



The Radiography Workforce

Current Challenges and Changing Needs



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RADIOGRAPHERS

Diagnostic imaging

Background

Imaging plays a central role in modern healthcare, with almost all patient pathways reliant on an effective and efficient service to improve patient experience and outcomes.

- Team working is fundamental to the delivery of a patient focused service.
- Of increasing importance given the sustained and significant increases in radiology activity, driven by new and emerging technologies, an ageing patient population with changing health needs, and a drive towards 7-day working.

Chronic shortages in the diagnostic workforce, including consultant radiologists and diagnostic radiographers.

- Significant diagnostic capacity issues are hampering the drive to improving patient care, experience and outcomes, with a considerable volume of investigations waiting more than 30 days for a report.
- Ambitious plans for new care models and improved cancer outcomes require novel approaches, maximising the skills of the entire imaging team. The status quo is no longer an option.

Methodology

The collaborative approach taken by the radiology department of an acute London hospital has been published as a case study, highlighting the team working approach advocated by the Royal College of Radiologists and the College of Radiographers.

These are the results from a continuous service evaluation, using the same methodology as used in previously published studies.

- Analysis of departmental activity, report turnaround times, waiting times and the proportion of examinations performed and/or reported by radiologists, reporting radiographers, sonographers and extended scope physiotherapists.
- Activity benchmarked against Royal College of Radiologists' workforce planning and national reporting standards.
- Novel approaches that maximise the contribution of the entire diagnostic team have been highlighted.

Results

Overall departmental activity shows ongoing growth, and reflects concurrent overall activity pressures on the NHS.

- Total activity has increased 35% from 117,520 examinations in 2010-11 to 158,773 in 2015-16.
- This has been driven by sustained growth in cross-sectional imaging. Over the six year cycle:
 - MRI has increased 72% (5,814 to 9,754 in 2015-16)
 - CT 26% (11,636 to 14,754)
 - Non-obstetric ultrasound 41% (23,057 to 32,719).
- Average waiting times have remained relatively consistent, especially given the increase in demand



- Reporting turnaround times have been maintained, or improved. MRI has shown a slight increase, however this needs to be placed in the context of sustained activity growth.
- Homerton University Hospital Radiology is one of few departments in England to report zero wait in the Royal College of Radiologists' audits.

Modality	Average Reporting Time	Proportion <24 hours
X-ray	34 hours	74%
CT	16 hours	73%
MRI	72 hours	36%

- Aside from overnight cover for urgent CT scans, outsourcing has not been required to maintain capacity or reporting times.
- Despite an increasing trend for clinicians outside of radiology to provide reports in England, all examinations, apart from intra-oral dental X-rays and intraoperative fluoroscopic imaging, receive a radiology report.
- The consultant radiologist and radiographer advanced practice establishment has increased, shaped by anticipated demand and service requirements.
- Advanced and consultant practitioners, reporting radiographers, sonographers and physiotherapists have provided a significant contribution the service delivery.
- Departmental activity was examined using the Royal College of Radiologists, guidance on workforce planning.

	2012-13	2015-16
Projected radiologist hours	15,595	23,832
Actual radiologist hours	11,834	17,699
Consultant radiologist (FTE) savings	3	6

- Extending the contribution of radiology department assistants (healthcare assistants) allows radiographers to concentrate on patient care, efficient service delivery and creates capacity for additional reporting sessions.
 - o Cannulating patients for CT and MRI contrast examinations
 - o MRI safety checks
 - o Assisting consultant radiologists and physiotherapists with ultrasound and CT interventional procedures
- An assistant practitioner is used in outpatient and general practitioner x-ray and provides a significant contribution to capacity. The assistant practitioner performs approximately 20% of outpatient x-ray imaging.
- Proactive training and role extension of sonographers has improved retention. At present we are up to full complement and are one of a few departments not using agency/locum staff in ultrasound.

Conclusions

A team-based approach is essential within radiology to meet rising demand and to maintain a patient focused service. Radiographer reporting provides a significant contribution and has been shown to be effective, efficient and safe.

Ensuring sufficient radiographers, both for reporting and for backfill into traditional roles, is essential for a robust, reliable service. This was recognised and addressed during 2014-15 when reporting times increased.

For further information contact:

Nick Woznitza
 Clinical Academic Reporting Radiographer
 Homerton University Hospital
 Canterbury Christ Church University
 nicholas.woznitza@nhs.net
 020 8510 5315



Radiographer Reporting - Summary of Evidence

Chest X-rays

Piper et al. *Chest reporting by radiographers: Findings of an accredited postgraduate programme* Radiography 2014; 20:94-99

Woznitza et al. *Adult chest radiograph reporting by radiographers: Preliminary data from an in-house audit programme* Radiography 2014; 20:223-229

Findings: Radiographers report chest X-rays with a high degree of accuracy and with comparable agreement to consultant radiologists.

Importance: Redesign of lung cancer pathway and improved lung cancer outcomes.

Gastrointestinal Imaging

Meertens et al. *Diagnostic accuracy of radiographer reporting of computed tomography colonography examinations: a systematic review* Clin Radiol 2013; 68:e177-90

Law et al. *Radiographer performed single contrast small bowel enteroclysis* Radiography 2005; 11:11-15

Findings: Radiographers can perform and report a range of gastrointestinal examinations with comparable accuracy to radiologists.

Importance: Increased workload due to bowel cancer screening programme and move away from traditional barium procedures.

Mammography

Wivell et al. *Can radiographers read screening mammograms?* Clin Radiol 2003;58:63-67

Debono et al. *Evaluation of radiographers' mammography screen-reading accuracy in Australia* J Med Radiat Sci 2015; 62:15-22

Findings: Radiographers identified all cancers in image test bank, and perform screening with good accuracy.

Importance: Shortage of breast radiologists and general breast imaging workforce.

Magnetic Resonance Imaging

Piper et al. *MRI reporting by radiographers: Findings of an accredited postgraduate programme* Radiography 2010;16: 136-142

Brealey et al. *Observer agreement in the reporting of knee and lumbar spine magnetic resonance (MR) imaging examinations: Selectively trained MR radiographers and consultant radiologists compared with an index radiologist* Eur J Radiol 2013; 82:e597-e605

Findings: Radiographers report knee and lumbar spine MRI examinations with high accuracy and comparable performance to radiologists.

Importance: Significant increase in MRI activity and rising demand from general practitioner with direct access.

Skeletal X-rays

Piper et al. *Accuracy of radiographers' reports in the interpretation of radiographic examinations of the skeletal system: a review of 6796 cases* Radiography 2005; 11:27-34

Brealey et al. *Accuracy of radiographer plain radiograph reporting in clinical practice: a meta-analysis*, Clin Radiol 2005; 60:232-241

Hardy et al. *Is a radiographer led immediate reporting service for emergency department referrals a cost effective initiative?* Radiography 2013; 19:23-27

Findings: Radiographers report skeletal X-rays with high accuracy and immediate reporting of skeletal X-rays from the emergency department is cost effective.

Importance: Emergency medicine is under significant strain with significant backlogs of GP skeletal X-rays waiting for a report across England.

Evidence of Service Contribution

Woznitza et al. *Optimizing patient care in radiology through team-working: A case study from the United Kingdom* Radiography 2014; 20:258-263

Snaith et al. *Beyond image interpretation: Capturing the impact of radiographer advanced practice through activity diaries* Radiography 2016; 22:e233-e238

Findings: Radiographer reporting provides a significant contribution to radiology service delivery in an effective, efficient and patient focused way.

Importance: Diagnostic capacity is frequently identified as a barrier to improved patient care and outcomes, with a significant backlog of examinations waiting for a report.



Therapeutic Radiography

Therapeutic radiographers plan and deliver radiotherapy and care for patients with cancer before, during and after their treatment. They provide specialist expertise, advice and continuity of support for patients across the radiotherapy treatment pathway.

National work to raise radiotherapy standards has been ongoing since the publication of the National Health Service (NHS) Cancer Plan¹ and subsequent formation of the National Radiotherapy Advisory Group in 2005, culminating in the recently published Vision for Radiotherapy 2014 – 2024.² The vision paper highlights the importance of skills-mix and new roles at advanced and consultant levels of practice in order to enable delivery of innovative and advanced radiotherapy to patients.

An independent task force was set up in early 2015 to formulate an action plan to radically improve the outcomes that the NHS delivers for people with cancer. The resultant strategy³ proposes six strategic priorities.

Recommendations include:

- increasing access to radiotherapy
- Investment in a radiotherapy equipment replacement programme, addressing critical workforce deficits
- Strategic review of future workforce needs
- Access to a clinical nurse specialist or other key worker for all people with cancer.

The availability of complex radiotherapy is expanding and in cancer centres across the United Kingdom, there are site specialist radiographer roles with post holders being responsible for streamlining and focussing care and support across radiotherapy pathways.

This expansion aligns to the development of advanced and consultant non-medical practitioners as a key strategy within Health Education England across the non-medical workforce. Current project work involves developing an England wide framework to more effectively implement skills mix and roll out of advanced/consultant roles in a consistent manner to support improvement to patient outcomes.

CASE STUDY: Hannah Nightingale and Cathy Taylor

The advanced roles of radiographers specialising in prostate cancer at a large cancer centre in the north of England have evolved in part due to working time directive initiatives for doctors limiting their hours of work. Combined with growing caseloads from high incidences of cancer and shortages of consultant oncologists, it was deemed essential to advance the traditional roles of radiographers.

Practices have developed to include brachytherapy volume studies, consenting patients, and reviewing patients during their radiation pathway.

These practices have allowed radiographers to ensure efficient services for patients by cutting waiting lists, increasing support for patients and the clinical team, as well as giving radiographers enhanced professional satisfaction.

It is essential that these roles are endorsed by the whole clinical team, allowing correct use of and support for the radiographers in the development of their advanced skills. When correct strategies are not implemented, this can pose challenges.

Defining a clear scope of practice can protect the teams and ensure role boundaries are clear. Radiographers in such roles may also require extra support to ensure a degree of clinical competency is achieved, for example on a linear accelerator, or with brachytherapy treatments and this can be difficult to achieve with the other responsibilities these roles encompass.

As practitioners in advanced/consultant roles, we have enjoyed the enhanced skills and knowledge we have acquired from the clinical teams and the responsibilities we have gained with this.

Being able to support patients using a holistic approach through their entire pathway is extremely rewarding.

In the future, these roles are likely to expand as newer technologies within radiation delivery specialise even further. For example, brachytherapy delivered as monotherapy will increase the case load of patients and will require expert knowledge.

We are also likely to see an increase in radiotherapy patients due to the new research findings from the STAMPEDE trial suggesting radiotherapy to the primary prostate cancer, even in metastatic patients, is likely to be beneficial.

CASE STUDY: Phil Reynolds

Since qualifying in 1999, I have worked in hospitals in the UK, Australia and New Zealand. I started as a general treatment review radiographer eight years ago seeing patients for all tumour sites and for the past six years I have been the Advanced Urology Practitioner specialising in radiotherapy for prostate and bladder cancers. The development of this role came after a gap was identified in the quality of support available for these patients.

My role is to be the link between urology and radiotherapy and so I have contact with all patients undergoing radiotherapy for a urological cancer. I support both the patient and their family throughout treatment after initially seeing them at a pre-treatment seminar.

As well as inserting gold seed markers into the prostate to aid the accuracy of treatment, I provide continuity of care throughout the course of radiotherapy. As a non-medical prescriber, I am able to initiate treatment for side effects and provide a follow up clinic.

Close working with colleagues in the multi-disciplinary team is crucial to ensuring the best care for the patient, enabling referral to other specialties as required, such as andrology or continence nurses. The role also includes involvement and facilitation of a monthly prostate cancer support group since its inception five years ago. I have really enjoyed helping facilitate the group as well as giving talks in my field of expertise.

As a member of the urology working party within radiotherapy, I help to continually improve techniques and outcomes for patients having radiotherapy for a urological cancer. To that end I am also responsible for writing our department patient information, as well as reviewing information for Prostate Cancer UK.

In the future, I hope to continue advancing the role working towards a consultant practitioner and to continue to make the journey for the patient as smooth as possible.

For further information contact:

Spencer Goodman MSc PgDip FHEA DCR (T)
Professional Officer for Radiotherapy
The Society and College of Radiographers
spencerg@sor.org
020 7740 7257

1. Department of Health. *The NHS Cancer Plan and the New NHS; providing a patient-centred service.* London: Stationery Office; 2004.

2. *Cancer Research UK and NHS England. Vision for Radiotherapy 2014 – 2024.* March 2014.

3. *The Independent Cancer Taskforce. Achieving world-class cancer outcomes: a strategy for England 2015-2020.* 2015.