrasound or adult echocardiography, or they can be registered in multiple specialties.

- **Necessary Skills and Qualities**

- Ultrasound is unique in imaging because it is so operator-dependent. The sonographer must have a thorough understanding of anatomy and be able to detect any existing pathology in order to document it and pass it along to the reading doctor, who often never actually sees or scans the patients themselves. Since small changes in an image may signal a problem within a patient, precision is necessary to create a quality image using complex equipment. Sonographers must be able to concentrate when performing a diagnostic test, even as they interact with the patient. Good physical health and strength are essential, because sonographers are on their feet for extended time periods and often must help to move ill or disabled patients. Dexterity in both arms is a must, as the left hand is used to operate the machine while the right hand scans.

- **Opportunities for Advancement**

- Since there are so many settings in which a sonographer can work, advancement potentials are limitless. In a hospital setting, sonographers can work up to lead and management roles in the department. Private practice sonographers also have management and administration potential. There are plenty of opportunities beyond patient care, such as becoming involved in ultrasound education or working directly for ultrasound equipment manufacturers in sales, training, and applications.

- **Salary and Job Outlook**

- The U.S. Bureau of Labor Statistics reports sonographers’ annual median wage as \$67,530. Salaries range from about \$46,930 to over \$93,850. The highest mean salaries are reported for sonographers working in outpatient care centers and specialty hospitals.
- From 2012 to 2022, sonography jobs should grow much faster than the average for all U.S. occupations; the Bureau of Labor Statistics projects a growth rate of 46 percent. This substantial growth is due in part to the fact that ultrasound technology procedures are being ordered more frequently in the medical community as a first-line exam because they are radiation-free, less expensive, and less invasive than many other diagnostic tests. More job growth is expected in physicians’ offices and outpatient diagnostic centers. Sonographers with multiple certifications will have even more job opportunities.