

# X-RAY VISION

A LOOK INSIDE MEDICAL IMAGING AND RADIATION THERAPY

## Radiologic Technologist

ra-di-o-log-ic tech-nol-o-gist (rā-dē-ō-loj'ik tek-nol'ō-jist)  
the medical personnel who perform diagnostic imaging examinations and administer radiation therapy treatments

## EDUCATION

**2 YEARS**

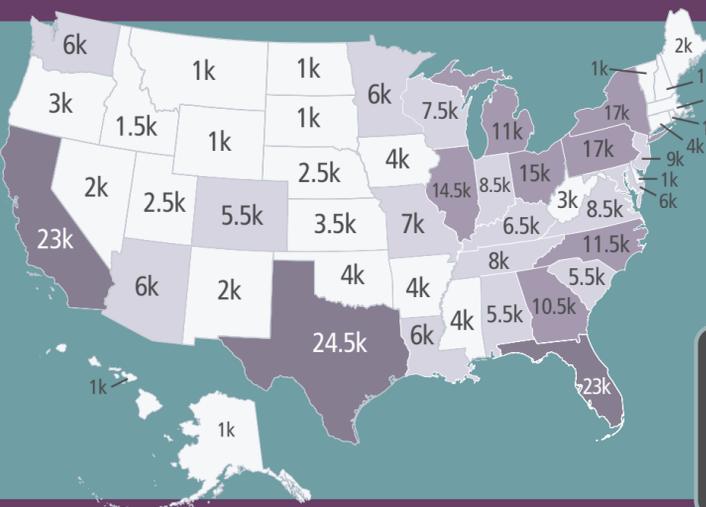
Associate Degree Program at academic institution

**4 YEARS**

Bachelor's Degree Program at academic institution

PASS National Certification Exam

+ EARN **24**  
CONTINUING EDUCATION CREDITS EVERY 2 YEARS



## WHO'S TAKING MY X-RAY?

When you're scheduled for a medical imaging examination or radiation therapy treatment, the person who performs your exam or delivers your treatment is called a radiologic technologist. Registered radiologic technologists, R.T.s, are educated in anatomy, patient positioning, examination techniques, equipment protocols, radiation safety, radiation protection and patient care.

**332,755**  
REGISTERED RADIOLOGIC TECHNOLOGISTS

Source: October 2016 ARRT Census

1900

**1895**

The x-ray was discovered by German physicist Wilhelm Conrad Roentgen on Nov. 8.



### FIRST X-RAY IMAGE

X-ray of Roentgen's wife's hand and wedding ring.

1950

**1977**

FIRST MR SCAN

**1971**

FIRST CT SCAN

ANNUALLY

**78.7M**

CT procedures

**37.8M**

MR procedures

**14.5M**

Nuclear medicine scans

**1.2M**

Radiation therapy treatments initiated



**159.7M**

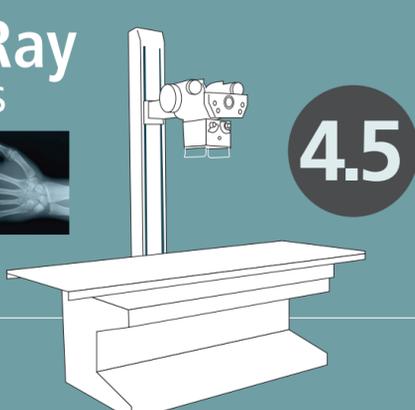
x-ray procedures performed in the United States.

Source: Statistics obtained from IMV 2013 and 2015 reports

## EQUIPMENT

● = avg # of units per facility

### X-Ray units

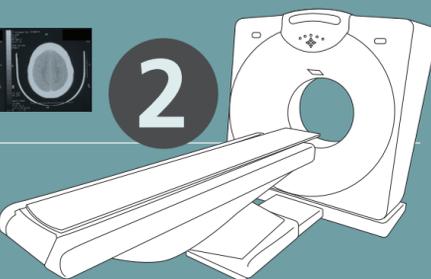


**4.5**

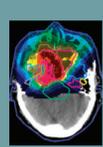
### CT scanners



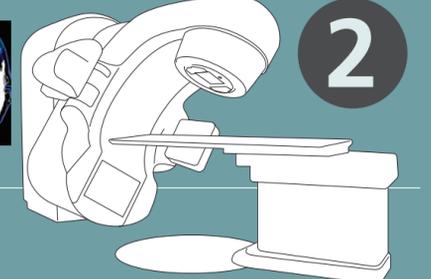
**2**



### Radiation Therapy treatment units



**2**



Source: ASRT Radiation Therapy Staffing and Workplace Survey 2016 and ASRT Radiologic Sciences Staffing and Workplace Survey 2015



## Strange Appearances...

Foreign bodies are frequently encountered in medical imaging and can range from intentionally placed objects, such as medical devices and surgical hardware, to debris from accidents and injuries and a wide variety of swallowed items.

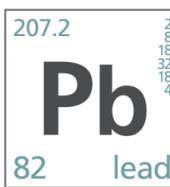
## TECHNOLOGY

- (R) Radiography**  
(X-ray) Produces images of anatomy to detect bone fractures, find foreign objects and show the relationship between bone and soft tissue.
- (CT) Computed Tomography**  
(CT scan) Obtains "slices" of anatomy at different levels of the body so physicians can view what's happening inside organs.
- (T) Radiation Therapy**  
Administration of targeted doses of radiation to the patient's body to treat cancer or other diseases.
- (N) Nuclear Medicine**  
Radiopharmaceuticals in body emit gamma rays that provide functional information about organs, tissues and bone.
- (CI) Cardiac-Interventional Radiography**  
Fluoroscopic procedures specifically targeted for diagnosis and treatment of cardiac diseases.
- (VI) Vascular-Interventional Radiography**  
Fluoroscopic procedures specifically targeted for catheter placement and the diagnosis and treatment of vascular diseases.
- (M) Mammography**  
Produces images of breast tissue to diagnose and rule out breast disease.
- (MR) Magnetic Resonance**  
(MRI) Creates detailed images of anatomy by exposing atoms in the patient's body to a strong magnetic field.
- (QM) Quality Management**  
Monitors the quality of processes and systems in the radiology department.
- (S) Sonography**  
(Ultrasound) Uses sound waves to obtain images of organs and tissues in the body.
- (BD) Bone Densitometry**  
Measures bone mineral density to diagnose and rule out osteoporosis.
- (CMD) Medical Dosimetry**  
Radiation dose is calculated and generated for distribution treatment plans, determined by the patient's oncologist.

## Radiologist Assistant



Radiologist assistants are experienced R.T.s who have obtained additional education and certification that qualifies them to serve as radiologist extenders. They work under the supervision of a radiologist to help improve productivity and efficiency.



## A LITTLE LEAD GOES A LONG WAY...

On average, x-ray room walls have lead lining that is 1/16 inch-thick. That's 4.5 times thinner than the new iPhone 7. The lead-plate walls stop radiation in its tracks.

Lead Sheet — 1.58 mm

iPhone 7 — 7.1 mm

## THE GOLDEN RULE

# ALARA

As Low As Reasonably Achievable

The practice to make every reasonable effort to minimize patient and personal radiation exposure by adjusting time, distance and shielding during a procedure.

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The ASRT is the largest radiologic science association in the world. Its mission is to advance and elevate the medical imaging and radiation therapy profession and to enhance the quality and safety of patient care.

## DOSIMETRY BADGE

Contains storage phosphors that are sensitive to ionizing radiation and are used for monitoring radiation exposure to R.T.s.



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