The Heart of the Hospital: Radiology

What is a Radiological Technologist?

A Radiological Technologist works in the medical imaging field. Dr. Wilhelm Roentgen was the first radiological technologist. In 1895 Dr. Roentgen discovered x-rays in his small lab in Germany. The first image produced was of his wife’s hand. He called his discovery x-radiation, ‘x’ standing for the unknown. Today we are a group of medical professionals working in a diverse field called Medical Imaging.

Radiological Technologists are like photographers except we are called radiographers. Photographers use light and lens to produce their images; we use radiation to create our images. Radiological Technologists work with an x-ray tube that, when energized, can produce a stream of x-rays; these x-rays are energy and highly penetrating. We can place a person in-between the x-ray tube and an image receptor, producing an image on the image receptor resembling the inside of the body. It is vital in radiography that we understand the science of image production as well as know how to carefully position the body.

What exam is most common in radiology? If you answered “chest x-ray” you would be correct; it is our most common exam. Well over half of all exams done in radiology are of the chest. A wealth of information is given on a chest image. Some of what can be seen is the heart, lungs, diaphragms, and ribs. Radiological Technologists can also produce images of all 206 bones in the body.

We give patients a drink of barium to produce specific images. Barium is a type of contrast media that when ingested will allow us to see other structures in the body. For example, we can see the esophagus, stomach, and small and large intestine. We also can inject a contrast media called Isovue into a vein to produce images of the kidneys, ureters, and bladder. Contrast media is necessary for the diagnostic imaging of internal structures. This type of imaging is called Fluoroscopy. These are moving images, sometimes called ‘live’ x-rays, and are viewed on a monitor by a radiologist during these particular exams known as Upper GI studies (gastrointestinal), IVP (intravenous pyelography) and Lower GI studies (barium enema).

A radiologist is a medical doctor who has had extensive training in reading medical images. The radiographer produces the images and a radiologist makes the diagnosis. Each x-ray image produced is reviewed and diagnosed by a radiologist, and a report is sent to the ordering doctor.

A typical day of a Radiological Technologist:

6:00 am - I arrive in radiology ready to start the day.

6:05 am – I get a report from the overnight technologist on what is happening in the department at the moment. I sign onto the computer to see the day log of inpatients. Some patients will be brought to the department for their exams; others will have portable x-ray images.
6:30 am – I organize my morning portable x-rays by areas where I need to go. I grab 16 image receptors (IR) and start out with my portable x-ray machine. I remember to bring the requisitions so I know my patient’s name and room number’s.

6:35 am – I arrive in the MSICU (medical/surgical intensive care unit) first. I have seven patients to perform one-view chest x-rays on. My first patient in ICU 2 is ‘contact precaution’. This means they may have a contagious disease and I will have to gown up with a long sleeve plastic gown, mask, and gloves before entering their room. I also place my IR in a plastic bag for protection. The nurse is in there and helps me lean the patient forward and I slide the IR behind the patient and get my x-ray tube into position. I adjust my technique for this patient because they weigh 350 pounds and I will need a larger amount of x-rays to penetrate and form this image. Three of my seven patients are contact precaution so I must gown up and carefully clean my portable machine after each patient so not to spread any infectious diseases.

7:35 am – I am finished in MSICU unit and I start pushing my portable machine over to the CVICU (cardio-vascular intensive care unit). A smile comes over my face because my co-worker popped up around the corner and asks if I need help. I say that would be wonderful because I have nine more patients to do.

7:45 am – We arrive in CVICU. These patients recently had heart surgery of some sort. They are very weak and many are on respirators to help them breath. Usually they are very heavy to lean forward and do not offer us any assistance. My co-worker and I continue through the unit until all nine patients have received their morning chest x-rays. Three of my patients in this unit were contact precaution. The gowning up and cleaning of the machine is the same procedure that I did in the MSICU.

9:15 am – We arrive back in radiology. I have all 16 image receptors on a cart and it is time to develop these images. We use Fuji Imaging in our department; I will scan each IR with the patient information and place them in a slot to be laser read. The image then comes up on a digital monitor. At this point I QA (quality control) my film, making sure it is a diagnostic image and all the anatomy, including their apices and costophrenic angles, are on the image. If I like the film, I post process it and label the image. We must label all images taken portable, the hour we did the image and whether the patient is upright or supine (laying down). My co-worker at the same time is completing the paperwork. We must charge the patient for the film, write a complete patient history, and verify the images before they are sent for a final reading to the radiologist.

9:45 am – Just as we finish Dr. Wit comes flying into the department; he is in a bit of a hurry and wants to see the image of a patient I just x-rayed in MSICU because the patient has developed shortness of breath and is being put on a breathing machine. I pulled up the image on our PACS (picture archiving system) for him to see. He looks and hurries off; as he walks out the door he says, “I need another chest x-ray on that patient.” STAT means move very quickly, I grab the patient’s name and run to the portable and head to MSICU just on his tail.

10:10 am – I am back from MSICU and the lead technologist tells me that my co-worker who was scheduled to work in surgery today has called in sick. She needs me to go to OR 3 (operating room 3) to
do a c-arm surgical case. I quickly change into surgical scrubs, grab an OR hat and mask, and go to the surgical suite.

10:30 am – I pull in the c-arm which is our portable fluoroscopy machine into the room. I quickly put on my lead apron which I wear for radiation safety. I am greeted by the surgeon as he is waving his hand at me to pull the machine in and give him an image immediately for which he thanks me. This patient has a compound fractured femur and the surgeon will be placing a rod the length of the femur in the patient’s leg. By the time this case is done we will have used over 10 minutes of live x-ray (fluoroscopy time) to complete this case and check placement of the rod.

12:00 pm – I am leaving OR 3; my case is complete. I must now find a computer and charge the patient for the hours I was in the OR and then film my case with the images the surgeon saved.

12:20 pm – I arrive back in radiology and the lead asks if I want lunch. I welcome the break.

12:55 pm – I am back from lunch feeling rested. I hear the phone ringing. I answer, and it is the neonatology department. They need a STAT chest and abdomen on a new born preemie. I quickly grab an IR and head out. When I got up to the third floor they buzzed me in because the mother/baby unit is on lock down. I see the baby and it is tiny, weighing just 3 pounds; I carefully place the baby on my IR, as I am thinking about what technique to use on this very small patient. The neonatologist asks me to please get those images on PACS system so he can see them right away. He also asks for a STAT reading from one of our radiologist for umbilicus catheter location. I will have to fill out a form and go back to our doctors reading area immediately. I must personally hand this paperwork to a radiologist.

1:20 pm – I arrive back and I see on the work list that the ER x-ray department is very busy. I head over to help my co-worker who has six patients waiting for x-rays. She thanks me for coming over to help. She tells me that the ER doctor has called twice to ask her to get some help. We work as a team to get these patients done as quickly as possible. A radiographer must be a critical thinker. We have a patient on a backboard needing a series of images on bones in the arm and hand that are obviously fractured. The normal way of creating images will not work when x-raying a badly, displaced fractured body part. We use the portable machine and go to the ER bed to perform the images.

2:20 pm – I go back to the department because we have a patient for a Lower GI study (barium enema). I fill the enema bag with barium; place the tip and air syringe on, and go get the patient. I go into the men’s dressing room and find my patient; he is very weak and feeling sick. I get a wheelchair and take him to the fluoroscopy room for his exam. Patients who have lower GI studies must carry out a strict dietary protocol for two days to clean out their colons. I get him on the table and start the exam with one of our radiologists.

3:20 pm – The Lower GI study is done and I have sent my patient home.

3:30 pm – The lead technologist asks if I would go to recovery and x-ray a post operative hip patient. I grab a co-worker and we head to post-op. We take two images of the hip, an AP, and a Lateral view. Since the patient just had surgery they cannot get into the position we normally use for a lateral hip. A
lot more maneuvering is done to create a lateral image of the hip, while trying to minimize patient discomfort.

3:50 pm – We arrive back in the department. The lead technologist sends me to the Outpatient Pavilion to finish my shift by doing outpatient x-rays. Our x-ray room is on the opposite side of the hospital so I take this opportunity to revive myself on my walk. I arrive and there are four patients waiting; the exams are cervical spine, lumbar spine, chest x-ray, and a skull x-ray on a 2-year-old. I replace my coworker and get working.

4:30 pm – The next shift is here and my 10-hour day is over. I remind myself that I am ‘on call’ from 11pm until 7am the next day. This means that if the department is very busy, or there is a surgical case during those hours, I will be called in to help. I make sure my pager is turned on for the evening. I am ready to call it a day. I feel a sense of accomplishment and pride. I have made my patients’ lives a little easier by showing them kindness and compassion when they are in my care. So many have just been diagnosed with cancer and other illnesses; they come to us for follow-up images. Others are waiting to see what the results are of their exams, and anxiety can run high. Whether it is an inpatient, outpatient, OR patient, or ER patient I try to place myself in their shoes and offer them the best care possible: a warm blanket, a smile, or a touch on the shoulder. This is what makes a Radiological Technologist’s profession rewarding and a marvelous career choice within the medical field.

One last item to address: the diversity of radiography is immense. A radiographer can specialize in other modalities within the radiology department. Examples of a few are Computer Tomography (CT), Magnetic Resonance Imaging (MRI), Interventional Radiography, and Cardiac Catherization Lab.