

# The role of the radiography workforce in neuro-radiography



The Society & College of Radiographers

Neuro-radiography is a subspecialty of radiology, focusing on the imaging of the brain, spinal cord and peripheral nervous system. It is used to diagnosis a range of conditions, including tumours, vascular malformations, aneurysms and stroke.

Neuro-radiography encompasses a broad range of imaging modalities which, coupled with the vital need for focused and excellent patient centred care, means that a high level of knowledge and skills are required from the radiography workforce. Radiographers specialising in neuro-radiography have a strong working knowledge of neuro-anatomy and an in-depth understanding of advanced techniques for image acquisition. They carry out complex procedures to inform the clinical decision making and improve outcomes for patients with existing or suspected neurological conditions.

Plain radiography has its place in neuro-radiography and may be used in conjunction with angiography (where contrast is injected into blood vessels). Ultrasound is also used, especially in imaging babies and children, but the primary imaging modalities are Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) which are highly technical and advanced scanning techniques.

## CT in neuro-radiography

CT is commonly used to diagnose patients attending as emergency cases with an acute cerebral event such as CVA (cerebral vascular accident) SAH (sub-arachnoid haemorrhage) and ICH (intracerebral haemorrhage) and is the first line investigation for traumatic brain injury allowing for rapid diagnosis and treatment. The use of multi-detector CT scanners allows for better identification of small lesions within the brain. CT is also used in routine neuro-imaging such as in the investigation of headaches.

CT angiography is used in neuro-radiography to examine the blood vessels in the brain and can identify abnormalities such as small aneurysms and arteriovenous malformations (AVM).

CT perfusion is commonly utilised in the diagnosis of ischaemic stroke.

## MRI in neuro-radiography

MRI allows for both structural and functional multi-planar imaging with the advantage of no radiation dose to the patient.

Structural MRI demonstrates brain structure identifying congenital abnormalities and pathologies such as brain tumours. The intracranial circulation can be imaged quickly without the need for injection of contrast agents allowing identification of conditions such as sub-arachnoid haemorrhage. The use of high field strength scanners means that higher resolution images can be produced with no increase in scan time, allowing for increased visualisation of focal structural lesions.

Functional MRI is very sensitive to blood flow and can detect early blood flow changes in the brain: this is essential in stroke imaging. Functional MRI can also

The radiography workforce delivers diagnostic imaging and radiotherapy services in a range of health and social care settings across the UK. Radiographers are pivotal to delivering fast and reliable diagnoses of disease, as well as curative and palliative treatment and care for patients with cancer. A large majority of patients will be referred for imaging during their treatment and radiographers are key to the delivery of successful clinical outcomes.

The Society and College of Radiographers (SCoR) is a professional body and trade union. With more than 90% of the radiography workforce in membership, it represents the entire profession. It shapes the healthcare agenda and leads opinion on a wide range of professional issues, setting standards and developing policies that are adopted and acclaimed by governments and health professionals worldwide.

The SCoR pioneers new ways of working and ensures that its members work in a safe and fair environment. Its activities are designed to ensure that patients receive the best possible care.

### The SCoR believes that:

- Every patient must have the right diagnostic examination, at the right time, undertaken by the most appropriate person, using the right equipment to the best possible standard and with timely results to inform the outcome.
- Every cancer patient must be able to be in control of decisions about their care and have access to the most effective treatment, delivered at the right time and by the most appropriate person.

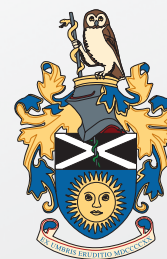
“Radiographers carry out complex procedures to inform the clinical decision making and improve outcomes for patients with existing or suspected neurological conditions.”

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be used in the diagnosis of metabolic diseases such as Alzheimer's and in diagnosing lesions on a finer scale.

Magnetic Resonance Angiography MRA is commonly used as a non-invasive method of imaging the cerebrovascular anatomy. Contrast enhanced MRA can allow for improved assessment of certain conditions such as the degree of vascular stenosis.

Diffusion Weighted Imaging (DWI) is a very sensitive technique for the detection of ischemia and is used routinely for patients with suspected TIA (transient ischaemic attack).

Inter-operative MRI is an emerging technique in neurosurgery allowing surgeons the ability to assess any residual tumour left whilst the patient is still under anaesthetic often reducing the need for further surgery on the patient.

## Summary

The radiography workforce is a vital part of the specialist neuro-radiography team. Their work in this challenging area requires focused and excellent patient-centred care, as well as an in-depth understanding of advanced techniques for image acquisition. They carry out complex procedures to inform the clinical decision making and improve outcomes for patients with existing or suspected neurological conditions.

