

## The Radiologist

### General Information

#### Contributors:

A/Prof Stacy Goergen

MBBS, FRANZCR, M.Clin.Epi

Ms Ann Revell, Dr Christine Walker

### What is a Radiologist?

A radiologist is a specialist medical doctor who has had specific postgraduate training in performing and interpreting diagnostic imaging tests and interventional procedures or treatments that involve the use of X-ray, ultrasound, and magnetic resonance imaging equipment. Radiologists are trained to assist other doctors and specialists to treat their patients by making a diagnosis and providing treatment using medical imaging. Radiologists have the medical knowledge to understand and explain your medical problem or symptom through the images or pictures that are taken of various parts of the inside of your body.

Radiologists can choose to work in various sub-specialties of radiology such as breast imaging, interventional radiology, musculoskeletal imaging, cardiac imaging, or paediatric (children's) imaging.

### What does a Radiologist do?

Most radiologists work in a public or private hospital or private radiology practice. They are there to help other doctors diagnose and treat illness. They do this by understanding when an imaging test may be needed to answer a doctor's question about a symptom, disease, injury or treatment, etc., and also when imaging is unlikely to be helpful. If an imaging test is needed, radiologists know which test is likely to be the best one to answer the question, or, if more than one test is needed, in which order the tests should be done to get the best result. When a radiologist receives a request for a test or interventional treatment of a problem, he or she considers the different imaging tests available, considers the risks and benefits of the different ways of obtaining imaging to assist in answering the question, and determines what test or treatment to do and how best to do it.

Radiologists communicate the results of diagnostic and interventional imaging to the doctor who has sent you for the test or procedure, by a written report sent to your doctor. Sometimes, the radiologist will discuss the report verbally (e.g. over the telephone) with your doctor too.

Radiologists work as part of the clinical team taking care of you so that they can participate actively in decision making about imaging tests that your doctor is considering. Excellent communication between your doctor and the radiologist, regarding your clinical problem, helps the radiologist best understand how to answer your doctor's question(s).

Your doctor and the radiologist will communicate through the written referral your doctor gives you to take to the hospital or radiology practice. Your doctor may talk with the radiologist to discuss how best to answer a question using imaging, or to clarify information about your problem before the radiologist can make a diagnosis based on the imaging (pictures) you have had taken at the hospital or radiology practice.

There are three types of radiology – diagnostic, interventional and therapeutic (called radiation oncology).

#### Diagnostic:

Diagnostic imaging uses plain X-ray radiology, computerised tomography (CT), magnetic resonance imaging (MRI), ultrasound and nuclear medicine imaging techniques to obtain images that are then interpreted to aid in the diagnosis of disease.

#### Interventional:

Interventional radiologists treat as well as diagnose disease using imaging equipment. Interventional radiologists may sub-specialise further so that they only treat abnormalities of the brain or spinal cord (neurointervention) or of the blood vessels elsewhere in the body (angiointervention). Interventional radiology is a minimally invasive procedure using X-ray, magnetic or ultrasound images to guide the procedures, usually done with tiny instruments and thin plastic tubes called catheters inserted through an artery or vein.

#### Radiation oncology:

Radiation oncology uses radiation to treat diseases such as cancer, using radiation therapy. These specialists are not called radiologists, but radiation oncologists, even though they belong to the Royal Australian and New Zealand College of Radiologists.

Not all diagnostic and interventional radiology tests and procedures are performed by radiologists. Nuclear medicine physicians are not always radiologists as many specialise first in internal medicine. Vascular (blood vessel) surgeons may perform ultrasound, angiography (taking pictures of the blood vessels using X-rays and contrast medium) and interventional procedures on the arteries and veins using X-ray equipment like radiologists. Some obstetricians perform their own ultrasound, and some choose to subspecialise in obstetric and gynaecologic ultrasound and confine their practice to this area. Cardiologists perform ultrasound on the heart and are increasingly involved in MRI and CT scanning of the heart as well. You may be referred to have a test involving imaging but it will not always be performed by a radiologist.

Many radiologists teach undergraduate medical students and postgraduate trainees. Some radiologists hold academic positions in university departments, some work in public hospitals or private practice, and some do all or a mixture of these.

## Why become a Radiologist?

Radiology is at the forefront of technological advances in clinical medicine. The ability to produce pictures of the human body using many different techniques has revolutionised the practice of medicine over the past hundred years. Radiologists are central members of the multidisciplinary clinical care team and play an important role in the diagnosis and treatment of disease in adults and children (including babies and foetuses). Radiology offers tremendous scope for a varied career in cutting edge technology, clinical medicine, teaching and research and is becoming more highly specialised as imaging technology increases in its sophistication and complexity.

## How do you become a Radiologist?

Radiologists have completed their undergraduate training in medicine at a university, either in Australia or overseas.

In Australia, newly qualified doctors (interns) are required to complete at least two years of general medical work under supervision in a hospital before they can apply to enter one of the specialist training programs for diagnostic radiology. Entry into the training program, as for all specialist training programs in Australia, is highly competitive and a minority of applicants enter the 5 year training program accredited by the Royal Australian and New Zealand College of Radiologists (RANZCR).

During the 5 year training period, trainees take two sets of examinations (Part 1 and Part 2). In addition, they receive practical, on-the-job training in all facets of diagnostic radiology including the interpretation of X-rays, CT scans, ultrasound, MRI, nuclear medicine and angiography. They are also trained in many interventional procedures. They are trained to interpret imaging studies performed in pregnancy, childhood, and in adults.

Once the trainees have completed 4 years of training and passed the Part 2 examination, they may decide to obtain additional subspecialty training through advanced training positions in Australia and/or overseas. These opportunities allow the trainees or recently qualified radiologists to concentrate on one area of the specialty of radiology, such as breast imaging, interventional

radiology, musculoskeletal radiology, or paediatric (children's) imaging.

About 80 doctors per year complete their training as radiologists in Australia and New Zealand. Other radiologists, who have completed their training in other countries, may apply to practice as radiologists in Australia. Each of these applications is considered individually by RANZCR and the qualifications of the individual are evaluated. Most overseas trained radiologists will be required to take the Part 2 examination, which assesses their ability to interpret the full spectrum of imaging tests as well as their theoretical knowledge of the specialist field of radiology.

## Where does a Radiologist study?

Radiologists have completed undergraduate medical training at a university and then undertake their post graduate specialist radiology training in a hospital setting. This is often in the public sector but increasingly the private sector is becoming involved in post graduate training of radiologists.

## What else can a Radiologist do?

Most radiologists continue their clinical (patient centred) career for many years but many choose to combine this with teaching, research, further study in the form of a subspecialty fellowship or post graduate research qualification such as a Master's degree, MD, or PhD. Administration of radiology departments in public hospitals and executive management of private radiology practices is also performed by radiologists. Radiologists act in an advisory capacity to government through the Medicare Services Advisory Committee as well as the Department of Health and Ageing and at jurisdictional levels through various State government committees.

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