Health Education England

Evidence Brief: Imaging and Radiology

Contents

Produced by the HEE Knowledge Management team Evidence Briefs offer a quick overview of the published reports, research, and evidence on a workforce-related topic.

Date of publication: September 2022

Please acknowledge this work in any resulting paper or presentation as:
Evidence Brief: Imaging and radiology. Katie Nicholas. (September 2022). UK: Health Education England Knowledge Management Team

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- Complete Evidence Brief list – link for HEE staff
- Complete Evidence Brief list – link for External staff

Key publications – the big picture

Diagnostic Radiography Workforce UK Census 2021 Report
Source: The Society of Radiographers
Publication date: August 2022
Between November 2021 and January 2022, the Society of Radiographers carried out a census of the diagnostic radiography workforce in the UK. The objectives were to establish the structure, nature and vacancy rate of the workforce. Fifty-nine providers of medical imaging responded to an online questionnaire. This document presents an analysis of the census results and compares them to similar censuses carried out in 2018 [1], 2019 [2] and 2020 [3].

Radiotherapy Radiographic Workforce UK Census 2021
Source: The Society of Radiographers
Publication date: June 2022
We, the College of Radiographers (CoR), carried out a census of the radiotherapy radiographic workforce in the UK as of the census date 1 November 2021. The census was targeted at radiotherapy providers in England, Northern Ireland, Scotland and Wales in the NHS and other healthcare sectors. The objectives were to establish the size, structure, nature and vacancy rate of the workforce. This document presents an analysis of the results and compares them with similar surveys carried out annually from 2012 to 2020 (see references).

Diagnostic imaging network workforce guidance
Source: NHS
Publication date: April 2022
The main purpose of this document is to optimise the utilisation of the current
workforce within imaging departments through networks. The document enables those who work within imaging networks to work efficiently by improving working environments and sharing work, as well as guide planning for the future growth of the workforce.

National radiotherapy plan for Scotland
Source: Scottish Government
Publication date: March 2022
We are committed to providing a world class radiotherapy service. This plan sets out our ambition to provide equitable, timely access across NHS Scotland to safe, efficient and effective, person-centred radiotherapy services.

Supporting succes: Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities
Source: Health Education England
Publication date: January 2022
Health Education England (HEE) has published this guidance in collaboration with the Society of Radiographers to maximise the contribution of the diagnostic imaging support workforce to deliver safe and effective care. This guidance sets out the roles and responsibilities that diagnostic imaging support workers, including assistant practitioners, can perform at four career levels. It provides additional, profession-specific competencies that complement the AHP Support Worker Competency, Education and Career Development Framework.

Radiology training: what good looks like, now and in the future
Source: The Royal College of Radiologists
Publication date: 2022
In 2016 the RCR published Radiology Training 2016–2026: A vision and a solution 3 which called for increases in training numbers and in the number of academies, as well as wider implementation of academy models of training through greater investment in and development of innovative training methods. Much of this is progressing well, and the recent expansion in

training numbers and in the number of imaging academies is very welcome. However, more is needed to meet consultant targets such as those set out in the Richards report .4 To achieve these targets, we need to continue to increase training capacity to help meet demand, while maintaining the highest standards of radiology training.

The radiologist and nuclear medicine: Third Edition
Source: The Royal College of Radiologists
Publication date: 2022
This document addresses the specific issues related to radiologists working in a nuclear medicine environment. The purpose of this document is to guide Fellows and members of The Royal College of Radiologists (RCR), clinical and medical directors and regional specialty advisers in job planning and at appointment committees.

Clinical radiology census report 2021
Source: The Royal College of Radiologists
Publication date: 2022
For over 10 years, the Royal College of Radiologists (RCR) has collected key clinical radiologist workforce data from clinical directors across the UK to identify trends, issues and make evidence-based recommendations. With a 100% response rate, this year's data reflects the workforce as it actually stood on 1 September 2021. Our 2021 census reflects an increasingly worrying picture of staff shortages, leading to increasing workforce pressures impacting on patient safety and quality of care provided for patients resulting in reduced retention. Until these issues are resolved, backlogs will continue to rise, and patient outcomes will continue to be adversely affected.

Clinical oncology census report 2021
Source: The Royal College of Radiologists
Publication date: 2022
For over 10 years, the Royal College of Radiologists (RCR) has collected key clinical oncologist workforce data and insight from cancer centre heads of service, the clinical leads in the 60 cancer centres, across the UK. This is used to identify trends, issues and make evidence-based recommendations to improve patient care. With a 100% response rate, this year's data reflects the workforce as it stood on 1 October 2021.

Current and future roles of diagnostic radiographers
Source: The Society of Radiographers
Publication date: December 2021
Diagnostic radiographers provide a range of types of diagnostic imaging to enable screening services, imaging for the diagnoses of diseases and trauma and to facilitate treatments that include curative, palliative, ongoing imaging surveillance, end of life interventions and care and forensic investigations. This document outlines some of the current and anticipated future roles of diagnostic radiographers in the health and social care system along with a short overview of the teams they work with, their provision of person-centred care, and the professional requirements that they meet.

Clinical Academic Radiographer: guidance for the support of new and established roles
Source: The Society of Radiographers
Publication date: September 2021
The purpose of this guidance document is to offer support from the Society of Radiographers (SoR), the professional body for clinical imaging and radiotherapy professionals, for the development of clinical academic roles in clinical imaging and radiotherapy. The main core role of all clinical academic allied health professionals is research. Clinical academic radiographer roles may be new for some services, but there is also an intention to support and promote knowledge of the roles of established clinical academic radiographers.

The guidance is issued in September 2021 and will be reviewed in 2023.

Artificial intelligence: Guidance for clinical imaging and therapeutic radiography workforce professionals
Source: The Society of Radiographers
Publication date: August 2021
The recommendations provided in this guidance document are focused on the different areas of radiographic practice in both clinical imaging and therapeutic services:

- Clinical practice
- Education
- Research
- Stakeholder partnerships

The recommendations were compiled using evidence from research literature, patient publications and healthcare professional policy and practice. The recommendations have been subject to a rapid period of peer, professional and patient assessment and review. Feedback was sought from a range of SoR members and advisory groups, including the SoR informatics group, the College of Radiographers (CoR) patient advisory group, the SoR research advisory group, and the CoR Education and Career Framework (ECF) review writing groups.It is hoped that these guidelines will be of value to: people who are developing, testing, validating and implementing AI for radiography in clinical practice; patients and carers; individual practitioners; service managers; and academic institutions.

Clinical radiology UK workforce census 2020 report
Source: The Royal College of Radiologists
Publication date: August 2021
The RCR's annual workforce census reveals huge shortages across radiology departments - both diagnostic radiologists who enable accurate treatment, and interventional radiologists who treat via non-invasive procedures. The RCR states that without significant investment in workforce, equipment and new ways of working, patients will suffer, diagnoses will be further delayed, and fewer patients will benefit from life-saving minimally invasive interventional radiology.

Clinical oncology UK workforce census 2020 report
Source: The Royal College of Radiologists
Publication date: July 2021
The findings from our latest annual workforce census of clinical oncologists in the UK highlight the widening gap between the future demand for cancer services and the specialist oncology workforce who provide the service, shortages which threaten to put the Long Term Plan and cancer recovery in jeopardy.

Society of Radiographers Survey of Trainee Consultant and Consultant Radiographers 2020
Source: The Society of Radiographers
Publication date: June 2021
The survey results presented in this 2021 publication provide updated information and a means to track trends and developments in the intervening period.

Position statement: Utilisation of skills across the professions of diagnostic and therapeutic radiography
Source: The Society of Radiographers
Publication date: June 2021
There are two distinct radiography professions – diagnostic radiography and therapeutic radiography – using two distinct UK-regulated, protected titles from the Health and Care Professions Council (HCPC). The Society of Radiographers (SoR) supports radiographers in identifying opportunities that benefit the service and service users through role development. Diversifying and expanding radiographers' practice within clinical imaging and radiotherapy is actively encouraged. It is

essential that development is underpinned by appropriate education and training to support the safe delivery of professional practice. If a College of Radiographers approved postgraduate qualification is available, the SoR expects a radiographer to achieve that recognised qualification.

Diagnostic imaging network implementation guide
Source: The Royal College of Radiologists; The Society of Radiographers; Institute of Physics and Engineering In Medicine and NHS
Publication date: April 2021
About 151 NHS trusts and foundation trusts provide their own imaging services, using operating models that need investment in premises, IT and equipment. Providers are also competing for increasingly scarce medical and non-medical staff. To address these challenges, The NHS Long Term Plan committed the NHS to establishing imaging networks across England by 2023; later our national imaging strategy outlined how their formation will maximise use of existing capacity, improve access to specialist opinion and make efficiencies and economies of scale. NHS evidence shows that the modernisation of equipment, technology, and local innovation within imaging networks, increases quality of service, experience, and safety of patients. Network formation drives efficiency, making these services more resilient and sustainable

Building a sustainable UK diagnostics sector: Summary report of a FORUM workshop held on Friday 19 March 2021
Source: The Academy of Medical Sciences
Publication date: March 2021
During the COVID-19 pandemic, the diagnostic testing, microbiology surveillance and manufacturing capabilities of the UK have expanded at an unprecedented speed. By applying the lessons learned from this response, as well as harnessing the investment in people, infrastructure, collaborations and innovative regulation, there is the opportunity to build a sustainable ecosystem that supports diagnostics across therapy areas and helps address unmet health needs and public health challenges. To discuss these issues, the Academy of Medical Sciences convened a FORUM workshop on 19 March 2021, bringing together experts from a wide range of disciplines across the NHS, academia, industry and wider life sciences sector. The challenge for the UK's diagnostic sector, emphasised by participants, is to maintain momentum going forward and to ensure that the progress made throughout the pandemic is not lost. Finding improved ways for academia and industry to access and work with the NHS, through samples, data and patients, can help drive the development of new, innovative tests that benefit patients in the future. In part this can be achieved by ensuring that current investments in the sector form the building blocks of an enduring legacy – by making sure that the best use is made of The Rosalind Franklin Laboratory and Lighthouse laboratories, for example, and by providing training opportunities to the COVID-19 workforce so they can build careers in diagnostics.

Building back cancer services in England.
Source: Institute for Public Policy Research (IPPR)
Authors: Patel, Parth;Thomas, Chris and Institute for Public Policy Research
Publication Date: 2021
Abstract: This research finds that even if stretched hospitals can maintain activity levels five per cent above pre-pandemic levels, it will still take until 2033 to clear the cancer treatment 'missing patients backlog' caused by the pandemic. However, if activity levels can be increased further and maintained at 15 per cent above pre-pandemic levels, backlogs across the cancer care pathway could be cleared by next year. However this uplift in cancer care activity could only be achieved with new policy to increase the cancer workforce and investment in diagnostic

equipment beyond the new funding announced in September 2021.

Diagnostics: Recovery and renewal – report of the independent review of Diagnostic Services for NHS England
Source: NHS England
Publication date: November 2020
Professor Sir Mike Richards was commissioned to undertake a review of NHS diagnostics capacity (NHS Long Term Plan). The independent report, Diagnostics: Recovery and Renewal, recommends the need for a new diagnostics model, where more facilities are created in free standing locations away from main hospital sites, including on the high street and in retail locations, providing quicker and easier access to tests to a range of tests on the same day, supporting earlier diagnosis, greater convenience to patients and the drive to reduce health inequalities.

Radiology: GIRFT Programme National Speciality Report
Author(s): Halliday et al.
Source: NHS Getting It Right First Times (GIRFT)
Publication date: November 2020
Recent years have seen a consistent, ongoing growth in demand for radiology services. In 2012/13, there were just over 35 million radiological examinations performed across the NHS in England. By 2018/19, that had risen to over 43 million. The fastest growth has been in the more complex modalities – MRI and CT. In April 2012, there were 250,000 CT scans undertaken a month; by March 2019, this had doubled. For MRI, the increase over the same period was from around 170,000 a month to 320,000. There seems little doubt that this pattern of growth will continue. Radiology is being used earlier and more extensively in the diagnostic pathway. It is at the heart of a growing number of screening programmes and health checks. At the same time, the use of interventional radiology is soaring, offering incredibly precise and minimally invasive surgery.

Transforming imaging services in England: a national strategy for imaging networks
Source: NHS
Publication date: November 2019
This strategy sets out a proposal for implementing collaborative imaging networks on a national basis across England. This approach will deliver better quality care and better value services for patients and provide hardworking NHS staff opportunities to develop their career and increase their productivity.

Progress update: Update on Phase 1 of the Cancer Workforce Plan
Source: Health Education England
Publication date: August 2019
Phase 1 of the Cancer Workforce Plan was clearly defined with a focus on seven key professions within the wider cancer workforce. This paper details progress towards ambitions described by the Cancer Workforce Plan (Phase 1 to 2021). HEE has been working with Cancer Alliances, NHS England and NHS Improvement, and other partners on the development and delivery of plans to deliver against these ambitions. Cancer Alliances are the system leaders for cancer, HEE regional leads have worked with them to develop regional workforce supply plans with ambitions to increase supply across the key professions. HEE regions have supported this through additional expertise, investment and alignment with LWABs and Workforce Development offers. Nationally, HEE invested an additional £9m in 2018/19 to support the cancer workforce, and Cancer Alliances are investing elements of transformation funding in workforce schemes. Development of projects and

initiatives within regional delivery plans is ongoing.

Right-touch assurance for sonographers based on risk of harm arising from practice: report to Health Education England
Source: Professional Standards Authority
Publication date: February 2019
As part of its Mandate 2020 goals for diagnostics, Health Education England's Diagnostics Programme has worked with stakeholders on developing a national "Sonographer" role to meet current and future demand for diagnostic services. This includes exploring the level of assurance required for such a role. As part of this work, HEE commissioned the Professional Standards Authority (PSA) to assess the evidence of risk to patients and the public posed by the Sonographer role, using their Right-touch assurance methodology. This report details the findings of PSA's assessment exercise.

Strategic Framework for Cancer Workforce: Interim working paper July 2018, not official or final HEE position
Source: Health Education England
Publication date: July 2018
In July 2018, the NHS was tasked with developing the Long Term Plan (LTP) setting out how the service intends to deliver major improvements in key areas including transforming cancer care. This was followed by a multi-year workforce plan – the interim People Plan. See also "Accompanying note"

Cancer Workforce Plan
Source: Health Education England
Publication date: 2017
This first phase report focusses on the actions needed to ensure we have enough staff with the right skills to deliver the funded activity set out in the Cancer Taskforce Strategy by 2021. This is not just about increasing numbers, but supporting our staff to develop new skills and enabling them to work differently. In addition to the steps we've already taken to increase the number of clinical radiologists and create new roles such as clinical endoscopists, this report sets out a number of 'pragmatic steps' to increase net supply and support new ways of working in the key professions highlighted in the Cancer Taskforce report. Whilst there is no new money over and above what was set out in the Spending Review of 2016, Health Education England (HEE) has reprioritised its budget and internal resources to support delivery of the Cancer Taskforce recommendations and Cancer Alliances are investing some of their transformation funds in their local workforce to deliver improvements for patients.

Radiology Academies Review
Source: Health Education England
Publication date: 2017
In 2005 the Department of Health and the Royal College of Radiologists collaborated to set up three Radiology Academies – Leeds & West Yorkshire, Norwich and Peninsula (Plymouth). These innovative purpose-built training environments were intended to increase clinical radiology training numbers and enhance the provision of effective and high-quality specialist training for a medical workforce experiencing a national shortage. This review was the first formal evaluation of the Radiology Academy training model. The purpose of the review was to consider the academic performance, service impact and cost-effectiveness of the three existing Radiology Academies. The review was undertaken to establish if the original Radiology Academy training model remained 'fit for purpose' and to inform future HEE decisions concerning, and investment in, Clinical Radiology training infrastructure.

Securing the future workforce supply: Gastrointestinal endoscopy workforce review
Source: Centre for Workforce Intelligence

Publication date: 2017
The Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health (DH) and Health Education England (HEE) to contribute qualitative and quantitative research, data analysis, and modelling to support HEE and NHS England in providing sufficient medical and non-medical gastrointestinal (GI) endoscopists to deliver GI endoscopy services. There is a growing pressure on endoscopy services and the Department of Health (DH, 2011) and Bowel Cancer UK (Bowel Cancer UK, 2012) suggest that there will be substantial increases in demand in the future which will affect all endoscopy services. Ensuring sufficient endoscopy capacity to meet the growing demand is a concern, and this project supports the DH drive to ensure that the NHS has the right number of trained staff available to deliver current and future demand for GI endoscopy. It will also help to improve HEE's understanding of the current GI endoscopy workforce −the outputs from the review will be used by HEE and HEE local team workforce planners to inform the commissioning of education and training and the resourcing of the GI endoscopy workforce. This is the first review of the endoscopy workforce undertaken by the CfWI, and this report represents the most complete picture to date of the GI endoscopy workforce in England in 2015. It contains combined analysis of three national endoscopy workforce datasets described below. The data yielded, coupled with wider work will support initial modelling, allowing a degree of extrapolation of demand and supply. However, it will not answer all questions about all subcomponents of this workforce.

Securing the future workforce supply: sonography workforce supply
Source: Centre for Workforce Intelligence
Publication date: 2017
The Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health and Health Education England (HEE) to contribute research, data analysis, and modelling to support them in providing sufficient ultrasound practitioners for diagnostic services across England.

Full team ahead: understanding the UK non-surgical cancer treatments workforce
Source: Cancer Research UK
Publication date: December 2017
More than 360,000 people in the UK are diagnosed with cancer each year1 . By 2022 it is projected that this figure will reach 422,000 people2,3 . Yet while more people will develop cancer, survival is improving. Currently half of all cancer patients survive their disease for 10 years or more. Cancer Research UK wants to accelerate progress so that 3 in 4 people survive by 2034. Early diagnosis followed by access to the best, evidence-based treatment is critical to achieve this. As we strive towards earlier diagnosis of cancer, treatments will change. Increasingly, treatments are tailored to an individual's cancer; combinations of treatment types are being used to target cancers differently and there are more treatment options than ever before. Additionally, an ageing population, often with comorbodities, means the treatment of cancer has become more complex.

Radiology training 2016-2026: a vision and a solution
Source: Royal College of Radiology
Publication date: June 2016
Radiology and the RCR have been here before: in 2002–2005 with the Department of Health, we created the Radiology Integrated Training Initiative (R-ITI) and three radiology academies. Those training schemes with academies significantly increased throughput using blended training in an

academy and the clinical setting and state of the art e-learning (R-ITI).

Scoping the future: an evaluation of endoscopy capacity across the NHS in England
Source: Cancer Research UK
Publication date: September 2015
See section 3.2 Workforce Recommendations

- Strategic planning around workforce should happen at the national level as recommended in Achieving World class Cancer Outcomes. We are aware that Health Education England is working with NHS England to deliver a training and development programme for Nurse Endoscopists, but this work should also include a robust assessment to determine the required number of trainees based on rising demand. Similar steps should be taken to ascertain the required level of new Consultant Gastroenterologists, Consultant GI surgeons, other non-medical endoscopists, and Senior Endoscopy nurses.
- Commissioners should work with local services to ensure the protections of training lists so staff are adequately trained.
- Leadership teams should ensure the unwarranted variation between units in Nurse Endoscopists' pay is eliminated
- NHS England and the Department of Health should work to ensure all staff involved in the delivery of endoscopy services are prepared for the transition to 7-day working. This should invoked the management of expectations from the recruitment stage, and the provision of appropriate compensation. In addition, local services should ensure job plans are appropriately balanced to encourage retention and avoid burnout.

Case Studies

Blogs and case studies from the Clinical Endoscopist Training Programme
Source: Health Education England
Stories from three professionals discussing their Clinical Endoscopy journeys and the training programme.

International recruitment at Yeovil Hospital during Covid-19
Source: NHS Employers
Publication date: April 2021
Learn how Yeovil District Hospital NHS Foundation Trust transformed its international recruitment model by adopting a person-centered approach. Key benefit included: Lead recruitment model supports collaborative recruitment across 15 trusts and has supported the arrival of 1,400 nurses and 50 radiographers since 2018.

How Community Diagnostic Centres can help address the existing radiology workforce crisis
Source: Philips and Rutherford Diagnostics
Publication date: 2021
In this article, Penny Owens, Radiography Advisor, Rutherford Diagnostics and Jill McKenna, Chief AHP and Head of Imaging, Rutherford Health, Stephen McMillan, Solutions Lead for Philips UK&I and Jeevan Gunaratnam, Director of Independent Sector and Community Diagnostics at Philips discuss the worsening shortage, its manifold reasons and explore how the UK's planned introduction of Community Diagnostic Centres could

help to address the radiology workforce shortage by creating environments that offer a positive, rewarding experience to both professionals and patients.

Multi-disciplinary diagnostic centre at UCLH delivers faster diagnosis
Source: NHS Long Term Plan
Publication date: January 2019
The multidisciplinary diagnostic centre (MDC), at University College London Hospital (UCLH), opened in 2016 and delivers faster diagnosis and improved patient journey with support from a Clinical Nurse Specialist (CNS), to patients presenting with complex or vague abdominal symptoms.

HEE Star

More resources and tools are available by searching for "imaging" and "radiology" in the HEE Star

Statistics

You can find relevant statistics on the Health and Care Statistics Landscape under **"Health and Care"** and use the **"Workforce"** filter

HEE National Data Programme

HEE staff can look at the National Data Warehouse (NDL) SharePoint site to find out more about datasets and Tableau products.

Published Peer Reviewed Research

Advanced practice

Diagnostic radiographer advanced clinical practice in the United Kingdom - A national cross-sectional survey
Author(s): Woznitza, Nick; Pittock, Lisa; Elliott, James; Snaith, Bev
Source: BJR open; vol. 3 (no. 1); p. 20210003
Publication date: 2021
To survey the diagnostic radiography workforce in the United Kingdom (UK) at an organisational level to ascertain the scope of advanced practice and compliance with Health Education England standards for multiprofessional advanced clinical practice (ACP). Methods: 174 diagnostic imaging departments were invited to participate in a cross-sectional electronic survey focused upon advanced level practice and their educational and accreditation expectations (October-December 2019). Breast imaging, computed tomography, fluoroscopy, interventional radiology, lithotripsy, magnetic resonance imaging and projectional radiography were included. Results: A total of 97 responses were received, of which 79 were eligible for inclusion (45%). Respondents reported advanced-level practice roles across all imaging modalities, which included clinical reporting, procedural-based and combined roles. Radiograph and mammogram reporting were most prevalent (95 and 67% of Trusts), with fluoroscopy the most frequent procedure-only role (25%). Only 39% of trusts required adherence to the four pillars of ACP within job descriptions, and only 12% requiring a full Masters qualification. Conclusions: Diagnostic radiographer reporting and procedure-based roles in the NHS are varied and widespread. However, inconsistencies in fulfilment against the expected standards for advanced practice exist. Realignment of advanced-level roles to delineate enhanced and advanced

clinical practice may ensure consistency between roles and professions. A requirement for accreditation as an advanced (clinical) practitioner with adherence to advanced practice requirements could therefore provide value to accreditation for both individual practitioners and Trusts. Advances in knowledge: Within the UK, diagnostic radiographer roles previously self-identified as advanced-level practice may be termed enhanced practice when not adhering to expected ACP standards.

Compassionate communication: Keeping patients at the heart of practice in an advancing radiographic workforce
Item Type: Journal Article
Authors: Taylor, A.;Bleiker, J. and Hodgson, D.
Publication Date: 2021
Journal: Radiography (London) 27(Suppl 1), pp. S43-S49
Abstract: INTRODUCTION: Compassion is a poorly understood concept in diagnostic and therapeutic radiography, but an increase in its focus was recommended in the Francis Report (2013). Much of the healthcare literature including policy and protocol has focussed on benchmarking and individualising compassion. Two separately conducted doctoral research projects, one therapeutic and one diagnostic, aimed to conceptualise compassion in order to understand its meaning and behavioural expression. METHODS: A constructivist approach was taken with appropriate ethical approval. Patients and carers, student radiographers and radiographers took part in interviews and focus groups and tweets were harvested from a Twitter journal club discussion between radiographers of the second author's published literature review. Data were transcribed and analysed thematically. FINDINGS: Key aspects of communication are fundamental to giving compassionate patient-centred care. These include verbal and non-verbal cues, actively listening and engaging and establishing rapport with the patient. Specific skills associated with these are also identified in these studies. CONCLUSION: Keeping the patient as a person at the centre of radiographic practice in the rapidly evolving technical and cultural environment in which it exists requires timely and appropriate behavioural expressions of compassion from radiographers deploying a range of highly specific communication and interpersonal skills. IMPLICATIONS FOR PRACTICE: When undertaking reflective practice, radiographers could consider key aspects of how they communicate with patients, including: verbal (in particular the language they use with patients and their tone of voice); non-verbal (especially eye contact and smiling and their body language). They could also usefully explore and develop skills in reading their patients' body language as well as their own in order to pick up subtle or hidden cues that might suggest a patient is suffering emotionally or psychologically. Finally, they could think about the sort of targeted questions they could ask of patients when welcoming them into the x-ray or treatment room that would both facilitate the procedure and leave the patient feeling that their radiographer had taken a genuine interest in them and their situation. These reflections could then be used to possibly modify their existing communications with their patients.

The role of the advanced clinical practitioner in breast diagnosis: A systematic review of the literature Abstract only*
Author(s): Spacey ; Hipperson, V.; Gloster, A.; Mercer, C.
Source: Radiography; vol. 27 (no. 2); p. 654-662
Publication date: May 2021
Increasing prevalence in breast cancers, workforce shortages and technological advancements have increased the need to further develop advanced practice in breast diagnosis. The Advanced Clinical Practitioner training programme has been introduced to support this need. The aim of this work was to systematically review studies that explore advanced practice in

mammography to assess the potential impact of the introduction of a specific Advanced Clinical Practitioner training programme in breast diagnosis within the UK. A systematic PRISMA review of the literature published between 1999 and January 2020 was carried out. A total of 17 studies were included in the review. Four themes were identified in the literature in relation to advanced practice in breast imaging: multidisciplinary practice; roles and responsibilities associated with advanced practice; development and progression; embedding and sustaining advanced practice. It was evident across all themes that advanced practice is vital in supporting better care for patients attending breast imaging in light of workforce shortages. Although advanced practice and its benefits are well established in breast imaging, persistent barriers were acknowledged such as role ambiguity, recruitment issues, lack of support from some radiologists and poor funding. Findings suggest that introducing a more formalised pathway to advanced practice into breast imaging through the implementation of a specific Advanced Clinical Practitioner apprenticeship training programme may overcome many of the challenges evidenced in this review. The findings of this review will help inform the development of the Advanced Clinical Practitioner apprenticeship programme specific to breast diagnosis.

Advancing Roles of Healthcare Professionals in Palliative Radiotherapy Abstract only*
Author(s): Fitzpatrick ; Javor, J.; Zywine, C.; Job, M.; Gram, V.
Source: Clinical Oncology; vol. 32 (no. 11); p. 753-757
Publication date: November 2020
New methods of working in relation to the management of patients requiring palliative radiotherapy are being embraced in hospital departments around the world. Team members are expanding on their previously assigned scope of practice to take on duties that had previously only been assigned to a consultant clinical oncologist. Career frameworks such as the four-tier model have been built upon to identify the skills held by other healthcare professionals and show how they may be best placed to take on additional roles within a patient pathway. Experiences of four departments in different countries report their local experiences in using both therapeutic radiographers and nursing staff to undertake advanced and consultant-level practice in relation to the management of both palliative radiotherapy patients and their research work streams. Involvement of other healthcare professionals within the clinical or research pathway for the management of palliative radiotherapy patients can be achieved. Their involvement can support clinicians and help to ensure the safe and efficient management of patients requiring palliative radiotherapy.

Does advanced practice in radiography benefit the healthcare system? A literature review Abstract only*
Author(s): Thom, S E
Source: Radiography (London, England : 1995); vol. 24 (no. 1); p. 84-89
Publication date: February 2018
OBJECTIVE: With ever-increasing demands on the National Health Service (NHS), members of staff are blurring their professional boundaries in the attempt to benefit the healthcare system. This review aims to establish whether advancing practice within radiography does benefit the healthcare system by examining published literature. KEY FINDINGS: Key words were input into databases such as: CINAHL, Science Direct and PubMed. Various filters were applied to narrow down the articles. Key themes were identified within the literature: cost, job satisfaction, patient benefits, restrictions and workload. Having advanced practitioners undertake some of the radiologists' workload was potentially cost effective whilst continuing/increasing the standard of quality. Patients benefitted from the quality of their examinations, the high

accuracy of their reports and the speed those reports were attained. CONCLUSION: Evidence within the literature emphasises that advanced practice does benefit the healthcare system by means of: cost reduction, job satisfaction, patient benefits and workload.

Advanced and extended scope practice of diagnostic radiographers in Scotland: Exploring strategic imaging service imperatives
Author(s): Henderson, I; Mathers, S A; McConnell, J
Source: Radiography (London, England : 1995); vol. 23 (no. 3); p. 181-186
Publication date: August 2017
INTRODUCTION: The development of diagnostic imaging services manifests features specific to the Scottish environment, in particular development of the radiographic workforce through implementing skills mix and role developments to enhance outcomes for patients. A component of a College of Radiographers Industry Partnership Scheme (CoRIPS) supported study, this research investigates perspectives of strategic service managers with Health Board responsibility for service delivery. METHOD: A questionnaire survey was administered to strategic service managers across Scotland (N = 14), followed up with telephone interviews. There was a return rate of 57% (n = 8) for the questionnaires and n = 4 agreed to be interviewed. Data collected related to radiographer roles across their Board area; awareness and understanding of service development issues and features as well as perspective on opportunities and barriers in the context of Scottish Government policy, workforce logistics, attitudes and inter-professional relationships. RESULTS: The results indicate evidence of financial, logistical and political barriers to service evolution, offset by a sense of optimism that scope for beneficial change may be approaching. There are a range of significant initiatives in place and an appetite exists to pursue the development of radiographer roles and skill mix for the benefit of service users more generally. CONCLUSION: The difficulties in achieving change are well understood and there are basic issues related to finance and industrial relations. There are also however, cultural elements to contend with in the form of attitudes demonstrated by some radiographers and significantly, the radiological community whose influence on the practice of independently regulated radiographers seems incongruent.

A national survey exploring UK trainees' perceptions, core training experience, and decisions to pursue advanced training in breast radiology. Abstract only*
Item Type: Journal Article
Authors: Lowes, S.;Bydder, M. and Sinnatamby, R.
Publication Date: 2017
Journal: Clinical Radiology 72(11), pp. 991.e1-991.e13
Abstract: Aim To investigate UK radiology trainees' perceptions of breast radiology and the factors that influenced their decision whether or not to choose breast radiology as an area of special interest. Materials & methods An online survey was compiled and distributed to all UK specialty trainees in clinical radiology via the Royal College of Radiologists Junior Radiologists' Forum (JRF) regional representatives. Results There were 275 respondents, representing 22% of all UK radiology trainees. Responses were received from all regions. A significant factor identified in influencing whether or not trainees decide to pursue advanced training in breast radiology is the timing and quality of their initial core training experience. Specific positive aspects of breast radiology that were repeatedly identified included the high level of patient contact and frequent use of interventional procedures. Recurring negative aspects of breast radiology included isolation from general radiology and finding the subject matter boring. Conclusion Breast radiology faces a significant workforce shortfall that is predicted to worsen in the coming

years. There has never been a greater need to recruit specialty trainees into this field, and action is urgently needed to help ensure the sustainability of breast services and drive further improvements to patient care. The findings from this survey should be regarded as a challenge to all breast radiologists to engage with trainees from an early stage in their training and to enthuse them with the many positive aspects of a career in breast radiology. Copyright © 2017 The Royal College of Radiologists

Advanced and extended scope practice of radiographers: The Scottish perspective Abstract only*
Author(s): Henderson I.; Mathers S.A.; McConnell J.; Minnoch D.
Source: Radiography; vol. 22 (no. 2); p. 185-193
Publication date: May 2016
Purpose: The impact of changing roles, skill mix and a shortage of consultant radiologists on the profession of diagnostic radiography is not clearly understood in Scotland although the anecdotal perspective suggests the situation in many areas does not equate to that of England. Method(s): A questionnaire survey was administered to 'lead diagnostic radiographers' across all Health Boards in Scotland and this was supplemented with telephone interviews. Result(s): The implementation of skill mix initiatives and particularly advanced/extended scope practice was found to be geographically variable with limited evidence of change in some areas. Lack of effective funding and backfill for training was found to be a major barrier to change, although it was also acknowledged that opposition from some professional groups could be a major factor. Conclusion(s): Although there is some optimism and evidence of accelerating change, development of the radiographic workforce in Scotland does not in general compare favourably to the findings of Price et al., in 2007. The reasons are multi-factorial including fiscal, professional and geographical elements.

Workforce

Determining diagnostic radiographer staffing requirements: A workload-based approach. Abstract only*
Item Type: Journal Article
Authors: Bam, L.;Cloete, C. and de Kock, I. H.
Publication Date: 2022
Journal: Radiography (London) 28(2), pp. 276-282
Abstract: INTRODUCTION: The topic of healthcare human resource planning for diagnostic radiographers has received limited research attention to date. This research is concerned with developing a framework that can be used to determine diagnostic radiographer staffing requirements at a unit- or department level (i.e. at the micro-level). METHODS: An inductive approach is applied to formulate requirement specifications that inform the development of the framework. A number of verification and validation activities are performed, including theoretical verification and a case study application. RESULTS: The diagnostic radiographer staffing framework consists of seven steps that comprise a workload-based approach to determining the number of full time equivalent diagnostic radiographers that are required for each modality, or group of modalities. Both clinical and non-clinical activities are considered, and guidance is provided on calculating staffing requirements to cover leave allowances. A number of potential approaches to determining activity times are also discussed. CONCLUSION: The framework represents a holistic approach to determining the required number of diagnostic radiographers at a practice-level, that is designed to remain relevant as technological advances are made in the field of diagnostic radiography. IMPLICATIONS FOR PRACTICE: By providing a practical guideline, with accompanying examples, the

framework is expected to hold value for individuals involved in the management of diagnostic radiography practices. The framework proposes an approach to a topic that affects every radiography practice in operation yet has received limited attention in literature to date.

Shortages of radiology and oncology staff putting cancer patients at risk, college warns. Full text available with NHS OpenAthens account*
Item Type: Journal Article
Authors: Limb, Matthew
Journal: Bmj 377, pp. o1430
Publication date: 2022
Patients in the UK with cancer are at risk from “devastating” effects of shortfalls of key radiology and oncology staff, leading specialists have warned.
The Royal College of Radiologists said that current workforce problems were “unsustainable” and that every month delayed cancer treatment raised the risk of death by around 10%. It highlighted service heads’ concerns for safe patient care, high levels of staff stress and burnout, affecting retention, a growing reliance on staff from overseas, a worrying use of expensive locums, and regional inequalities in the ability to deliver lifesaving cancer care.

NHS trusts and alliances join forces to solve staffing issues: New roles are being devised in cancer care to streamline the patient experience and transform diagnostic services Abstract only*
Item Type: Journal Article
Authors: Sprinks, Jennifer
Publication Date: 2022
Journal: Cancer Nursing Practice 21(5), pp. 6
Abstract: Ten NHS trusts and cancer alliances in south east England are collaborating to find ways to overcome workforce challenges and reduce waiting times. The organisations have been working in partnership with Skills for Health and Health Education England South East to find staffing solutions, such as opening up career pathways, and streamlining the patient experience to transform cancer care and diagnostic services.

National audit of seven-day working care in radiology
Author(s): Bailey, H S; Mehrotra, P; Drinkwater, K J; Howlett, D C
Source: BJR open; vol. 3 (no. 1); p. 20200046
Publication date: 2021
Objectives: To evaluate the extent to which our current provision of diagnostic and interventional radiology services matches existing clinical demand and future government proposals as set out in the Royal College of Radiologists published guidance on providing seven-day acute care.
Methods: In June 2018, all UK radiology department audit leads were sent a questionnaire designed to assess compliance for each standard of the Royal College of Radiologists published guidance on providing seven-day acute care.Results135 hospitals (68%) responded. Of those that responded, 96% of departments have a diagnostic radiologist rota for clinicians to discuss acute cases and review imaging and 48% of departments do not have a fully staffed consultant rota 24 h a day, seven days a week for interventional radiology. There is significant variance in MRI radiographer availability within departments, ranging from 18.8% during Saturday/Sunday evening/overnight up to a maximum of 63.9% during Saturday daytime. 11% of departments participate in a regional out of hours cross-organisation reporting rota. 40% of departments have no 24/7 RIS technical support and 34% have no PACS technical support out of hours. Conclusion: There is a wide variation in practice across radiology departments in the UK. Although there are some standards that the majority of

hospitals are achieving, there is a significant short-fall in fundamental aspects of providing acute seven-day care. The multifactorial nature in which these problems have arisen means there is no easy solution to combat these issues. There is a requirement for significant investment and political commitment to improve staffing and infrastructure in order to address the current situation. Advances in knowledge: A UK wide evaluation of the current provision of seven-day working in radiology showing 54% of hospitals do not have a UK working-time regulations compliant Interventional radiology rota, severe lack of availability of acute MRI out of hours and significant deficiencies in providing technical support out of hours. A sustainable and efficient seven-day service is currently not being provided.

Supporting the development of the research and clinical trials therapeutic radiographers workforce: The RaCTTR survey.
Abstract only*
Item Type: Journal Article
Authors: Taylor, A. and Shuttleworth, P.
Journal: Radiography (London) 27(Suppl 1), pp. S20-S27
Publication Date: Oct ,2021
Abstract: INTRODUCTION: The Research and Clinical Trials Therapeutic Radiographers network is a College of Radiographers Specialist Interest Group. It was established to develop and facilitate a support network for therapeutic radiographers working in roles which involve the delivery of radiotherapy clinical trials. Its establishment highlighted the challenges faced by therapeutic radiographers employed in these roles. Consequently, the authors sought to formally capture the working landscape of this subsection of the radiographic workforce, aiming to ascertain any potential barriers to professional development and the increase of clinical trials activity by 15% mandated by NHS England. METHODS: A Qualtrics survey was designed, pilot tested and distributed to the sixty-two radiotherapy departments across England and the devolved nations. Departments were questioned on the size, structure and the scope of practice of their radiotherapy research and clinical trials team members. FINDINGS: Thirty-nine complete responses were received, providing a response rate of 62%, with each region of the UK represented in the survey. The findings demonstrated issues related to the number of posts affecting capacity, contract status jeopardising the security and effectiveness of their role and the activities specific to research and clinical trials being 'bolted on' to existing roles. Although advanced practice was being undertaken by around a third of this workforce the findings established several barriers including individual/teams' capacity and a perceived lack of support for therapeutic radiographers to progress in clinical trials roles. CONCLUSION: The findings illustrate several important implications which if not addressed may not only hinder UK radiotherapy departments to achieve the national increase of 15% of clinical trial activity over the next three years but also restrict the growth in size and scope of professional practice of the workforce. IMPLICATIONS FOR PRACTICE: The research and clinical trials workforce need to adopt a collaborative approach to profile raising and establish a standardised professional scope of practice to support growth and recognition of their role.

The practice of emergency radiology throughout Europe: a survey from the European Society of Emergency Radiology on volume, staffing, equipment, and scheduling Abstract only*
Author(s): Scaglione M.; Hartley R.; Basilico R.; Delli Pizzi A.; Iacobellis F.; Dick E.; Dumba M.; Wirth S.; Linsenmaier U.; Calli C.; Berger F.H.; Nieboer K.H.; Barrio A.B.; Grassi R.; Katulska K.; Schueller G.; Patlas M.N.; Laghi A.; Muto M.; Nicola R.; Zins M.; Miele V.; Katz D.S.; Derchi L.
Source: European Radiology; vol. 31 (no. 5); p. 2994-3001

Publication date: May 2021
To obtain information from radiology departments throughout Europe regarding the practice of emergency radiology Methods: A survey which comprised of 24 questions was developed and made available online. The questionnaire was sent to 1097 chairs of radiology departments throughout Europe using the ESR database. All data were collected and analyzed using IBM SPSS Statistics software, version 20 (IBM). Result(s): A total of 1097 radiologists were asked to participate, 109 responded to our survey. The response rate was 10%. From our survey, 71.6% of the hospitals had more than 500 beds. Ninety-eight percent of hospitals have an active teaching affiliation. In large trauma centers, emergency radiology was considered a dedicated section. Fifty-three percent of institutions have dedicated emergency radiology sections. Less than 30% had all imaging modalities available. Seventy-nine percent of institutions have 24/7 coverage by staff radiologists. Emergency radiologists interpret cross-sectional body imaging, US scans, and basic CT/MRI neuroimaging in more than 50% of responding institutions. Cardiac imaging examinations/procedures are usually performed by cardiologist in 53% of institutions, while non-cardiac vascular procedures are largely performed and interpreted by interventional radiologists. Most people consider the European Diploma in Emergency Radiology an essential tool to advance the education and the dissemination of information within the specialty of emergency radiology. Conclusion(s): Emergency radiologists have an active role in the emergency medical team. Indeed, based upon our survey, they have to interact with emergency physicians and surgeons in the management of critically ill patients. A broad skillset from ultrasonography and basic neuroimaging is required. Key Points: * At most major trauma centers in Europe, emergency imaging is currently performed by all radiologists in specific units who are designated in the emergency department. * Radiologists in the emergency section at present have a broad skillset, which includes cross-sectional body imaging, ultrasonography, and basic neuroimaging of the brain and spine. * A dedicated curriculum that certifies a subspecialty in emergency radiology with a diploma offered by the European Society of Emergency Radiology demonstrates a great interest by the vast majority of the respondents.

Bowel cancer screening workforce survey: developing the endoscopy workforce for 2025 and beyond Abstract only*
Author(s): Ravindran S, Munday J, Veitch AM, et al
Source: Frontline Gastroenterology
Publication Date: February 2021
Publication Type(s): Journal Article
Aim The demand for bowel cancer screening (BCS) is expected to increase significantly within the next decade. Little is known about the intentions of the workforce required to meet this demand. The Joint Advisory Group on Gastrointestinal Endoscopy (JAG), the British Society of Gastroenterology (BSG) and Association of Coloproctology of Great Britain and Ireland (ACPGBI) developed the first BCS workforce survey. The aim was to assess endoscopist career intentions to aid in future workforce planning to meet the anticipated increase in BCS colonoscopy. Methods A survey was developed by JAG, BSG and ACPGBI and disseminated to consultant, clinical and trainee endoscopists between February and April 2020. Descriptive and comparative analyses were undertaken, supported with BCS data. Results There were 578 respondents. Screening consultants have a median of one programmed activity (PA) per week for screening, accounting for 40% of their current endoscopy workload. 38% of current screening consultants are considering giving up colonoscopy in the next 2–5 years. Retirement (58%) and pension issues (23%) are the principle reasons for this. Consultants would increase their screening PAs by 70% if able to do so. The top three activities

that endoscopists would relinquish to further support screening were outpatient clinics, acute medical/surgical on call and ward cover. An extra 155 colonoscopists would be needed to fulfil increased demand and planned retirement at current PAs. Conclusion This survey has identified a serious potential shortfall in screening colonoscopists in the next 5–10 years due to an ageing workforce and job plan pressures of aspirant BCS colonoscopists. We have outlined potential mitigations including reviewing job plans, improving workforce resources and supporting accreditation and training.

National census of UK endoscopy services in 2019
Author(s): Ravindran S, Bassett P, Shaw T, et al
Source: Frontline Gastroenterology
Publication Date: June 2020
Publication Type(s): Journal Article
Introduction The 2017 Joint Advisory Group on Gastrointestinal (GI) Endoscopy (JAG) census highlighted the pressure endoscopy services were under in meeting national targets and the factors behind this. In 2019, JAG conducted a further national census of endoscopy services to understand trends in activity, workforce and waiting time targets. Methods In April 2019, the census was sent to all eligible JAG-registered services. Collated data were analysed through various statistical methods. A further comparative dataset was created using available submissions from the 2017 census matched to services in the current census. Results There was a 68% response rate (322/471). There has been a 12%–15% increase in activity across all GI procedures with largest increases in bowel cancer screening. Fewer services are meeting waiting time targets compared with 2017, with endoscopist, nursing and physical capacity cited as the main reasons. Services are striving to improve capacity: 80% of services have an agreed business plan to meet capacity and the number using insourcing has increased from 13% to 20%. The workforce has increased, with endoscopist numbers increasing by 15%, nurses and allied health professionals by 14% and clerical staff by 30%. Conclusions The 2019 JAG census is the most recent and extensive survey of UK endoscopy services. There is a clear trend of increasing activity with fewer services able to meet national waiting time targets than 2 years ago. Services have increased their workforce and improved planning to stem the tide but there remains a continued pressure to deliver high quality, safe endoscopy. In light of the COVID-19 pandemic, JAG recognises that these pressures will be severely exacerbated and waiting time targets for accreditation will need adjustment and tolerance during the evolution and recovery from the pandemic.

Addressing the British Breast Radiology workforce crisis, a Credential for Breast Clinicians See 0037
Author(s): Goldthorpe Z.
Source: Breast Cancer Research; vol. 21
Publication date: December 2019
Background: With a high retirement rate and increasing service demand, many British breast units have a radiology crisis. Screening and symptomatic targets are consistently difficult to achieve. This project between the Royal College of Radiologists, Association of Breast Clinicians and Health Education England will increase the number of Breast Clinicians (non-Radiologist doctors working in breast diagnosis, trained in breast imaging), standardise their training and provide formal accreditation by means of a Credential. Method(s): The new curriculum, delivered over three years has been developed by a project board. It follows General Medical Council guidance on curricula and features 14 Capabilities in Practice (CiPs) each focusing on one key element of generic or breast specific medical practice. The generic CiPs mirror those within the curriculum for Clinical Radiology and the trainee must demonstrate the ability to work within the multi-disciplinary

team, engage in evidence based practice and exhibit all the professional values of a senior autonomous doctor. The breast specific CiPs set out the training requirements in mammography, ultrasound and interventional procedures. Trainees must pass the FRCR part 1 physics examination, learn non-imaging skills in clinical examination, understand oncological practice and assess family history and genetic risk. Result(s): The new curriculum provides an innovative opportunity for doctors to train in breast imaging, diagnosis and risk assessment. Assessment is both formative and summative through examination and workplace based assessments. Conclusion(s): The Credential delivers a solution to the breast radiology workforce crisis facing the UK now, providing accredited doctors, within three years.

Radiographer reporting: A literature review to support cancer workforce planning in England
Author(s): Culpan, G; Culpan, A-M; Docherty, P; Denton, E
Source: Radiography (London, England : 1995); vol. 25 (no. 2); p. 155-163
Publication date: May 2019
OBJECTIVE: Clinical Imaging contributes to screening, diagnosis, planning and monitoring of treatment and surveillance in cancer care. This literature review summarises evidence about radiographer reporting to help imaging service providers respond to Health Education England's 2017 Cancer Workforce Plan project to expand radiographer reporting in clinical service provision. KEY FINDINGS: Papers published between 1992 and 2018 were reviewed (n = 148). Evidence related to dynamic examinations (fluoroscopy, ultrasound) and mammography was excluded. Content was analysed and summarised using the following headings: clinical scope of practice, responsibilities, training, assessment, impact in practice and barriers to expansion. Radiographer reporting is well established in the United Kingdom. Scope of practice varies individually and geographically. Deployment of appropriately trained reporting radiographers is helping the NHS maintain high quality clinical imaging service provision and deliver a cost-effective increase in diagnostic capacity. CONCLUSION: Working within multiprofessional clinical imaging teams, within a defined scope of practice and with access to medical input when required, reporting radiographers augment capacity in diagnostic pathways and release radiologist time for other complex clinical imaging responsibilities.

Evaluating the progress of England's cancer strategy: Workforce challenges clouding the path to success, nurses warn Abstract only*
Author(s): Evans, Nick
Source: Cancer Nursing Practice; vol. 17 (no. 1); p. 8-9
Publication date: February 2018
The article reports on the progress of the National Health Service (NHS) England's cancer strategy and mentions the operation of cancer alliances to coordinate the strategy and investment in new or upgraded linear accelerator radiotherapy machines in several hospitals.

Perceptions of Radiology Staff on Appointing an NHS Trusts First Consultant Radiographer Full text available with NHS OpenAthens acount*
Item Type: Journal Article
Authors: Milner, Robert C.
Publication Date: 2018
Journal: Journal of Medical Imaging & Radiation Sciences 49, pp. S8
Purpose: In 2016, an NHS Trust in the North of England, developed a business case seeking to employ their first consultant radiographer. The role was created in response to a difficulty in recruiting radiologists, and to manage an increasing

backlog of plain film radiographs. Prior to commencing post, the successful candidate sought to gauge the sentiments of staff who already worked in the radiology department. Methods: Prior to commencement, an email containing a link to an online questionnaire was sent to all radiology staff at the appointing NHS Trust. The inclusion criteria were wide and incorporated all staff employed within radiology, regardless of role. Results: Respondents were generally positive about the new consultant role, and themes were identified between professional groups: Radiographers perceived benefits such as Will be more approachable than radiologists, whilst radiologists hoped benefits would include reduce interruptions (such as) radiographers disrupting us for trauma x-rays. Common desires from all staff included faster report turnaround times, more education and training of junior radiographers, investment in advanced practice and improvement in standards and quality. Respondents suggested possible challenges would include breaking down traditional barriers, high workload, resentment to change, and pressure from radiologists. Conclusions: Several studies have evaluated consultant radiographer roles from the perspective of the individual; however this is the first study that examines the role from the perception of the staff already working in the department. It captures their hopes and aspirations for their new colleague, as well as some reservations; many similar themes were identified but there were also key differences between differing professional groups.

The academic radiography workforce: Age profile, succession planning and academic development.
Item Type: Journal Article
Authors: Knapp, K. M.;Wright, C.;Clarke, H.;McAnulla, S. J. and Nightingale, J. M.
Journal: Radiography (London) 23(Suppl 1), pp. S48-S52
Publication Date: Sep ,2017
Abstract: INTRODUCTION: Academia is one area of practice in which radiographers can specialise; they compile approximately 2% of the total radiography profession in the UK, but are highly influential and essential for the education and development of the workforce in addition to undertaking research. However, the academic environment is very different to clinical practice and a period of transition is required. METHODS: Data were collated to explore the age and retirement profile of the academic radiography workforce in the UK; to understand the research time allocated to this workforce; the time required to develop a clinical radiographer into an academic and the mentorship and succession planning provisions nationally. An online UK wide survey was conducted and sent to all 24 Universities delivering radiography education within the UK. RESULTS: Eighteen out of 24 Universities in the UK responded to the survey. Approximately 30% of radiography academics are due to retire over the next 10 years, with over 25% of radiographers who currently hold a doctorate qualification included within this figure. Those entering academia have notably lower qualifications as a group than those who are due to retire. Developing clinical radiographers into academics was thought to take 1-3 years on average, or longer if they are required to undertake research. CONCLUSION: There is vulnerability in the academic radiography workforce. Higher education institutions need to invest in developing the academic workforce to maintain research and educational expertise, which is underpinned by master's and doctorate level qualifications.

Crisis point for radiology and oncology workforces Full text available with NHS OpenAthens account*
Author(s): The Lancet
Source: The Lancet; vol. 388 (no. 10059); p. 2450

Publication date: November 2016
Radiology and oncology workforce capacity will soon be in crisis in the UK, according to findings published on Nov 9, by Europe's Telemedicine Clinic and on Nov 8, by the UK's Royal College of Radiologists (RCR).

A survey of nurse staffing levels in interventional radiology units throughout the UK Abstract only*
Author(s): Christie, A; Robertson, I
Source: Clinical radiology; vol. 71 (no. 7); p. 698-701
Publication date: July 2016
AIM: To supplement previous surveys analysing provision of interventional radiology (IR), in-hours (IH) and out-of-hours (OOH), by specifically surveying the level of nursing support provided. MATERIALS AND METHODS: A web-based questionnaire was distributed to all British Society of Interventional Radiology (BSIR) members. This addressed several aspects of radiology nursing support for IR procedures, both IH and OOH. RESULTS: Sixty percent of respondents indicated that they have a formal OOH service. Of these, all have a dedicated nursing rota, with the vast majority operating with one nurse. IH, 77% of respondents always have a scrubbed nurse assistant, but this reduces to 40% OOH. IH, 4% never have a scrubbed radiology nurse assistant, which rises to 25% OOH. IH, 75% of respondents always have a radiology nurse dedicated to patient monitoring, but this reduces to 20% OOH. IH, 3% never have a radiology nurse dedicated to patient monitoring, which rises to 42% OOH.CONCLUSIONA significant disparity exists in the level of IR nursing support between IH and OOH. The majority of sites provide a single nurse with ad hoc additional support. This is potentially putting patients at increased risk. Radiology nurses are integral to the safe and sustainable provision of IR OOH services and a greater focus is required to ensure adequate and safe staffing levels for 24/7 IR services.

Covid-19

Towards describing the global impact of the COVID-19 pandemic on clinical radiography education: A systematic review Full text available with NHS OpenAthens account*
Item Type: Journal Article
Authors: Lawal, Olanrewaju;Omiyi, David;York, Helen and Akudjedu, Theophilus N.
Journal: Journal of Medical Imaging & Radiation Sciences 53(3), pp. 487-497
Publication Date: September 2022
Abstract: INTRODUCTION: The sudden onset of the COVID-19 pandemic has brought significant and rapid changes to the traditional ways of providing radiography education, including adaptations to teaching and learning styles as well as disruptions to students' clinical placement. This review explored the impact of the pandemic on clinical radiography education globally. METHODS: A systematic literature search was conducted on relevant databases, including PubMed, Science Direct, CINAHL (Cumulative Index of Nursing and Allied Health Literature, and SCOPUS. All relevant articles were critically appraised for quality and subjected to information extraction and results-based convergent synthesis. RESULTS: A total of 17 articles met the inclusion and exclusion criteria for this review. The key findings are themed around challenges and benefits with the introduction of new teaching and learning approaches and resilience exhibited by students during the pandemic to overcome: inadequate support and mentorship while transitioning to fully qualified professionals, challenges with PPE usage, and impact on personal and academic life. CONCLUSIONS: Globally, radiography students experienced several challenges, especially during the initial acute phase of the pandemic. The pandemic-related challenges identified in this review could negatively influence the radiography student

attrition rates, consequently worsening the existing radiography workforce shortage. Thus, urgent institutional level support systems and interventions would be necessary to mitigate the pandemic impact and improve the students' learning experience. Copyright © 2022. Published by Elsevier Inc.

A national survey investigating the impact of the COVID-19 pandemic on core and higher breast radiology training in the UK. Abstract only*
Item Type: Journal Article
Authors: Carpenter, S.;Graham, Y.;Kulkarni, T.;Lyburn, I.;Vinnicombe, S.;Sharma, S.;Sharma, N. and Lowes, S.
Publication Date: 2022
Journal: Clinical Radiology (pagination), pp. no pagination
Abstract: AIM: To investigate the impact of the COVID-19 pandemic on core and higher breast radiology training in the UK from the perspective of trainees and new consultants. MATERIALS AND METHODS: A survey comprising 25 questions was distributed to UK radiology trainees via the regional Junior Radiologists Forum representatives under the auspices of the British Society of Breast Radiology (BSBR). RESULT(S): Sixty-nine eligible responses were received representing all UK training regions. Fifty-five per cent of respondents completing either a core or higher breast rotation felt that the pandemic had a negative effect on their breast training. There was an overall reduction in exposure to the key breast imaging methods when rotations took place during the pandemic. Completing a core breast rotation during the pandemic was less likely to attract trainees to higher breast training. Three out of four breast radiology consultants in their first year after receiving their Certificate of Completion of Training (CCT) felt the pandemic reduced their preparedness for becoming consultants. Positive outcomes included the increased use of online educational resources and remote multidisciplinary meetings. CONCLUSION(S): As well as having a negative impact on breast radiology training overall, the pandemic has had a detrimental effect on attracting trainees to breast radiology as a future career. It is of key importance that trainees have a positive core breast rotation as this experience appears central to many trainees' decisions to pursue higher breast training. Increased use of online learning resources has also been positively received and is a valuable approach to learning that can be maintained in the longer term.Copyright © 2022 The Royal College of Radiologists

The radiography students' perspective of the impact of COVID-19 on education and training internationally: a across sectional survey of the UK Devolved Nations (UKDN) and the United Arab Emirates (UAE).
Item Type: Journal Article
Authors: Elshami, W.;Abuzaid, M. M.;McConnell, J.;Stewart, S.;Floyd, M.;Hughes, D.;McClintick, C.;Eckloff, K.;Leishman, L. and McFadden, S.
Publication Date: 2022
Journal: Radiography (pagination), pp. no pagination
Abstract: Introduction: The overnight change in hospital practice and service delivery during the COVID-19 pandemic raises the question whether undergraduate radiography students received an adequate clinical experience. Many students had their clinical placements cancelled, deferred or replaced with simulated learning. As a way of dealing with the pandemic some hospitals were dedicated to COVID-19 patients only resulting in many elective procedures being cancelled. Many patients also chose to stay away from the hospital out of fear of infection or the desire to reduce the burden on staff. This resulted in a limited range of examinations and clinical experience for those students who were able to complete their clinical placement. Aim(s): This study aims to investigate the impact of COVID-19 on the education and training of radiography students internationally in the United Kingdom

Devolved Nations (UKDN) and the United Arab Emirates (UAE), to determine any possible impact on their future careers. Method(s): Ethical permission was sought and granted from the Research Ethics Committees (ID: 21-04-12-02 and ID:21/0032). An online survey was developed using Google Forms and link was shared with students via email. Result(s): 262 students participated in the study [UAE (n = 60, 23%) and UKDN (n = 202, 77%)]. 72% stated that their clinical skills have improved and 82% were confident in the choice of radiography as a career. Participants from UAE displayed a higher tendency towards anxiety (p = 0.009). Students who were on clinical placements during the COVID-19 pandemic and worked with COVID-19 positive patients displayed less ongoing concern relating to COVID-19 (p = 0.004). 78% of the participants did not require wellbeing advice or request any type of wellbeing support from the higher education institutions (HEIs). Nevertheless, the study found that wellbeing of students was found to be negatively affected during the pandemic. Conclusion(s): Completing clinical placement during the COVID-19 pandemic allowed the continuation of education as students were allowed to improve their skills, confidence and resilience in coping with uncertainties and challenges. Undergraduate students should not be excluded from the clinical department during subsequent waves of COVID-19 or future pandemics to ensure continued workforce planning is possible. Implications for practice: HEIs should find solutions to compensate students for the loss of practical experience and skills due to the decreased number of patients in some areas of radiography practice. Providing academic and career counselling can assist students achieve their professional objectives and decrease the risk of attrition and problems upon qualification.

The impact of COVID-19 on the mental health of radiography staff and managers in Northern Ireland, UK: The radiography managers' perspective.
Item Type: Journal Article
Authors: Flood, T.;McFadden, S. and Shepherd, P.
Publication Date: 2022
Journal: Radiography (pagination), pp. no pagination
Abstract: Introduction: Increasing evidence suggests that the COVID-19 pandemic has influenced the mental health of health professionals, including radiographers. Less is known about the effect of the pandemic on the mental health of radiography managers. Radiography managers have led their teams through the pandemic, making unpopular decisions to safeguard staff and patients. This study explores radiography managers' perceptions regarding the impact of the COVID-19 pandemic on the mental health of themselves and their staff. Method(s): Ethical approval was obtained from the NHS Research Ethics Committee (ID 287032). Eleven interviews were conducted with therapeutic and diagnostic radiography managers between March-April 2021. Written information was also included from a paediatric diagnostic radiography manager. Data was analysed independently by 2 researchers using thematic analysis. Result(s): Three central themes emerged: 1) Factors perceived to have negatively influenced mental health, which included changing PPE guidance, restructuring of work conditions, social isolation, challenges to patient care and lack of quality vacation leave. 2) Factors perceived to have positively influenced mental health, which included witnessing staff resilience and team camaraderie. 3) Support provided for mental health. Conclusion(s): Managers felt that they had implemented appropriate strategies to support their staff throughout the first year of the pandemic and expressed feeling responsible for the wellbeing of their staff. Strong empathy was evident towards staff and their experiences. Despite the availability of mental health support services, managers felt that resources were underutilised by radiography teams. Implications for practice: Managers should

be proactive in communicating their appreciation for their staff in an era where remote working can add to disconnect between staff and management. Mental health support services should be promoted and continually reviewed, to ensure that appropriate support services are maintained.Copyright © 2022 The Author(s)

Transitioning into the workforce during the COVID-19 pandemic: Understanding the experiences of student diagnostic radiographers.
Item Type: Journal Article
Authors: Blackburn, N. E.;Marley, J.;Kerr, D. P.;Martin, S.;Tully, M. A. and Cathcart, J. M.
Publication Date: 2022
Journal: Radiography 28(1), pp. 142-147
Abstract: Introduction: The COVID-19 pandemic, with associated pressures on healthcare services and workforce, had implications for final year Diagnostic Radiography students completing their training and transitioning into employment. The aim of this study was to explore their experience as novice practitioners starting work and integrating into the workforce during a time of national crisis. Method(s): Five early career Diagnostic Radiographers, eligible to join the temporary HCPC register, were recruited. One to one interviews were completed online exploring their thoughts, feelings and experiences. Participants had the option of using photographs to aid communication. Result(s): Interviews were transcribed, emerging themes identified and coded. Four main themes emerged specifically related to the COVID-19 pandemic, (i) perceived challenges associated with joining the workforce, (ii) managing expectations and unexpected outcomes during transition, (iii) adapting to changes in systems and structures, (iv) sense of uncertainty relating to professional identity. The impacts were experienced beyond the work environment into social and personal lives. Participants demonstrated resilience as they adapted to their shifting lives and drew on the support of clinical colleagues and University academics for help. They did report feelings of concern and anxiety. The participants all expressed a sense of feeling valued and supported in their new roles. Conclusion(s): The Pandemic was unprecedented and created uncertainty in terms of workforce requirements. This study highlights the personal impact and professional responses of novice practitioners, who felt a sense of duty and care to help support the NHS and others. Implications for practice: This will help in the understanding of the transition of student into employment and what wider support needs to be in place prior, during and after this phase. Copyright © 2021 The College of Radiographers

The Impact of the COVID-19 Pandemic on Radiology Resident Education: Where Do We Go From Here?
Item Type: Journal Article
Authors: Patil, Nikhil S.;Gunter, Dane and Larocque, Natasha
Publication Date: 2022
Journal: Academic Radiology 29(4), pp. 576-583
Abstract: The Coronavirus Disease of 2019 (COVID-19) pandemic caused a dramatic shift in radiology resident education. Primarily, physical distancing prompted a general transition to virtual learning. Common changes made by radiology residency programs included virtual rounds and readouts, the use of simulation technology, and case-based learning which utilized pedagogical approaches such as the flipped classroom for teaching residents. Virtual learning appears to be a suitable alternative to traditional, in-person learning, and may have a place post-pandemic as part of a blended curriculum with in-person and virtual components. The extent of disruption to radiology resident education varied based on the local impact of COVID-19 and the prevalence of redeployment, as did residents' mental health and wellbeing. Accessibility of mental health resources for residents was

highlighted as an issue that programs need to address during these difficult times. Moreover, the pandemic resulted in unavoidable reductions in procedural exposure which programs mitigated through the use of simulation technologies and virtual learning resources. Professional development activities such as mentorship and career planning were also dramatically impacted by the pandemic and remains a challenge that programs need to consider moving forward post-pandemic. The purpose of this review is to outline the changes made to radiology resident education as a result of the COVID-19 pandemic and suggest what changes may be worthwhile to continue.

COVID-19: Impact on radiology departments and implications for future service design, service delivery, and radiology education
Author(s): Taylor A.; Williams C.
Source: British Journal of Radiology; 2021; vol. 94 (no. 1127)
Publication date: 2021
The pandemic caused by SARS-CoV-2 (severe adult respiratory distress syndrome Coronavirus-2) and its most severe clinical syndrome, COVID-19, has dramatically impacted service delivery in many radiology departments. Radiology (primarily chest radiography and CT) has played a pivotal role in managing the pandemic in countries with well-developed healthcare systems, enabling early diagnosis, triage of patients likely to require intensive care and detection of arterial and venous thrombosis complicating the disease. We review the lessons learned during the early response to the pandemic, placing these in the wider context of the responsibility radiology departments have to mitigate the impact of hospital-acquired infection on clinical care and staff wellbeing. The potential long-term implications for design and delivery of radiology services are considered. The need to achieve effective social distancing and ensure continuity of service during the pandemic has brought about a step change in the implementation of virtual clinical team working, off-site radiology reporting and postgraduate education in radiology. The potential consequences of these developments for the nature of radiological practice and the education of current and future radiologists are discussed.

The global impact of the COVID-19 pandemic on clinical radiography practice: A systematic literature review and recommendations for future services planning
Author(s): Akudjedu, T N; Mishio, N A; Elshami, W; Culp, M P; Lawal, O; Botwe, B O; Wuni, A-R; Julka-Anderson, N; Shanahan, M; Totman, J J; Franklin, J M
Source: Radiography (London, England : 1995); Nov 2021; vol. 27 (no. 4); p. 1219-1226
Publication date: November 2021
INTRODUCTION: Worldwide, reports and experiences indicate that there has been extensive re-organisation within diagnostic imaging and radiotherapy departments in response to the COVID-19 pandemic. This was necessary due to changes in workload and working practice guidelines that have evolved during the pandemic. This review provides a comprehensive summary of the global impact of the COVID-19 pandemic on radiography practice, service delivery and workforce wellbeing. METHODS: A systematic review methodology was adopted to obtain data from primary studies of qualitative, quantitative, and mixed methods designs from databases (PubMed, Science Direct, Cumulative Index of Nursing and Allied Health Literature [CINAHL], and SCOPUS: all 2020 to present). The included articles were subjected to information extraction and results-based convergent synthesis. RESULTS: The electronic database search yielded 10,420 articles after removal of duplicates. Of these, 31 articles met the final inclusion criteria with some (n = 8) fully focussed on radiotherapy workforce and

service delivery. The pandemic impact on radiography practice is broadly themed around: training, communication, and information dissemination; infrastructure, technology, and clinical workflow; and workforce mental health and well-being. CONCLUSION: Globally, most radiographers received inadequate training for managing COVID-19 patients during the initial acute phase of the pandemic. Additionally, there were significant changes to clinical practice, working patterns and perceived increase in workload due to surges in COVID-19 patients and the consequent strict adherence to new infection protocols. These changes, coupled with fear emanating from the increased risk of the workforce to contracting the infection, contributed to anxiety and workplace-related stress during the pandemic. IMPLICATIONS FOR PRACTICE: Local pandemic response strategies must be appropriately developed from standard protocols in readiness for safe clinical practice and well-being management training of practitioners.

The impact of the Covid-19 pandemic on the mental health and work morale of radiographers within a conventional X-ray department
Author(s): Yasin, B; Barlow, N; Milner, R
Source: Radiography (London, England : 1995); Nov 2021; vol. 27 (no. 4); p. 1064-1072
Publication date: November 2021
INTRODUCTION: There is a plethora of literature that has described the negative impact of the COVID-19 pandemic on the mental health of healthcare staff worldwide. Our aim was to investigate the physical and mental demands of mobile x-ray imaging on radiographers during the first wave of the COVID-19 pandemic, within a local NHS Trust. METHODS: A total of 16 participants from 1 NHS Trust took part within this study. Both quantitative and qualitative data was obtained through an online survey. Statistical data was obtained via the Trust Radiology Information System (RIS). Data was gathered for the thirteen weeks from 23rd March to 21st June 2020 (the first wave); direct comparison was made to the same period in 2019.RESULTSThree key themes emerged from the data. These include mental health challenges/work morale in Radiology, demand of mobile imaging and departmental and Trust-wide mental health support. Results indicate a high demand in mobile imaging which has made a significant difference in the working life of some radiographers. CONCLUSION: The COVID-19 pandemic has significantly affected the mental health of a proportion of radiographers at this Trust. Results indicate high workload and demand in mobile imaging has made a significant difference to the working life of radiographers, specifically the ones who were relatively newly qualified. IMPLICATIONS FOR PRACTICE: Two key interventions are proposed from this study. The first one is to provide and promote mental health support within radiology departments. The second is to encourage dual working on mobile x-ray examinations to help manage the emotional and physical burden.

Impact of COVID-19 on nuclear medicine in the UK Abstract only*
Author(s): Dizdarevic, Sabina; Abdulla, Mahdi; Sewedy, Taha; Weston, Charlotte; Oxley, Caroline; Croasdale, Jilly; Redman, Stewart; Vinjamuri, Sobhan; Mayes, Christopher; Flux, Glen; Ward, Mike; Graham, Richard; Buscombe, John; Council and Officers of British Nuclear Medicine Society
Source: Nuclear medicine communications; Feb 2021; vol. 42 (no. 2); p. 138-149
Publication date: February 2021
PURPOSECOVID-19 brought about unprecedented challenges to healthcare, with nuclear medicine (NM) being no exception. The British Nuclear Medicine Society (BNMS) COVID-19 survey assessed the impact of the first wave of pandemic on NM services in the UK. With COVID-19 resurge compounded by

seasonal winter pressures, we reflect and share lessons learnt from the first wave of pandemic to guide future strategy. METHODS: A questionnaire consisting of 34 questions was sent out to all BNMS members over 2 weeks in May 2020, to evaluate the impact of 'lockdown'. RESULTS: One hundred thirty-eight members (92 sites) from a multidisciplinary background responded. There was a 65% reduction across all services; 97.6% of respondents reported some reduction in diagnostic procedures and 71.3% reduction in therapies; 85% worked with a reduced workforce. The North East of England, Greater London and South East and Wessex were most affected by staff absences. The North East reported the highest number of COVID-19 positive staff; London reported the greatest lack of testing. The reported time required to clear the backlog was 1-12 months. Seventy-one percent of participants used BNMS COVID-19 guidance. CONCLUSION: The first wave caused a major disruption of NM service delivery and impacted on the workforce. The departmental strategies should tailor services to evolving local and regional differences in prevalence of COVID-19. A blanket shutdown of services with a 'one size fits all' strategy would likely have a severe impact on future delivery of NM and health services in general. Timely testing of staff and patients remains of paramount importance.

Postgraduate radiology education: what has Covid-19 changed?
Author(s): Nanapragasam, Andrew; Mashar, Meghavi
Source: BJR open; 2021; vol. 3 (no. 1); p. 20200064
Publication date: 2021
Radiology training in the UK follows a standardised pathway with formative and summative assessments throughout. The Covid-19 pandemic has affected multiple existing educational methods commonly used during radiology training including small group teaching, multidisciplinary team meetings, online e-learning modules, radiology courses, exam provision and more. As such, significant adaptations have been implemented in order to maintain the standard of radiology training which come with their respective advantages and disadvantages. However, the question still remains as to the effectiveness of these methods, their acceptability and longevity. In this review, we discuss these educational adaptations and future directions for training in the ongoing pandemic.

Impact of COVID-19 on radiology training: Royal College of Radiologists Junior Radiologists Forum national survey.
Item Type: Journal Article
Authors: Fossey, S.;Ather, S.;Davies, S.;Dhillon, P. S.;Malik, N.;Phillips, M. and Harden, S.
Publication Date: 2021
Journal: Clinical Radiology 76(7), pp. 549.e9-549.e15
Abstract: AIM: To obtain a national snapshot of radiology trainees' experience during the first wave of the pandemic. MATERIALS AND METHODS: A 25-item questionnaire was disseminated to representatives from all training regions across the UK in July 2020. Each representative collated the collective experiences of trainees in their training programme in key domains, including redeployment, shielding, training, and teaching. RESULTS: Ninety-five percent (38 of 40) of representatives completed the questionnaire. Trainees in up to 76% of training programmes were redeployed to wards and some trainees were shielding in 81% of programmes. Only 27% of programmes enabled remote reporting for isolating or shielding trainees. Sixty-two percent of respondents felt their well-being needs were supported. There was an overall increase in the attendance, volume, and quality of teaching and training nationally due to improved accessibility via remote-learning methods. Significant challenges were described with reporting, interventional procedures, and multidisciplinary team meeting attendance, although 62% of programmes noted an increase in service provision. Less in-person feedback was

reported with in-person training still deemed necessary for practical skills. The Royal College of Radiologists Junior Radiologists Forum webinars were well received by all trainees with continuation of the series recommended. CONCLUSION: The COVID-19 pandemic has had a clear impact on many areas of radiology training in the UK. Early strategies have been adopted to mitigate the challenges faced by trainees and opportunities for future improvement are highlighted. Copyright © 2021. Published by Elsevier Ltd.

The impact of COVID-19 upon student radiographers and clinical training.
Item Type: Journal Article
Authors: Rainford, L. A.;Zanardo, M.;Buissink, C.;Decoster, R.;Hennessy, W.;Knapp, K.;Kraus, B.;Lanca, L.;Lewis, S.;Mahlaola, T. B.;McEntee, M.;O'Leary, D.;Precht, H.;Starc, T. and McNulty, J. P.
Publication Date: 2021
Journal: Radiography (London) 27(2), pp. 464-474
Abstract: INTRODUCTION: To investigate student clinical placement concerns and opinions, during the initial COVID-19 pandemic outbreak and to inform educational institution support planning. METHODS: Between mid-June to mid-July 2020, educational institutions from 12 countries were invited to participate in an online survey designed to gain student radiographer opinion from a wide geographical spread and countries with varying levels of COVID-19 cases. RESULTS: 1277 respondents participated, of these 592 had completed clinical placements during January to June 2020. Accommodation and cohabiting risks were identified as challenging, as was isolation from family, travel to clinical placements, and to a lesser extent childcare. Students stated they had been affected by the feeling of isolation and concerns about the virus whilst on placement. Overall 35.4% of all respondents were 'Not at all worried' about being a radiographer, however, 64.6% expressed varying levels of concern and individual domestic or health situations significantly impacted responses (p Copyright © 2020. Published by Elsevier Ltd.

Can training in diagnostic radiology be moved online during the COVID-19 pandemic? UK trainee perceptions of the Radiology-Integrated Training Initiative (R-ITI) e-learning platform.
Item Type: Journal Article
Authors: Upadhyay, N. and Wadkin, J. C. R.
Publication Date: 2021
Journal: Clinical Radiology 76(11), pp. 854-860
Abstract: AIM: To assess trainee perceptions of the Radiology-Integrated Training Initiative (R-ITI)) e-learning modules. MATERIALS AND METHODS: A mixed methodology approach was used, with triangulation between a thematic analysis of eight semi-structured interviews from radiology trainees and trainers, and a contextual analysis of 60 free-text feedback comments and module ratings from trainees after completion of R-ITI modules. RESULTS: Three broad themes emerged: "learning the subject matter", "learning the role," and "e-learning preferences". Superficial learning techniques were prevalent when "learning the subject matter" during early training, with e-learning resources providing a good pedagogical fit for this learning. Much of what was considered "learning the role" of the radiologist was learned at the workplace. This included topics with inherent subjectivity, which were difficult to convey with e-learning. Trainees' "e-learning preferences" favoured modules that incorporated many imaging cases with layer annotation, clinical relevance, and self-assessment. CONCLUSIONS: The ease of reproducing imaging studies using the R-ITI platform represents a huge potential for e-learning. Content tailored to the learning needs of the trainee, the appropriateness of the subject matter for an online platform, and the design of the e-learning modules are important considerations. Radiology

training also involves important tacit learning and discussions around subjective topics, which are difficult to capture on this platform.

COVID-19 Impact on Well-Being and Education in Radiology Residencies: A Survey of the Association of Program Directors in Radiology.
Item Type: Journal Article
Authors: Robbins, J. B.;England, E.;Patel, M. D.;DeBenedectis, C. M.;Sarkany, D. S.;Heitkamp, D. E.;Milburn, J. M.;Kalia, V.;Ali, K.;Gaviola, G. C.;Ho, C. P.;Jay, A. K.;Ong, S. and Jordan, S. G.
Publication Date: 2020
Journal: Academic Radiology 27(8), pp. 1162-1172
Abstract: Rationale and Objectives: The COVID-19 pandemic has forced rapid evolution of the healthcare environment. Efforts to mitigate the spread of the virus through social distancing and shelter-at-home edicts have unintended consequences upon clinical and educational missions and mental well-being of radiology departments. We sought to understand the impact of the COVID-19 pandemic on radiology residencies with respect to the educational mission and perceptions of impact on well-being. Material(s) and Method(s): This study was IRB exempt. An anonymous 22 question survey regarding the impact of COVID-19 pandemic on educational and clinical missions of residencies, its perceived impact upon morale of radiologists and trainees and a query of innovative solutions devised in response, was emailed to the Association of Program Directors in Radiology membership. Survey data were collected using SurveyMonkey (San Mateo, California). Result(s): Respondents felt the COVID-19 pandemic has negatively impacted their residency programs. Regarding the educational mission impact, 70.1% (75/107) report moderate/marked negative impact and 2.8% (3/107) that educational activities have ceased. Regarding the pandemic's impact on resident morale, 44.8% (48/107) perceive moderate/marked negative effect; perceived resident morale in programs with redeployment is significantly worse with 57.1% (12/21) reporting moderate/marked decrease. Respondents overwhelmingly report adequate resident access to mental health resources during the acute phase of the pandemic (88.8%, 95/107). Regarding morale of program directors, 61% (65/106) report either mild or marked decreased morale. Program innovations reported by program directors were catalogued and shared. Conclusion(s): The COVID-19 pandemic has markedly impacted the perceived well-being and educational missions of radiology residency programs across the United States.

Impact of COVID-19 on UK radiology training: a questionnaire study.
Item Type: Journal Article
Authors: Veerasuri, S.;Vekeria, M.;Davies, S. E.;Graham, R. and Rodrigues, J. C. L.
Publication Date: 2020
Journal: Clinical Radiology 75(11), pp. 877.e7-877.e14
Abstract: AIM: To understand the impact of COVID-19 on radiology trainee experience and well-being. MATERIALS AND METHODS: A questionnaire designed to capture the impact of COVID-19 on radiology training, working patterns, and well-being was sent to all speciality trainees in a regional UK radiology school. The survey was distributed at the beginning of May 2020 and responses collected over 2 weeks. Trainees were questioned about changes that had occurred over a time period starting at the beginning of the COVID-19 pandemic. All survey responses (n=29) were anonymised and the results were subsequently analysed. RESULTS: Sixty-two percent (29 of 47) of trainees within the deanery, who were spread across

seven different hospital sites, responded to the questionnaire. All trainees felt that overall radiology workload had decreased in response to COVID-19. Seventy-two percent (21/29) stated that their workload had significantly decreased. Seventy percent (19/27) reported decreased subspecialty experience, and 19% (5/27) reported a complete lack of subspecialty training. Twenty-four percent (7/29) of trainees were redeployed from radiology to clinical ward-based work. Forty-eight percent reported experiencing a worsening in their well-being compared to before the pandemic. CONCLUSION: The first wave of the COVID-19 pandemic had a significant impact on training and well-being. Lessons learnt from this report should help prepare for a second-wave of COVID-19 or future pandemics.

Supply

UK undergraduate aspirations and attitudes survey: do we have a perception problem in clinical radiology? Abstract only*
Author(s): Oliver, H C; Hudson, B J; Oliver, C F; Oliver, M C
Source: Clinical radiology; vol. 75 (no. 2); p. 158
Publication date: February 2020
AIM: To understand medical students' potential long-term career choices, with particular reference to radiology, and their current perceptions and experiences of radiology and radiologists, with the aim to help inform future initiatives for undergraduate and early postgraduate medical education and workforce strategies. MATERIALS AND METHODS: An invitation to an online survey was sent to all undergraduate medical students at a large UK medical school, using Likert-style, multiple choice and ranking questions. A quantitative approach was used to explore these responses (n=328). RESULTS: Radiology ranked only 10th out of 14 specialties for long-term career preference amongst medical student respondents (n=328). Radiology was judged as being "low status", but enabled a "good" work-life balance. Medical students considered making an impact on patient diagnosis and level of intellectual challenge as positive influences of a potential career in radiology. Perception of radiology by the public, patient relationship/contact time, perception of radiology by other clinicians, variation of work, and radiology work environment were all perceived more negatively. CONCLUSION: Radiology remains a specialty with limited exposure and experience for undergraduate students, who appear to be incompletely aware of the scope and range of the work of modern radiologists. Greater exposure to radiology teaching in the undergraduate curriculum and placements in radiology departments may increase and expedite medical students' understanding and enjoyment of radiology at a juncture where demand for radiology services is increasing rapidly in the UK.

Inspiring the next generation of therapeutic radiographers - Our story Abstract only*
Author(s): Julka-Anderson N.; Barker E.; Johnson S.; Tuke K.
Source: Radiography; vol. 26
Publication date: January 2020
Introduction: By 2030 there will be over 7 million jobs that require Science, Technology, Engineering and Mathematics (STEM) skills1. There are 14 AHP roles available in the NHS, of which, there are 3217 Therapeutic Radiographer jobs in the UK2. The SCoR identified a 33% decrease in students studying Radiotherapy at university in 20183. Universities and Colleges Admissions Service (UCAS) reported a 27% decrease in applicants to healthcare programmes in 2014-20184. Work experience has been an important tool utilised by students to experience a professional work environment and understand their chosen career choice4. A recent study by UCAS found

that two thirds of employers look for graduates who have some relevant work experience4; this includes apprenticeships5. We developed a structured work experience programme to help increase the profile of Radiotherapy for STEM students from local schools, and to address recruitment issues we are experiencing. Methods and Materials: Initially, staff focus groups were held to understand barriers and limitations to having work experience students within our department. A pilot work experience program was designed including the following elements: 1. 4 days showcasing all aspects of radiotherapy 2. Limited patient contact 3. Supervised LINAC time Our Learning and Development team chose year 10 STEM students who applied to their school for healthcare based work experiences. Feedback sessions with the students enabled us to understand their experiences so that we could adapt our approach for future cohorts. Result(s): The pilot group found that the duration of the experience was too long and could have included more patient contact. For the next cohorts, we shortened the experience to two days in radiotherapy and two days in the diagnostic department. This allowed for more patient contact and showcased key aspects of both professions. 93% of 14 students enjoyed every aspect of the work experience programme. In particular, they enjoyed seeing the different roles available within radiotherapy, seeing the LINACs and having patient contact. Conclusion and Discussion: Feedback from the students, patients and staff suggest that this work experience was successful and may help to address recruitment and retention across the profession.

Consultant Radiographer in breast imaging: Entry into a growing role See 0083
Author(s): Morrell R.; Leaver A.; Lowes S.
Source: Breast Cancer Research; vol. 21
Publication date: December 2019

There is an established workforce crisis in UK radiology. Contributing factors include rising demand, retirement, an increasing numbers of vacant posts, and a shortfall in supply of radiologists. The most recent Workforce Census once again identified breast imaging as having the biggest shortage of radiologists, with a 9.3% unfilled vacancy rate. To help maintain breast services, there has been a move to developing existing Allied Health Professionals (AHPs) into Consultant Radiographer roles. However, the route to Consultant Radiographer is not always clear, and for Trusts developing this role for the first time it can be a challenging process. The role of Consultant AHP Practitioners was born from the Department of Health publication "Meeting the challenge: a strategy for allied health professions (2000)" and "The NHS plan". Both documents proposed developing areas of responsibility for Consultant AHP Practitioners, defining the role as multidimensional positions encompassing the core functions of consultant practice: expert clinical practice; professional leadership and consultancy; practice and service development, research and evaluation; education and professional development. We illustrate, from different staff perspectives, our experience of developing a Consultant Radiographer in breast imaging. We outline the potential different career routes into this role, including our example of recruiting from a non-mammographic background. The principal challenge is a lack of a formally established training pathway within the UK. It should also be recognised that AHPs from a non-mammographic background have valuable transferable skills that can provide an alternative pathway to the role of a Consultant Radiographer.

UK radiologist staffing crisis reaches critical levels NHS OpenAthens required*
Author(s): Gourd, Elizabeth
Source: The Lancet. Oncology; vol. 18 (no. 11); p. e651

Publication date: November 2017
An endemic staffing shortage in UK radiology is causing delays in hospital diagnoses scan assessment results, and wasting millions of the NHS budget, according to official figures released last week. “Maximising the benefits for patients requires urgent investment in the workforce with more radiology training posts, expansion of radiographer reporting opportunities, and accelerated investment in machine reading of images.

A national UK survey of radiology trainees special interest choices: what and why?
Author(s): Parvizi, Nassim; Bhuva, Shaheel
Source: The British journal of radiology; vol. 90 (no. 1079); p. 20170338
Publication date: November 2017
OBJECTIVES: A national survey was designed to better understand factors influencing special interest choices, future aspirations of UK radiology trainees and perceptions of breast radiology. METHODS: A SurveyMonkey questionnaire was developed and distributed to all radiology trainees in the UK through the British Institute of Radiology, RCR Junior Radiologists Forum and by directly contacting UK training schemes as well as by social media between December 2015 and January 2016.RESULTSFrom 21 training schemes across the UK, 232 responses were received. Over half entered radiology after foundation training and 62% were ST1-3; one-fifth of trainees intended to leave the NHS. The most popular special interests were musculoskeletal (18%), abdominal imaging (16%) and neuroradiology (13%). Gynaecological and oncological imaging proved to be the least popular. Strong personal interest, a successful rotation during training, a mix of imaging modalities, direct impact on patient care and job prospects were the most popular factors influencing career choice. Research and potential for private income were the least influential factors. Respondents detailed their perceptions of breast radiology, selecting an awareness of career prospects (41%) and a better trainee experience (36%) as factors that would increase their interest in pursuing it as a career. CONCLUSION: Understanding the factors that influence special interest choice is essential to addressing the alarming staffing shortfalls that will befall certain radiology special interests. Addressing trainee's preconceptions and improving the trainee experience are key to attracting trainees to breast radiology. Advances in knowledge: This is the first survey of its kind in the UK literature designed to evaluate special interest career choices and the factors that influence those among radiology trainees.

A national survey exploring UK trainees' perceptions, core training experience, and decisions to pursue advanced training in breast radiology
Author(s): Lowes, S; Bydder, M; Sinnatamby, R
Source: Clinical radiology; vol. 72 (no. 11); p. 991
Publication date: November 2017
AIM: To investigate UK radiology trainees' perceptions of breast radiology and the factors that influenced their decision whether or not to choose breast radiology as an area of special interest. MATERIALS & METHODS: An online survey was compiled and distributed to all UK specialty trainees in clinical radiology via the Royal College of Radiologists Junior Radiologists' Forum (JRF) regional representatives. RESULTS: There were 275 respondents, representing 22% of all UK radiology trainees. Responses were received from all regions. A significant factor identified in influencing whether or not trainees decide to pursue advanced training in breast radiology is the timing and quality of their initial core training experience. Specific positive aspects of breast radiology that were repeatedly identified included the high level of patient contact and frequent use of interventional procedures. Recurring negative aspects of breast radiology

included isolation from general radiology and finding the subject matter boring. CONCLUSION: Breast radiology faces a significant workforce shortfall that is predicted to worsen in the coming years. There has never been a greater need to recruit specialty trainees into this field, and action is urgently needed to help ensure the sustainability of breast services and drive further improvements to patient care. The findings from this survey should be regarded as a challenge to all breast radiologists to engage with trainees from an early stage in their training and to enthuse them with the many positive aspects of a career in breast radiology.

Radiologist shortage leaves patient care at risk, warns royal college Full text available with NHS OpenAthens account*
Author(s): Rimmer, Abi
Source: BMJ : British Medical Journal (Online); vol. 359 ; p. n
Publication date: October 2017
Nearly all radiology departments in the UK (97%) said that they had been unable to meet their diagnostic reporting requirements in 2016 within their radiology staff's contracted hours, the college's 2016 census report found. 1 "This points to an insufficient number of radiologists to meet the increasing demand for imaging and diagnostic services," it said. The workforce crisis comes at a time of well documented shortages in other specialties, including paediatrics, 2 obstetrics, 3 emergency medicine, rheumatology, psychiatry, and general practice. 4 Radiology has the second lowest proportion of trainees to consultants when compared with other hospital based specialties, said the report, with 26 trainees for every 74 consultants, compared with an average in all specialties of 40 trainees for every 60 consultants.

UK radiologist staffing crisis reaches critical levels. Abstract only*
Item Type: Journal Article
Authors: Gourd, Elizabeth
Publication Date: 2017
Journal: Lancet Oncology 18(11), pp. e651
An endemic staffing shortage in UK radiology is causing delays in hospital diagnoses scan assessment results, and wasting millions of the NHS budget, according to official figures released last week.

A survey of nurse staffing levels in interventional radiology units throughout the UK. Abstract only*
Item Type: Journal Article
Authors: Christie, A. and Robertson, I.
Journal: Clinical Radiology 71(7), pp. 698-701
Publication Date: 2016
Abstract: Aim To supplement previous surveys analysing provision of interventional radiology (IR), in-hours (IH) and out-of-hours (OOH), by specifically surveying the level of nursing support provided. Materials and methods A web-based questionnaire was distributed to all British Society of Interventional Radiology (BSIR) members. This addressed several aspects of radiology nursing support for IR procedures, both IH and OOH. Results Sixty percent of respondents indicated that they have a formal OOH service. Of these, all have a dedicated nursing rota, with the vast majority operating with one nurse. IH, 77% of respondents always have a scrubbed nurse assistant, but this reduces to 40% OOH. IH, 4% never have a scrubbed radiology nurse assistant, which rises to 25% OOH. IH, 75% of respondents always have a radiology nurse dedicated to patient monitoring, but this reduces to 20% OOH. IH, 3% never have a radiology nurse dedicated to patient monitoring, which rises to 42% OOH. Conclusion A significant disparity exists in the level of IR nursing support between IH and OOH. The majority of sites provide a single nurse with ad hoc additional support. This is potentially putting patients at increased risk. Radiology nurses are integral to the safe and

sustainable provision of IR OOH services and a greater focus is required to ensure adequate and safe staffing levels for 24/7 IR services.

Training and education

Student selection in radiography education: a narrative review
Abstract only*
Author(s): Holmstom et al,
Source: Radiography 28(3) pp. 838-847
Publication date: August 2022
Objectives: Due to effects on study success, radiography student selection has a major impact on higher education institutions and applicants. However, there is very little research to demonstrate which selection methods and contents are most successful in radiography education. This study aimed to describe the methods and contents used in radiography student selection and factors related to study success. Key findings: A narrative review was undertaken. A computerized search in four databases limited to studies published between January 2000 and June 2021. Ten quantitative, mainly retrospective, studies were included. The review identified 23 selection methods; of these, interview (n = 4), Scholastic Aptitude Test (n = 3), American College Test (n = 2) and reference letter (n = 2) were used more than once in radiography student selection. The content of the selection methods was identified in four categories including 44 factors. The most often assessed content was category of learning skills while the least often assessed concerned categories of social skills, personality traits and career choice. Regarding study success, factors of learning skills, namely mathematics, physics, biology, anatomy, physiology, natural sciences, a composite of factors comprising electronics and a composite of factors comprising mechanics predicted study success. Factors of social skills, personality traits and career choice were not related to study success. Conclusion: The methods used and contents assessed vary greatly in radiography student selection. The results suggest using the content in the four categories in the selection of radiography students. Implications for practice: Further research is needed to clarify the methods, with knowledge of the reliability and validity and the contents for the suggested categories, and to demonstrate their relationship to study success and identify the core content of radiography student selection especially in European context.

Large differences in education and training of radiographers in Europe and Central Asia: Results from an IAEA coordinated study.
Item Type: Journal Article
Authors: Foley, S.;Paulo, G. and Vassileva, J.
Journal: Radiography 28(1), pp. 48-54
Publication Date: 2022
Abstract: Introduction: Education and training of radiographers is known to be diverse between countries and regions. Under an IAEA project, this work collected data on radiographer education for the Europe and Central Asia region with a particular focus on radiation protection gaps and potential actions. Method(s): Following piloting, an electronic questionnaire was distributed to all national counterparts for the IAEA Technial Coopearation (TC) Europe region (n = 33 countries) and nominated national representatives. Contacts were additionally invited to a virtual workshop to discuss and rank common problems in education and training of radiographers and to propose potential solutions. Result(s): Responses were received from 31 countries, including 14 from the European Union. Just over half of countries reported radiographer education being in higher education with 71% having program durations more than 3 years (range: 1 month-4 years). Programs included a spectrum of both clinical training

and radiation protection hours with ten-fold variations noted across the region. Inclusion of core radiation protection topics within curricula varied similarly, as did radiographers' clinical involvement in both justification and optimisation between countries. Workshop participants identified five common training problems, namely education availability, lack of standardisation, radiation protection course quality, teamwork problems and lack of equipment. Conclusion(s): Radiographer education in the IAEA Europe region is heterogeneous with substantial differences in duration and quality of training programs between countries, which likely impact on quality of patient care delivered. Common problems have been identified and potential solutions proposed to focus quality improvement initiatives. Implications for practice: Radiographer education and training is diverse throughout the IAEA TC Europe region, with likely impacts on radiation protection practices applied. Clinical involvement of radiographers in justification and optimisation differs, potentially limiting adherence to radiation protection principles. Copyright © 2021 The College of Radiographers

A narrative review of e-learning in professional education of healthcare professionals in medical imaging and radiation therapy Abstract only*
Item Type: Journal Article
Authors: Konstantinidis, Kl;Apostolakis, I. and Karaiskos, P.
Journal: Radiography (London) 28(2), pp. 565-570
Publication Date: 2022
Abstract: OBJECTIVES: This literature review attempts to explore the characteristics of e-learning tools used to develop the qualifications and skills of healthcare professionals in medical imaging and radiation therapy, and to promote the effectiveness and acceptance of e-learning through highlighting the outcomes of its implementation where applicable. KEY FINDINGS: From the literature search in the PubMed and ResearchGate databases we concluded to 21 articles, which were included in the qualitative synthesis. Acceptance of e-learning tools was confirmed. Also, e-learning can be part of healthcare professionals' blended learning. The acquisition of new or improvement of existing knowledge, the improvement of clinical skills and the increase of the self-confidence of healthcare professionals in their daily practice were recorded, as outcomes of the e-learning implementation. The importance of human-computer interaction for the comprehension of theoretical concepts and practical aspects using multimedia was also captured. No significant findings emerged among the 21 articles against the adoption of the e-learning for the training of healthcare professionals. The Internet is the channel used for synchronous and asynchronous interaction of trainees with instructors. CONCLUSIONS: We concluded that e-learning is an attractive training method, equally or occasionally more effective than the traditional educational methods for the lifelong training of healthcare professionals in the field of medical imaging and radiation therapy. Also, many collaborative web-based applications provide the necessary means to build an e-learning program, according to the training needs of each professional team. IMPLICATIONS FOR PRACTICE: This new knowledge corroborates the perspective of e-learning beneficial contribution to remote interaction and collaboration of healthcare professionals in medical imaging and radiation therapy. Collaborative web-based tools are already available to decision makers and stakeholders, who want to develop an e-learning program. Copyright © 2021 The College of Radiographers. Published by Elsevier Ltd. All rights reserved.

Radiography education with VR using head mounted display: proficiency evaluation by rubric method.
Item Type: Journal Article
Authors: Kato, Kengo;Kon, Daisuke;Ito, Teruo;Ichikawa, Shigeji;Ueda, Katsuhiko and Kuroda, Yoshihiro

Journal: BMC Medical Education 22(1), pp. 579
Publication Date: Jul 28 ,2022

Abstract: BACKGROUND: The use of head mounted display (HMD)-based immersive virtual reality (VR) coaching systems (HMD-VRC) is expected to be effective for skill acquisition in radiography. The usefulness of HMD-VRC has been reported in many previous studies. However, previous studies have evaluated the effectiveness of HMD-VRC only through questionnaires. HMD-VRC has difficulties in palpation and patient interaction compared to real-world training. It is expected that these issues will have an impact on proficiency. The purpose of this study is to determine the impact of VR constraints in HMD-VRC, especially palpation and patient interaction, on radiographic skills proficiency in a real-world setting. METHODS: First-year students (n = 30) at a training school for radiology technologists in Japan were randomly divided into two groups, one using HMD-VRC (HMD-VRC group) and the other practicing with conventional physical equipment (RP group) and trained for approximately one hour. The teachers then evaluated the students for proficiency using a rubric method. RESULTS: In this study, it was found that some skills in the HMD-VRC group were equivalent to those of the RP group and some were significantly lower than those of the RP group. There was a significant decrease in proficiency in skills related to palpation and patient interaction. CONCLUSIONS: This study suggests that HMD-VRC can be less effective than real-world training in radiographic techniques, which require palpation and patient interaction. For effective training, it is important to objectively evaluate proficiency in the real world, even for HMD-VRC with new technologies, such as haptic presentation and VR patient interaction. TRIAL REGISTRATION: The study was conducted with the approval of the Ethics Committee of International University of Health and Welfare (Approval No.21-Im-035, Registration date: September 28, 2021). Copyright © 2022. The Author(s).

Promoting simulation-based training in radiology: a homemade phantom for the practice of ultrasound-guided procedures.
Item Type: Journal Article
Authors: Giannotti, Elisabetta;Jethwa, Ketan;Closs, Samantha;Sun, Rachel;Bhatti, Hamnah;James, Jonathan and Clarke, Christopher
Publication Date: Sep 01 ,2022
Journal: British Journal of Radiology 95(1137), pp. 20220354
Abstract: OBJECTIVE: Ultrasound-guided intervention is an essential skill for many radiologists and critical for accurate diagnosis and treatment in many radiology subspecialties. Simulation using phantoms have demonstrated statistically significant benefits for trainees within the literature. We propose a novel phantom model which the authors feel is ideal for training clinical radiology trainees in the performance of ultrasound-guided procedures. METHODS: The recipe to prepare a homemade phantom is described. Results of a local survey from trainees preparing and using the phantom are also presented. RESULTS: This realistic training simulation model can be adapted to suit a variety of biopsy devices and procedures including soft tissue biopsy and cyst aspiration. The phantom mimics the sonographic appearances of soft tissue and biopsy targets can be concealed within. The phantom was easily prepared by 22 trainees (Likert score 4.5) and it functioned well (Likert score of 4.7). CONCLUSION: In summary, our phantom model is ideal for training clinical radiology trainees in the performance of ultrasound-guided core biopsy. The availability and low cost of the model, combined with the ease of preparation and reproducibility, make this an efficient and effective addition to the training process. ADVANCES IN KNOWLEDGE: A low cost easily handmade

phantom recipe is described that could be easily implemented in training schemes.

Research pedagogy in a UK radiography education setting.
Item Type: Journal Article
Authors: McKnight, K. L.
Publication Date: 2022
Journal: Radiography (London) 28(1), pp. 80-87
Abstract: INTRODUCTION: This paper focuses on research pedagogy in radiography and the importance of research for the profession by exploring one university's endeavours to realise the aims of The Society and College of Radiographers Research Strategy 2016-20211 around embedding research in the curriculum. METHODS: Co-Constructed Depiction method was developed as an innovative use of imagery in data collection, analysis, and presentation of results, being symbolic of the practices of the radiography profession by foregrounding the importance of images and their interpretation. A total of eighteen radiography staff, post-graduate radiography students, and 3rd year radiography undergraduate students from both Diagnostic and Therapeutic professional backgrounds and courses took part in individual semi-structured interviews that included participant image making. RESULTS: Students and educators saw the importance of research for individuals and the profession. While students could identify where research was embedded in the curriculum, generally staff did not feel embedding was done well, but this may be because research is not made explicit enough in the curriculum. Participants suggested that research needs to become 'normalised'; being a part of all radiographers' work. CONCLUSION: The links between research, professionalism, and care can be made more evident to students from the start of their studies so increasing understanding of their own relationship with the spectrum of research, and how this links to maintaining the standing of our profession and to patient care. IMPLICATIONS FOR PRACTICE: The findings will inform future research pedagogy and undergraduate curriculum development in radiography and other Allied Health Professions around embedding research in the curriculum in a way that educators and students recognise. Copyright © 2021 The College of Radiographers. Published by Elsevier Ltd. All rights reserved.

Difficulties associated with access to training and clinical support for Reporting Radiographers - A narrative evidence synthesis. Abstract only*
Item Type: Journal Article
Authors: Murphy, L.;Nightingale, J. and Calder, P.
Journal: Radiography 28(4), pp. 1071-1079
Publication Date: 2022
Abstract: Objectives: This narrative synthesis of evidence identifies and explores issues that impact upon the expansion or effectiveness of Reporting Radiographers working in all diagnostic modalities within the United Kingdom (UK). The publication focuses on accessibility to training for prospective Reporting Radiographers as well as clinical support within and beyond training. Key Findings: Fifteen studies informed the themes of this article, they were published between 2014 and 2021. Reporting Radiographers often found it difficult find support during training and once qualified, this was usually due to the availability and workload of supervising staff. Although resistance and obstruction were experienced by many. Concerns relating to pay, promotion and interest were expressed by some respondents whilst access to courses and finance were highlighted as areas of variance across the UK. Conclusion(s): Inadequate support of Reporting Radiographers is impairing expansion of the specialism, whilst impacting capability and morale. This increases risk of patient harm, delays to care and inefficiency, it also threatens the sustainability of services. Negative interactions between Reporting Radiographers and Radiologists or managers is

disappointing considering development of the specialism; evidence of Reporting Radiographer effectiveness and current collaboration between Royal College of Radiologists and Society of Radiographers. Issues raised in relation to pay/promotion and litigation could be clarified with ease, this should be considered when guidance is updated. Access to finance and courses is a major barrier in some regions of the UK. Scope exists for further exploration of training. England has used grants to facilitate uptake, these may prove to be an important tool in other countries. Implications for practice: Drivers to increase recruitment should be implemented alongside measures to facilitate accessibility to training and improvements to support infrastructure.

The challenge of environmental sustainability in radiology training and potential solutions Full text available with NHS OpenAthens account*
Author(s): Peters, Seren; Burrows, Susan; Jenkins, Paul
Source: Postgraduate medical journal; vol. 97 (no. 1154); p. 755-759
Publication date: Dec 2021
The environmental impact of training has been poorly recognised for many years. With the emergence of high-profile climate activists and a wider appreciation of the need for sustainable healthcare, training within radiology can no longer be excused from its responsibility to consider the environment in its actions. In this paper, we aim to evaluate the environmental impact of the travel undertaken by trainees within the Peninsula training programme, with the aim of developing practices and providing suggestions (evidence-based where possible) on how to improve the impact on the environment of trainee travel. We envisage that many of the lessons and suggestions may be transferrable to other training schemes in the UK and further afield. During the early months of 2020, in addition to the environmental crisis, COVID-19 escalated to a pandemic resulting in the alteration of working practices across the UK (and the rest of the world). This led to many environmentally beneficial working practices being adopted in Radiology in the South West Peninsula Deanery, and throughout this paper we have evaluated these changes and used our collective experience of these to inform our suggestions on how to improve the environmental sustainability of Medical and Radiological training.

A narrative review of e-learning in professional education of healthcare professionals in medical imaging and radiation therapy Abstract only*
Author(s): Konstantinidis, Kl; Apostolakis, I; Karaiskos, P
Source: Radiography (London, England : 1995)
Publication date: Dec 2021
OBJECTIVES: This literature review attempts to explore the characteristics of e-learning tools used to develop the qualifications and skills of healthcare professionals in medical imaging and radiation therapy, and to promote the effectiveness and acceptance of e-learning through highlighting the outcomes of its implementation where applicable. KEY FINDINGS: From the literature search in the PubMed and ResearchGate databases we concluded to 21 articles, which were included in the qualitative synthesis. Acceptance of e-learning tools was confirmed. Also, e-learning can be part of healthcare professionals' blended learning. The acquisition of new or improvement of existing knowledge, the improvement of clinical skills and the increase of the self-confidence of healthcare professionals in their daily practice were recorded, as outcomes of the e-learning implementation. The importance of human-computer interaction for the comprehension of theoretical concepts and practical aspects using multimedia was also captured. No significant findings emerged among the 21 articles against the adoption of the e-learning for the training of

healthcare professionals. The Internet is the channel used for synchronous and asynchronous interaction of trainees with instructors. CONCLUSIONS: We concluded that e-learning is an attractive training method, equally or occasionally more effective than the traditional educational methods for the lifelong training of healthcare professionals in the field of medical imaging and radiation therapy. Also, many collaborative web-based applications provide the necessary means to build an e-learning program, according to the training needs of each professional team. IMPLICATIONS FOR PRACTICE: This new knowledge corroborates the perspective of e-learning beneficial contribution to remote interaction and collaboration of healthcare professionals in medical imaging and radiation therapy. Collaborative web-based tools are already available to decision makers and stakeholders, who want to develop an e-learning program.

Bridging the gap: interactive, case-based learning in radiology education
Author(s): Sugi M.D.; Kennedy T.A.; Hartung M.P.; Shah V.
Source: Abdominal Radiology; vol. 46 (no. 12); p. 5503-5508
Publication date: December 2021
Traditional teaching methods in radiology education have not kept pace with advances in technology that foster successful transition into independent practice. This deficit has been exacerbated by the COVID-19 pandemic, as the need for social distancing and the introduction of hybrid staffing models have decreased the critical educational interactions at the reading room workstations between staff and trainees. By leveraging interactive, case-based learning, educators have the opportunity to bridge the substantial gap between basic pattern recognition and successfully making a diagnosis in independent practice. For the educator, this signals a shift away from perfect case selection and presenter authority, and toward the role of a guide facilitating an active case-based learning experience. This form of learning is best accompanied by guided interpretation and iterative feedback with the goal of developing similar levels of mastery and autonomy among graduating trainees. In this article, we present the tools and methods for incorporating interactive cases into existing and novel teaching materials to meet the unique challenges educators are facing today.

International perspectives on radiography practice education
Author(s): McNulty, J P; England, A; Shanahan, M C
Source: Radiography (London, England : 1995); vol. 27 (no. 4); p. 1044-1051
Publication date: November 2021
INTRODUCTION: The radiography profession is built upon strong educational foundations which help ensure graduate radiographers have the required knowledge, skills, and competence to practise safely and effectively. Changing clinical practices, service needs, technological developments, regulatory changes, together with our growing professional evidence-base, all contribute to the need for our curricula to responsive and continually reviewed and enhanced. This study aims to explore similarities and differences in training curricula and follows a 2012 global survey on radiography education and more recent surveys undertaken by the European Federation of Radiographer Societies (EFRS). METHODS: An online questionnaire, based on previous EFRS education and clinical education surveys, which comprised of open and closed questions and consisted of sections designed to ascertain data on: type, level and duration of education programmes leading to an initial or pre-registration qualification in radiography/medical radiation practice, pre-clinical skill development and clinical placement within programmes. The survey was distributed via social media channels and through an international network of professional societies. Descriptive statistics are reported for most analyses while open questions were analysed

thematically. RESULTS: Responses were received from 79 individuals from 28 identified countries across four continents. This represented a total of 121 different pre-registration/entry level programmes offered across these institutions. While dedicated diagnostic radiography programmes were most common (42/121), almost one-third of programmes (40/121) offered two or more areas of specialisation within the curriculum. The average of total hours for clinical placement were 1397 h for diagnostic radiography programmes; 1300 h for radiation therapy programmes; 1025 h for nuclear medicine programmes; and 1134 h for combined specialisation programmes, respectively. Institutions provided a range of physical and virtual systems to support pre-clinical skills development. CONCLUSION: Around the world, radiography programmes vary considerably in terms of their level, duration, programme type, pre-clinical and clinical training, use of simulation, and also in terms of class sizes, student/staff ratios, and graduate employment prospects. The ability of graduates to work independently in areas covered within their programmes varied considerably. While some changes around simulation use were evident, given the impact of COVID-19 it would be beneficial for future research to investigate if pre-clinical and clinical education hours or use of simulation resources has changed due to the pandemic. IMPLICATIONS FOR PRACTICE: The heterogeneity that exists between radiography programmes presents a significant challenge in terms of the mutual recognition of qualifications and the international movement of the radiographer workforce.

Musculoskeletal radiology training in the UK: a national survey by the British Society of Skeletal Radiologists Abstract only*
Author(s): Dalili, D; Mackay, J; Robinson, P; Mansour, R; British Society of Skeletal Radiologists
Source: Clinical radiology; Sep 2021; vol. 76 (no. 9); p. 650-658
Publication date: September 2021

AIM: To identify the standard of core and subspecialist musculoskeletal (MSK) training across deaneries in the UK.MATERIALS AND METHODS: An online survey of 46 questions with responses in Likert scale or dichotomous formats was distributed to members of the Society of Radiologists in training, British Society of Skeletal Radiologists (BSSR), Training Programme Directors and the Royal College of Radiologists (RCR) Junior Radiology Forum representatives for national training schemes across the country. Responses were analysed descriptively with narrative analysis of free-text comments. RESULTS: One hundred and seventy-eight participants completed the survey. Forty-six percent (81/178) were core trainees (ST1-3), 47% (84/178) were subspecialist trainees, and 7% (13/178) were newly qualified consultants (<2 years in post). All (178/178) of the participants had a dedicated MSK rotation, with a duration of ≥3 months in 76% (136/178). Only one-third received a dedicated period in MSK ultrasound and only 60% (107/178) had been actively involved in interventional procedures during their training. Overall, 21% (37/178) and 42% (75/178) of participants rated the quality of their MSK training as excellent and good, respectively. The majority (93%, 168/178) thought that MSK training could be improved, especially for ultrasound (62%, 110/178) and interventional computed tomography (CT) or fluoroscopy (57%, 101/178). CONCLUSIONS: There are inconsistencies in MSK training offered in the UK. Although the majority of trainees are satisfied, there were gaps and potential threats to the quality of training. MSK training is witnessing substantial demand from trainees and workforce strategists necessitating tactical investments to standardise and enhance its quality.

Medical imaging education opportunities for junior doctors and non-radiologist clinicians: A review Abstract only*
Item Type: Journal Article
Authors: Ayesa, Sally L.;Katelaris, Annette G.;Brennan, Patrick

C. and Grieve, Stuart M.
Journal: Journal of Medical Imaging & Radiation Oncology 65(6), pp. 710-718
Publication Date: Oct ,2021
Abstract: Medical imaging plays a critical role in clinical decision-making across disciplines, and as such, there is frequent need for non-radiologist clinicians to interact with medical imaging. This review examines the literature about the delivery of medical imaging education to non-radiologist clinicians, spanning junior doctors, advanced trainees and specialists. Knowledge of medical imaging among non-radiologist clinicians is paramount to the quality of patient care, with calls for formal implementation of radiology education into non-imaging specialty training programmes. Overall, there is a demand across non-imaging disciplines for greater formalised medical imaging education. Concerns are raised that too great a reliance on informal methods of teaching radiology, for example in ward settings, results in greater variation in the quality and volume of educational opportunities and risks the perpetuation of erroneous attitudes and practices. The evolution of the medical imaging workplace and increasing utilisation of remote reporting has distanced the collaborative relationship between radiologists and their non-imaging colleagues, diminishing opportunities for ad hoc learning and engagement in larger formalised educational collaborations. Ideally, radiologists should be directly involved in the development and delivery of medical imaging education to post-graduate doctors to not only benefit patient care but also foster inter-specialty relationships and respect. Evidence supports the value of structured radiological teaching opportunities, including tutorials, lectures and electronic resources, in improving medical imaging skills among non-radiologist clinicians. There is wide scope for growth in the e-learning arena to address this demand for quality and accessible imaging education for our non-radiology colleagues. Copyright © 2021 The Royal Australian and New Zealand College of Radiologists.

Evaluation of radiotherapy education across the EU and the impact on graduates' competencies working on the linear accelerator
Author(s): Couto, J G; McFadden, S; McClure, P; Bezzina, P; Camilleri, L; Hughes, C
Source: Radiography (London, England : 1995); vol. 27 (no. 2); p. 289-303
Publication date: May 2021
INTRODUCTION: Regulation and education of the professionals administering radiotherapy treatments in the linear accelerator varies across the EU. However, how different programme characteristics affect the level of competency of these professionals has never been studied before. This study also aimed to assess which are the least and most developed competencies in radiotherapy across the EU. METHODS: An online questionnaire was distributed to academic staff teaching radiotherapy across the EU. Staff were asked to identify the characteristics of the course programmes and to classify the level of competency of graduates regarding linear accelerator tasks. RESULTS: Fifty respondents from 19 EU countries answered the questionnaire. The least developed competency theme was pharmacology followed by equipment quality assurance and management and leadership. The most developed competency was positioning and immobilisation, followed by radiotherapy treatment delivery and professional and ethical practice. Some competencies are developed at the same level across EU countries, while others vary considerably between member-states. Longer programmes, with more placements, and larger proportions of radiotherapy in the programme showed significant increase in the development of some competencies. Longer placements in skills labs was correlated with a decrease in competency. CONCLUSION: There is no harmonisation of radiotherapy eduction across the

EU and the differences in programme characteristics are reflected in differences in competency levels of radiotherapy radiographers. This may hinder movement of professionals and create disparities in the level of care offered across the EU. IMPLICATIONS FOR PRACTICE: Longer programmes, with longer clinical practice and adequate proportion of radiotherapy in the course are essential to ensure that these professionals are competent at similar levels across the EU and to ensure patient safety.

Endoscopy training in the UK pre-COVID–19 environment: a multidisciplinary survey of endoscopy training and the experience of reciprocal feedback
Author(s): Ratcliffe, E. et al.
Source: Frontline Gasteroenterology
Publication Date: February 2021
Publication Type(s): Journal article
Objective: Training in gastrointestinal endoscopy in the UK occurs predominantly in a real world one-to-one trainer to trainee interaction. Previous surveys have shown surgical and gastroenterology trainees have had mixed experiences of supervision and training, and no surveys have explored specifically the role of trainee to trainer feedback. This study aimed to explore the experience of training and of providing trainer feedback for all disciplines of endoscopy trainees. Design/method: An online survey designed in collaboration with Joint Advisory Committee training committee and trainee representatives was distributed from January 2020 but was interrupted by the COVID-19 pandemic and hence terminated early. Results: There were 129 responses, including trainees from all disciplines and regions, of which 86/129 (66.7%) rated the culture in their endoscopy units favourably—either good or excellent. 65/129 (50.4%) trainees reported having one or more training lists allocated per week, with 41/129 (31.8%) reporting only ad hoc lists. 100/129 (77.5%) respondents were given feedback and 97/129 (75.2%) were provided with learning points from the list. 65/129 (50.4%) respondents reported their trainer completed a direct observation of procedure or direct observation of polypectomies. 73/129 (56.6%) respondents reported that they felt able to give feedback to their trainer, with 88/129 (68.2%) feeling they could do this accurately. Barriers to trainer feedback cited included time constraints, lack of anonymity and concerns about affecting the trainer–trainee relationship. Conclusion: Overall, the training environment has improved since previous surveys. There are still issues around interdisciplinary differences with some surgical trainees finding the training environment less welcoming, and trainee perceptions of hierarchical barriers and trainer responsiveness to feedback limiting the accuracy of their feedback.

Disrupting the Education Paradigm: An Opportunity to Advance Simulation Training in Radiology-Radiology In Training.
Item Type: Journal Article
Authors: Solomon, Alex J.;England, Ryan W.;Kolarich, Andrew R. and Liddell, Robert P.
Publication Date: 2021
Journal: Radiology 298(2), pp. 292-294
Summary: Radiology has always been on the cutting edge of medical innovation; however, in simulation-based training, we are lagging compared with our procedure-based colleagues. Introduction: The coronavirus disease 2019 (COVID-19) pandemic has disrupted the idea of a typical day. Radiology, along with almost every other aspect of health care and society, continues to adapt in a rapidly changing environment, altering academic and private practice workflow and volume. Resident education in the era of COVID-19 was, and often continues to be, disrupted by changes in patient volume, clinical redeployment, remote image interpretation, modifications to the traditional trainee read-out, and any combination thereof (1). Recent analysis demonstrates a decrease of 49%–76% for

diagnostic examinations and a decrease of 43%–63% for interventional procedures (2). Radiology trainees are likely disproportionately affected by these changes and the unknown circumstances ahead. Seventy-one percent of residents already report a negative impact on their educational mission, while 45% of residents and 61% of program directors note a moderate or marked decline in morale (3). Distance learning, remote teaching, and online case compilations are helping fill the void for diagnostic image interpretation; however, the hands-on nature of interventional radiology and the direct patient-facing aspects of diagnostic radiology (eg, mammography; contrast-enhanced US; image-guided biopsies or interventions in musculoskeletal radiology, body radiology, and neuroradiology) present a unique set of obstacles, which the widespread integration of simulation-based training may mitigate.

Undergraduate medical education: A national survey of consultant radiologists.
Item Type: Journal Article
Authors: Chew, C. and O'Dwyer, P. J.
Publication Date: 2020
Journal: British Journal of Radiology 93(1112), pp. no pagination
Abstract: Objective: Rising clinical demand and changes to Radiologists' job plans mean it is becoming ever more difficult for Radiologists to teach medical students. The aim of this study was to assess the current role of Radiologists in undergraduate medical education in Scotland. Method(s): Consultant Radiologists working across all 14 Scottish Health Boards were invited by email to participate in an anonymous short online survey. The survey ran for 6 weeks from November 2019. One reminder email was sent a week before the survey closed. Result(s): 102 responses were recorded, representing 34% of the total whole time equivalent Radiologists in Scotland. All agreed Radiology should be taught to medical students. Over 70% (n = 73) taught medical students, most often during supporting professional activity time. 76 percent of Radiologists who did not teach expressed a desire to do so. The most common barrier to teaching was not having enough time in their job plan. Scottish Radiologists delivered a median of 10 h (IQR 0-22) a year of teaching to medical students. Thematic analysis of free comments revealed staffing/time constraints severely limiting ability to teach. Conclusion(s): This is the first national survey to assess the current role of Radiologists in teaching medical students. While most are teaching or want to teach, there is a large drop-off between current Scottish and previously reported UK median teaching hours. Engagement from Universities, Royal College of Radiologists and Health Boards is urgently needed to reverse this trend. Copyright © 2020 The Authors.

The Hidden Curriculum of Utilisation of Imaging and Unregulated Digital Resources within Clinical Education
Abstract only*
Item Type: Journal Article
Authors: Matthan, Joanna and Finn, Gabrielle M.
Publication Date: 2020
Journal: Advances in Experimental Medicine & Biology 1235, pp. 145-163
Abstract: Clinical education has changed dramatically over the last 30 years. The increasing use of imaging and visualisation technologies within medical, dental and other healthcare sciences education curricula is taken for granted, with little consideration given to the agenda behind the colonisation of the basic sciences curricula with these technologies or their ultimate utility with regards to patient care. Sufficient critique is rarely given prior to the incorporation of imaging modalities into teaching and learning, and the hidden curriculum remains deeply buried under the impetus to 'move with the times'.

Coupled with increasingly easily accessible but unregulated streamed digital teaching resources widely utilised in healthcare professions' curricula, there remains a danger that future generations of clinicians may be exposed to erroneous information that could ultimately impact on the safety of their patients. Educators must develop a reflective approach, and together with institutions develop a collective responsibility to integrate and map evidence-based and clinically-relevant approaches within the respective curricula, rather than bombard undergraduates with the latest technology and never-ending (and sometimes unreliable and unregulated) information without awareness of the potential dangers lurking within their preferred teaching methods and ideologies. Healthcare professionals must subject teaching resources utilised within their curricula to the same scrutiny that textbooks undergo, with content accuracy and endorsement via reputable sources, preferably peer reviewed and traceable, taking precedence.

Standardisation of Medical Physics training in Europe Abstract only*
Author(s): Tsapaki V.
Source: Physica Medica; vol. 67 ; p. 194
Publication date: November 2019
Medical physics has done much to advance medicine. We can be proud of our collective accomplishments. The development of our profession in Europe has been driven by the regulatory requirements for radiation safety initially of staff and lately of patients. European legislation acknowledged the importance of physics in radiation protection of patients in the 1980s by requiring a "qualified expert in radiophysics" to be available to "sophisticated departments of radiotherapy and nuclear medicine". In the 1990s the term "medical physics expert" (MPE) was introduced and the involvement of MPEs was foreseen also in "other radiological practices". The new European Directive (59/2013) expanded the MPE's role in patient radiation safety. It defines the roles and responsibilities of experts who should be involved in radiation protection. The role of the Radiation Protection Expert (RPE) and the Medical Physics Expert (MPE) is clearly defined. The requirements for information, training and education are also addressed in order to highlight the importance of education and training in radiation protection. According to article 14 member states must ensure the education training and retraining to allow the recognition of radiation protection experts and medical physics experts in the field. The new law which is now implemented in all Member States proves that medical physics has a lot more to offer and places our profession on a more profound ground and provides us with opportunities that we never had before. This is our big opportunity to evolve and make ourselves leaders in radiation protection within the hospital environment and beyond. In a number of European countries, binding regulations appear also on non ionizing radiation such as MRI, US and others. Artificial Intelligence and leaderships issues are also given a lot of attention. The presentation will provide the current information on education and training across Europe together with emerging challenges and opportunities.

Musculoskeletal Radiology Teaching at a UK Medical School: Do We Need to Improve? Abstract only*
Author(s): Marino, Katherine; Merrick, Deborah; Edwards, Kimberly; Pratten, Margaret
Source: Anatomical sciences education; vol. 12 (no. 3); p. 257-263
Publication date: May 2019
The United Kingdom is currently facing crisis due to a shortage of radiology consultants despite ever-increasing demand for medical imaging. The specifics of how best to teach radiology has generated increasing interest. This study aims to determine whether musculoskeletal (MSK) radiology teaching at the University of Nottingham (UoN) Medical School is perceived to

be satisfactory by medical students, Foundation-Year doctors, and senior medical professionals in preparing students for the demands working as Foundation-Year doctors. Questionnaires were distributed to all medical students and Foundation-Year doctors that graduated from UoN (n = 307). Semi-structured interviews were conducted with consultants and teaching staff (n = 13). Forty-nine percent of preclinical medical students, 43% of clinical students and 27% of Foundation-Year doctors thought MSK radiology teaching was not sufficient in preparing them for the radiology challenges Foundation-Year doctors' face. This difference was statistically significant (P < 0.001). The consensus from senior medical professionals was that MSK Radiology teaching is currently adequate and producing competent students. Interestingly, only 5% of students were considering a career in radiology compared to 34% of Foundation-Year doctors. Overall, there seems to be concern among students regarding MSK radiology teaching and students have a lack of confidence with MSK radiology. Foundation-Year doctors and senior medical professionals do not share this view. This may be due to medical students' lack of clarity on what is required of them. Formal documentation of set learning objectives for MSK radiology throughout the curriculum may address this.

Trends in UK endoscopy training in the BSG trainees' national survey and strategic planning for the future
Author(s): Biswas S, Alrubaiy L, China L on behalf of the British Society of Gastroenterology Trainees' Section, et al
Source: Frontline Gastroenterology
Publication Date: 2018
Background: Improvements in the structure of endoscopy training programmes resulting in certification from the Joint Advisory Group in Gastrointestinal Endoscopy have been acknowledged to improve training experience and contribute to enhanced colonoscopy performance. Objectives: The 2016 British Society of Gastroenterology trainees' survey of endoscopy training explored the delivery of endoscopy training - access to lists; level of supervision and trainee's progression through diagnostic, core therapy and subspecialty training. In addition, the barriers to endoscopy training progress and utility of training tools were examined. Methods: A web-based survey (Survey Monkey) was sent to all higher specialty gastroenterology trainees. Results: There were some improvements in relation to earlier surveys; 85% of trainees were satisfied with the level of supervision of their training. But there were ongoing problems; 12.5% of trainees had no access to a regular training list, and 53% of final year trainees had yet to achieve full certification in colonoscopy. 9% of final year trainees did not feel confident in endoscopic management of upper GI bleeds. Conclusions: The survey findings provide a challenge to those agencies tasked with supporting endoscopy training in the UK. Acknowledging the findings of the survey, the paper provides a strategic response with reference to increased service pressures, reduced overall training time in specialty training programmes and the requirement to support general medical and surgical on-call commitments. It describes the steps required to improve training on the ground: delivering additional training tools and learning resources, and introducing certification standards for therapeutic modalities in parallel with goals for improving the quality of endoscopy in the UK.

The training of therapeutic radiographers in dementia care: A literature review. Abstract only*
Item Type: Journal Article
Authors: Carnall, C. and Chianese, J.
Journal: Journal of Radiotherapy in Practice 17(4), pp. 455-459
Publication Date: 2018
Abstract: Background In the United Kingdom, 7.1% of people aged over 65 live with dementia. The National Dementia Strategy emphasises the need for a skilled workforce

competent in dementia care. In all, 50% of cancer patients are in the 70 plus age group, suggesting that education of therapeutic radiographers in the care of the patient with dementia is key. The aim of the study was to review the literature regarding training of therapeutic radiographers on dementia and use the findings to make recommendations for training in the future in order to provide the best care.Materials and methods A literature search of electronic databases holding peer-reviewed journals was conducted. Search terms were generated using the Population Intervention Comparison Outcome (PICO) method and retrieved articles were evaluated using the Critical Appraisal Skills Programme (CASP) tool. Additional evidence was accessed through snowballing and from grey literature.Results The search failed to find any studies on dementia care education within a radiotherapy setting and only a limited number were found in the acute care setting. There appeared to be a large variation in the education provision for healthcare professionals on the subject of dementia care, both at the pre-registration and post-registration stages.Findings There is no evidence of a standardised education programme for healthcare professionals in dementia care. In the future, therapeutic radiographers are likely to see more patients with dementia but currently some may not have had the education and training to provide effective holistic care.

An investigation into breast imaging as part of the undergraduate (UG) education of diagnostic radiography students in the UK Abstract only*
Author(s): Strudwick, R M; Taylor, K
Source: Radiography (London, England : 1995); vol. 23 (no. 2); p. 141-146
Publication date: May 2017
INTRODUCTION: How mammography is incorporated into undergraduate (UG) radiography training may influence student perception of the speciality and its potential as a future career option. An overview is provided of the academic and clinical content of UG radiography courses relating to mammography across the UK. METHODS: Using mixed methods and an iterative, inductive approach supplying quantitative and qualitative data, we identify any variations and discuss possible causes which may help influence future training strategies. A self-designed questionnaire containing open and closed questions was sent online using SurveyMonkey™ to course leaders of all Higher Education Institutions (HEIs) offering BSc (Hons) Diagnostic Radiography courses in the UK. Responses were analysed for trends which were further explored by semi structured telephone interviews. These were transcribed and evaluated using a thematic analysis, the themes being categorised and coded. RESULTS: 19 of 24 (79%) HEIs responded to the questionnaire. Follow up telephone interviews were conducted with five course leaders to further explore themes. Academic teaching ranged from 3 to 25 h over the 3 year course. Compared to other specialities 10 (53%) HEIs spent less time on mammography with 12 (63%) citing HCPC standards as the reason. 11 (65%) HEIs sent students on mammography placements, 2 (12%) sent females only. Placement times ranged between 2 days and 2 weeks. Influences included availability of expert teaching and relationship with clinical departments. CONCLUSION: There is variation in undergraduate exposure to mammography. Students views should be sought to add validity to these findings.

A new e-learning platform for radiology education (RadEd).
Abstract only*
Item Type: Journal Article
Authors: Xiberta, P. and Boada, I.
Publication Date: 2016
Journal: Computer Methods and Programs in Biomedicine 126,

pp. 63-75

Abstract: One of the key elements of e-learning platforms is the content provided to the students. Content creation is a time demanding task that requires teachers to prepare material taking into account that it will be accessed on-line. Moreover, the teacher is restricted by the functionalities provided by the e-learning platforms. In contexts such as radiology where images have a key role, the required functionalities are still more specific and difficult to be provided by these platforms. Our purpose is to create a framework to make teacher's tasks easier, specially when he has to deal with contents where images have a main role. In this paper, we present RadEd, a new web-based teaching framework that integrates a smart editor to create case-based exercises that support image interaction such as changing the window width and the grey scale used to render the image, taking measurements on the image, attaching labels to images and selecting parts of the images, amongst others. It also provides functionalities to prepare courses with different topics, exercises and theory material, and also functionalities to control students' work. Different experts have used RadEd and all of them have considered it a very useful and valuable tool to prepare courses where radiological images are the main component. RadEd provides teachers functionalities to prepare more realistic cases and students the ability to make a more specific diagnosis.

Technology

Artificial intelligence in radiation oncology: A review of its current status and potential application for the radiotherapy workforce Abstract only*
Author(s): Parkinson ; Matthams, C.; Foley, K.; Spezi, E.
Source: Radiography; vol. 27

Publication date: October 2021
Radiation oncology is a continually evolving speciality. With the development of new imaging modalities and advanced imaging processing techniques, there is an increasing amount of data available to practitioners. In this narrative review, Artificial Intelligence (AI) is used as a reference to machine learning, and its potential, along with current problems in the field of radiation oncology, are considered from a technical position. AI has the potential to harness the availability of data for improving patient outcomes, reducing toxicity, and easing clinical burdens. However, problems including the requirement of complexity of data, undefined core outcomes and limited generalisability are apparent. This original review highlights considerations for the radiotherapy workforce, particularly therapeutic radiographers, as there will be an increasing requirement for their familiarity with AI due to their unique position as the interface between imaging technology and patients. Collaboration between AI experts and the radiotherapy workforce are required to overcome current issues before clinical adoption. The development of educational resources and standardised reporting of AI studies may help facilitate this.

Beauty Is in the AI of the Beholder: Are We Ready for the Clinical Integration of Artificial Intelligence in Radiography? An Exploratory Analysis of Perceived AI Knowledge, Skills, Confidence, and Education Perspectives of UK Radiographers.
Item Type: Journal Article
Authors: Rainey, C.;O'Regan, T.;Matthew, J.;Skelton, E.;Woznitza, N.;Chu, K. Y.;Goodman, S.;McConnell, J.;Hughes, C.;Bond, R.;McFadden, S. and Malamateniou, C.
Publication Date: 2021
Journal: Frontiers in Digital Health 3(pagination), pp. no pagination
Abstract: Introduction: The use of artificial intelligence (AI) in medical imaging and radiotherapy has been met with both

scepticism and excitement. However, clinical integration of AI is already well-underway. Many authors have recently reported on the AI knowledge and perceptions of radiologists/medical staff and students however there is a paucity of information regarding radiographers. Published literature agrees that AI is likely to have significant impact on radiology practice. As radiographers are at the forefront of radiology service delivery, an awareness of the current level of their perceived knowledge, skills, and confidence in AI is essential to identify any educational needs necessary for successful adoption into practice. Aim(s): The aim of this survey was to determine the perceived knowledge, skills, and confidence in AI amongst UK radiographers and highlight priorities for educational provisions to support a digital healthcare ecosystem. Method(s): A survey was created on Qualtrics and promoted via social media (Twitter/LinkedIn). This survey was open to all UK radiographers, including students and retired radiographers. Participants were recruited by convenience, snowball sampling. Demographic information was gathered as well as data on the perceived, self-reported, knowledge, skills, and confidence in AI of respondents. Insight into what the participants understand by the term "AI" was gained by means of a free text response. Quantitative analysis was performed using SPSS and qualitative thematic analysis was performed on NVivo. Result(s): Four hundred and eleven responses were collected (80% from diagnostic radiography and 20% from a radiotherapy background), broadly representative of the workforce distribution in the UK. Although many respondents stated that they understood the concept of AI in general (78.7% for diagnostic and 52.1% for therapeutic radiography respondents, respectively) there was a notable lack of sufficient knowledge of AI principles, understanding of AI terminology, skills, and confidence in the use of AI technology. Many participants, 57% of diagnostic and 49% radiotherapy respondents, do not feel adequately trained to implement AI in the clinical setting. Furthermore 52% and 64%, respectively, said they have not developed any skill in AI whilst 62% and 55%, respectively, stated that there is not enough AI training for radiographers. The majority of the respondents indicate that there is an urgent need for further education (77.4% of diagnostic and 73.9% of therapeutic radiographers feeling they have not had adequate training in AI), with many respondents stating that they had to educate themselves to gain some basic AI skills. Notable correlations between confidence in working with AI and gender, age, and highest qualification were reported. Conclusion(s): Knowledge of AI terminology, principles, and applications by healthcare practitioners is necessary for adoption and integration of AI applications. The results of this survey highlight the perceived lack of knowledge, skills, and confidence for radiographers in applying AI solutions but also underline the need for formalised education on AI to prepare the current and prospective workforce for the upcoming clinical integration of AI in healthcare, to safely and efficiently navigate a digital future. Focus should be given on different needs of learners depending on age, gender, and highest qualification to ensure optimal integration.

Professionals' responses to the introduction of AI innovations in radiology and their implications for future adoption: a qualitative study

Author(s): Chen, Yaru; Stavropoulou, Charitini; Narasinkan, Radhika; Baker, Adrian; Scarbrough, Harry

Source: BMC health services research; vol. 21 (no. 1); p. 813

Publication date: August 2021

BACKGROUND: Artificial Intelligence (AI) innovations in radiology offer a potential solution to the increasing demand for imaging tests and the ongoing workforce crisis. Crucial to their adoption is the involvement of different professional groups,

namely radiologists and radiographers, who work interdependently but whose perceptions and responses towards AI may differ. We aim to explore the knowledge, awareness and attitudes towards AI amongst professional groups in radiology, and to analyse the implications for the future adoption of these technologies into practice. METHODS: We conducted 18 semi-structured interviews with 12 radiologists and 6 radiographers from four breast units in National Health Services (NHS) organisations and one focus group with 8 radiographers from a fifth NHS breast unit, between 2018 and 2020.RESULTSWe found that radiographers and radiologists vary with respect to their awareness and knowledge around AI. Through their professional networks, conference attendance, and contacts with industry developers, radiologists receive more information and acquire more knowledge of the potential applications of AI. Radiographers instead rely more on localized personal networks for information. Our results also show that although both groups believe AI innovations offer a potential solution to workforce shortages, they differ significantly regarding the impact they believe it will have on their professional roles. Radiologists believe AI has the potential to take on more repetitive tasks and allow them to focus on more interesting and challenging work. They are less concerned that AI technology might constrain their professional role and autonomy. Radiographers showed greater concern about the potential impact that AI technology could have on their roles and skills development. They were less confident of their ability to respond positively to the potential risks and opportunities posed by AI technology. CONCLUSIONS: In summary, our findings suggest that professional responses to AI are linked to existing work roles, but are also mediated by differences in knowledge and attitudes attributable to inter-professional differences in status and identity. These findings question broad-brush assertions about the future deskilling impact of AI which neglect the need for AI innovations in healthcare to be integrated into existing work processes subject to high levels of professional autonomy.

Cautiously optimistic: A survey of radiation oncology professionals' perceptions of automation Abstract only*
Author(s): Batumalai V.; Jameson M.G.; King O.; Walker R.; Slater C.; Dundas K.; Dinsdale G.; Wallis A.; Ochoa C.; Gray R.; Vial P.; Vinod S.K.
Source: Radiotherapy and Oncology; vol. 152
Publication date: November 2020
Purpose or Objective: Given the increased demand for health services, automation processes and technological advances within the workforce are increasing. While there is evidence to show the positive effects of automation in improving overall radiotherapy department efficiency, there is no research to show how radiation oncology professionals perceive these changes. This study examined radiation oncology professionals' perceptions of automation in radiotherapy planning. Material(s) and Method(s): An online survey link was sent to the chief radiation therapists of all Australian radiotherapy centres. It was requested that the survey be sent to all radiation therapists (RT), medical physicists (MP) and radiation oncologists (RO) within their institution. The survey was open from May - July 2019. Questions included the current and planned level of automation in departments and opinions on the effect of automation on specific tasks, roles and jobs. Result(s): Participants were 204 RTs, 84 MPs and 37 ROs with estimated response rates of 10% of the overall Australian radiation oncology workforce. Respondents reported that most planning tasks are 'somewhat automated' or 'automated with manual tuning' (Figure 1). 69% of respondents felt very probably/probably empowered to drive decisions about implementing automated planning processes. 66% of respondents indicated they thought automation in planning was very important/important. Respondents felt automation resulted

in improvement in work output and productivity (88%), quality of planning (57%), consistency in planning (90%) and staff focus on patient care (49%). When asked about perceived impact of automation, the following responses were recorded; will change the primary tasks of certain jobs (66%), will allow staff to do the remaining components of their job more effectively (51%), will eliminate jobs (20%), will not have an impact on jobs (6%), and not concerned at all with automation (9%). 27% of staff believe automation will reduce job satisfaction (Figure 2). 71% of respondents strongly agree/agree that automation will cause a loss of understanding of general principles of radiotherapy, while only 25% respondents strongly agree/agree that the current training and education tools provided by their department are sufficient to ensure staff do not lose their skillsets. [Figure Presented] Figure 1: Current level of automation in radiotherapy centres [Figure Presented] Figure 2: Staff attitude toward automation in radiotherapy planning Conclusion Although the effect of automation is perceived positively with respect to work output and productivity, there are some concerns on loss of skillsets and the lack of training to maintain this. These results highlight the need for continued education to ensure that basic skills and knowledge of the principles of radiotherapy are not lost with automation of tasks in radiation oncology.

Is there a role for simulation based education within conventional diagnostic radiography? A literature review
Abstract only*
Author(s): Shiner, N
Source: Radiography (London, England : 1995); vol. 24 (no. 3); p. 262-271
Publication date: August 2018
INTRODUCTION: Simulation based education is advancing, but is there a role for it in Diagnostic Radiography? The aim of this literature review was to understand the use of simulation within conventional diagnostic radiography education to raise awareness of this pedagogical approach. Objectives were to identify the prevalence and stage of delivery in education; understand the variation of simulation and learning objectives informing its use; and review the perceptions of those using simulation in education and practice. METHODS: The literature review used a systematic search strategy. Library Plus, CINAHL, ScienceDirect, Medline and Google Scholar were reviewed resulting in 703 articles. Inclusion and exclusion criteria were applied with initial review of title and abstract resulting in 22 articles. Fifteen articles were selected following full text review. RESULTS: Simulation was used for both pre- and post-registration education. Themes included inter-professional education, use of computer software and improving patient/practitioner interactions. Increased confidence and understanding of professional roles were common outcomes. CONCLUSION: Simulation is a valuable pedagogical approach for diagnostic radiography education. Staff training and careful implementation of each stage is required to achieve desired learning outcomes.

Retention and attrition

Retention of radiographers: A qualitative exploration of factors influencing decisions to leave or remain within the NHS
Author(s): Nightingale, J; Burton, M; Appleyard, R; Sevens, T; Campbell, S
Source: Radiography (London, England : 1995); vol. 27 (no. 3); p. 795-802
Publication date: August 2021
INTRODUCTION: In many countries a widening imbalance exists between radiographer workforce supply and demand. Improving retention is a rapid method of workforce expansion which is gaining importance with policy makers and providers. To better understand the current leaver profile, this study aimed

to identify why radiographers leave the NHS early, and what incentives are important in their decision to stay. METHODS: A qualitative framework methodology used semi-structured telephone interviews to explore the perspectives of radiography managers, radiographers who have left the NHS, and those considering leaving. Purposive sampling ensured representation across radiography professional groups, geographical and organisational diversity, and stages of career. RESULTS: Three over-arching themes were identified across all radiographer professional groups (n = 44): 1) Challenging working patterns and the impact on employee health and wellbeing; 2) Lack of flexibility in working terms and conditions; 3) Lack of timely career progression and access to CPD, and the need to feel valued. Radiographers were keen to express how they 'loved being a radiographer'; small concessions and changes to workplace culture might be the incentive to remain in radiography that some were clearly searching for. Manager participants recognised the need to offer greater flexibility in working patterns but this was challenging within financial and service delivery constraints. CONCLUSIONS: While some influencing factors varied between radiographer professional groups, the three themes were consistent across participants. Failure to address these concerns will exacerbate the loss of experienced and highly trained staff from the NHS at a time when demand for services continues to rise. IMPACT ON PRACTICE: Recommendations are presented related to three primary themes which will be a catalyst for sharing of best practice between radiology and radiotherapy centres.

Understanding perceptions and expectations of studying radiotherapy: mature students compared to school-leavers
Author(s): Wortley J.
Source: Radiography; vol. 26
Publication date: January 2020

Recruitment and retention for pre-registration radiotherapy courses in the U.K. has posed a difficulty for workforce planning within cancer care for many years. Mature students have traditionally made up a high proportion of students, but there has been a large decline in them starting the course since 2017. There is a broad understanding of the market for mature students in general, but little research on why mature students choose radiotherapy specifically. This study explores mature students' views on radiotherapy as a course and a career, in comparison to the views of students who had joined the course straight from school. Method(s): A focus group of mature students and one of school-leavers all from one institution were conducted with semi-structured questions. Focus groups were recorded, transcribed verbatim and coded by one researcher. Ethical approval was obtained via Sheffield Hallam University. Result(s): Both groups were attracted by hands-on learning, close patient care of cancer patients and secure job opportunities, but were concerned by the physics content. School-leaver students expected a traditional University experience, where mature students were expecting a more structured training course. Mature students required more detail on the practicalities of placement living and location as they were more limited. Both groups felt disappointed in the job opportunities from before the course compared to starting it, but it was a more of a concern for mature students due to their settled lives. Mature students were more anxious about their choice to study radiotherapy and were more interested in the ability to plan, as they had made an active choice to return to education, where school-leavers were going to go to University at this point anyway. Conclusion(s): More detailed information on the course and the job prospects may help mature student recruitment and retention. Similarly, policies which allowed for more job security earlier in the course should be looked at. These ideas should then be put back to prospective mature students in further research.

Improving retention in radiotherapy. Delivering an intervention to enable clinical supervisors to support and nurture students to achieve their full potential
Author(s): Bennett C.; Armstrong-James L.; Tuckey M.; Thorne R.; Khine D.R.
Source: Radiography; vol. 26
Publication date: January 2020
Dissatisfaction with clinical placement is rated the most frequent reason for leaving radiotherapy programmes and healthcare programmes generally. As reported in the "Mind the Gap" project different generations of students and staff have different expectations and needs. Furthermore, evidence has shown when students feel part of the team, they learn more effectively and have a positive experience4. A collaboration between UWE and CUoL, supported by the Office for Students Strategic Interventions in Health Education Disciplines Challenge Fund, investigated how enhancing clinical supervisors awareness of students needs through training, could provide an innovative approach to reduce attrition. Method and Materials: The ethics approved project is delivered in two phases. 1) Engagement phase: Clinical supervisors for UWE and CUoL participated in a facilitated online student support discussion forum. Student feedback was gained via an online placement experience survey. This data informed the educational intervention design (study day and online resources). 2) Implementation phase: The study day has run in London and the Southwest of England and evaluated through participant feedback and student feedback on placement experience. The study day will run again in autumn 2019. Result(s): Feedback from clinical supervisors highlighted a desire to support students on placement but indicated a need for guidance on student well-being. Feedback from students indicated their placement experience varied widely and related to specific interactions with different staff members. The study day and resources were designed around a central well-being theme and has received positive feedback. Conclusion and Discussion: The positive support for the intervention affirms its need. It provided delegates with reflection time, supervisory skill development and is supported by online resources. Further study days and feedback will provide additional impact data and may indicate its contribution to retention.

Understanding student radiographer attrition: Risk factors and strategies.
Item Type: Journal Article
Authors: McAnulla, S. J.;Ball, S. E. and Knapp, K. M.
Publication Date: 2020
Journal: Radiography 26(3), pp. 198-204
Abstract: Introduction: Diagnostic student radiographer attrition is reported at 14%, 6% higher than the average for higher education, however, little research has been undertaken on this subject. This study explored risk factors for attrition and strategies that enabled these to be overcome. Method(s): A two-phase study was undertaken. Phase one: data for 579 former student diagnostic radiographers (468 completers and 111 non-completers) from 3 English universities were analysed. Logistic regression was used to estimate odds ratios and 95% confidence intervals for completion based on individual characteristics. Phase two: content analysis of data from an online survey of 186 current UK student diagnostic radiographers exploring their experiences was undertaken. Result(s): Phase one: Attrition was 19%. Increased age, non A-level entry qualifications and poor academic performance were predictors of attrition (p Result(s): Phase one: Attrition was 19%. Increased age, non A-level entry qualifications and poor academic performance were predictors of attrition (p Conclusion(s): Although characteristics were identified that increased the chance of attrition, the study concluded that attrition is most likely to be multi-factorial. Academic and

personal support were identified as key in students continuing their studies when they considered leaving. Clinical placement experience is likely to influence continuation decisions. Implications for practice: Transparency around course expectations and academic requirements together with ensuring high quality clinical placements may assist in reducing attrition.

Challenges in recruitment and retention: Securing the therapeutic radiography workforce of the future.
Item Type: Journal Article
Authors: Nightingale, J.;McNamara, J. and Posnett, J.
Publication Date: 2019
Journal: Radiography (London) 25(1), pp. 1-3
In this issue of the Radiography journal, we have published a Letter to the Editor from E.R. Andersen which argues that the development of therapeutic radiography as a profession across Europe is limited by a lack of visibility. 1 The author makes a plea to therapeutic radiographers to 'let the world know that we exist'. He argues that the lack of public and professional awareness of the profession as well as variation in the scope of practice from country to country is limiting our potential to engage in cross-European projects and multi-disciplinary work that could benefit our patients. 1

Non-medical prescribing

Service needs, capacity and innovations to extend clinical capacity for sonographer education: An online survey
Author(s): Harrison G.
Source: Ultrasound; vol. 27 (no. 2)
Publication date: 2019
Sonography is a shortage occupation, with evidence suggesting vacancy rates of between 5 and 25% in England. Ultrasound education is changing to meet service needs; however, one challenge being faced by education providers and clinical staff is the lack of clinical placement capacity. An online survey was sent to ultrasound managers to investigate innovations being used to increase clinical capacity for educating sonographers. Higher education providers were also contacted via email and telephone for their views on innovations in ultrasound clinical education. Additional objectives of the study included determining current and future estimated sonographer shortages and placement capacity. There were 72 responses to the questionnaire. The average shortfall in sonographers was 2.65, with 5% of departments reporting a deficit of 10 sonographers. The predicted number of additional sonographers required to provide the service in five years' time was an average of 4.6 sonographers, with 10% of departments anticipating they will need an additional 10 sonographers. Most departments were involved in clinical ultrasound education, with 51% of students being sonographers, averaging two per department. Several departments had additional capacity for teaching students, with a combined total of 45 places. A number of challenges were raised by respondents, particularly relating to issues of funding for student sonographers, balancing clinical and teaching requirements, staff shortages and the need to teach others, e.g. radiologists because of radiology shortages. A number of different methods are being used to extend the capacity for clinical education of sonographers; these include extended working days and weekend teaching lists, simulation and peripatetic clinical educators. As ultrasound education is undergoing changes, to meet the increasing service needs, innovative solutions to increase placement capacity are needed. This study provides some ideas to assist education providers, clinical departments and stakeholders to meet these demands.

Non-medical prescribing for Therapeutic Radiographers - extending roles and advancing practice

Author(s): Nisbet H.
Source: Radiotherapy and Oncology; vol. 133
Publication date: April 2019
Purpose or Objective: Legislation has been in place in the UK to allow Therapeutic Radiographers to train as supplementary prescribers (SP) and the role has been successfully undertaken since 2005. Since March 2016 Therapeutic Radiographers can train as independent prescribers and this has been supported by the Royal College of Radiologists citing a positive patient experience, a more streamlined patient pathway and a sharing of the pressures of the clinical team's workload as just some of the very substantial benefits. One Advanced and two Consultant Therapeutic Radiographers at our Cancer Centre completed their qualification to become independent prescribers (IP) in June 2017. The objective of this poster is to outline the training pathway, scope of practice and clinical model for Therapeutic Radiographer non-medical prescribers (NMP) and to detail the advantages of this role. Material(s) and Method(s): The NMP must undergo an approved post-registration training programme that meets the prescribing standards set by the Health Professions Council before being annotated as an IP/SP on the register in order to be able to prescribe. As with most Trusts, the NMP must also be accepted into the role by the Trust's NMP lead for indemnity purposes. They may prescribe any licensed medicine for any condition within national and local guidelines, the practitioner's area of expertise and competence, and the overarching framework of the treatment of cancer. NMPs within our cancer centre run independent clinics to review and treat patients who require the support and management of radiotherapy treatment related conditions and toxicities before, during and after their course of radiotherapy treatment. NMPs work in close liaison with other healthcare professionals to ensure safe and effective treatment is prescribed and administered to patients to manage common radiotherapy toxicities and complications such as skin reactions, oral mucositis, pain, diarrhoea, constipation and emesis. Result(s): The introduction of NMPs supports the delivery of a seamless review service within this Cancer Centre. This benefits the patient by improving the patient pathway, reducing the need for repeated assessment and review, enhancing patient care, supporting the multi-disciplinary team and using the skills of the workforce more effectively. Since June 2017 NMP prescribing practice has averaged upwards of 10 prescriptions a week equating to a minimum saving of 3 hours of oncologist time otherwise spent in consultation and prescribing activity. Conclusion(s): NMPs can provide a more holistic approach to patient care, a smoother patient pathway, provide improved accessibility to appropriately prescribed medication and release pressures on the oncologists' workload.

Expanding training capacity

First year student radiographers' perceptions of a one-week simulation-based education package designed to increase clinical placement capacity.
Item Type: Journal Article
Authors: Partner, A.;Shiner, N.;Hyde, E. and Errett, S.
Publication Date: 2022
Journal: Radiography (London) 28(3), pp. 577-585

Abstract: INTRODUCTION: The radiography workforce is short-staffed and under increasing pressure to meet service pressures. Combined with the impact of Covid-19, where student face-to-face clinical time was abruptly halted for safety, there is cause to change the pedagogical approach to teaching diagnostic radiography to students, increasing capacity and ensuring the continuance of qualifying radiographers to support the profession. This paper shares the perceptions of first year student radiographers on a one-week simulation-based education package designed to replace one week of clinical

placement experience. METHODS: Two cohorts of first-year radiography students engaged in a one-week simulation-based education package. Simulations increased in complexity throughout the week and included conventional imaging techniques, mobile and theatre radiography, and cross-sectional imaging. Thirty-six students consented to the thematic analysis of their reflective blogs. RESULTS: Five themes emerged from the data: feeling anxious, understanding and skill development, building confidence, communication, and patient-centred care. CONCLUSION: The simulation package had a positive impact on students learning, no matter the stage at which it was incorporated into their clinical placement block. Students engaged well with the activities and saw value in the experience. The findings indicate that the simulation-based education package is a suitable replacement for one week of clinical placement, supporting skills development in students and providing increased placement capacity. IMPLICATIONS FOR PRACTICE: A successful, engaging simulation-based education package is presented, which first year student radiographers perceived as a suitable replacement for one-week of clinical placement. Further research into the acceptability of use of simulation-based education packages in second- and third-year student radiographers would be a useful next step.

A collaborative coaching approach to practice learning and placement expansion in gastroenterology Abstract only*
Author(s): Hill, Rebekah; Coughlan, Claire; Regan, Cathy; Whayman, Kathy; Duncan, Julie; Ball, Alison; Hibberts, Fiona
Source: Gastrointestinal Nursing; vol. 20 (no. 1); p. 16
Publication date: 2022
Practice learning is an essential part of pre-registration nursing education, and the number of placements needs to be expanded to keep up with demand, including in NHS gastroenterology services. This potential could be reached with a collaborative coaching approach, with groups of up to six students in each specialist area working together, supported by assessors using a coaching strategy.

Expanding physiotherapy placement capacity: Clinical educators' experiences of implementing a coaching approach to supervision...Physiotherapy UK Virtual Conference, November 5-6, 2021
Author(s): Smith ; Godley, S.; Miller, P.; Anderson, A.; Heap, S.
Source: Physiotherapy; vol. 114
Publication date: February 2022
Increasing by 50% the UK’s capacity for training students in the Allied Health Professions (AHPs), as recently mandated by Health Education England, represents a significant challenge for universities and healthcare providers alike. This challenge is, perhaps, felt most acutely in the domain of placement provision, where resources are not necessarily available to support the clinical supervision of large numbers of additional students. In response to this, a trial ‘coaching’ model of clinical supervision in physiotherapy was introduced by the researchers across two NHS Trusts in the North of England in 2020 and 2021. Commonly used in the practical training of medical students, this entails extensive group-based learning activity, rather than the one-to-one approach traditional across most AHP areas. The research reported herein explores the experiences of Clinical Educators (CEs) in implementing this approach for the first time, with a view to more clearly understanding its impacts upon their own working practices and those within their departments. Methods: The research team contacted all CEs who had (a) supervised one full cohort of students using the coaching model, while also (b) having prior experience of supervising using the traditional approach, inviting them to take part in an online semi-structured interview addressing their experiences. In line with pragmatic restraints,

the first N=10 to register interest were formally recruited, and all provided interviews (with a mean duration of 31 minutes). These interviews were transcribed verbatim, with redactions made only where essential for the protection of participants' identities. The full research team undertook investigation of the transcripts using Reflexive Thematic Analysis. Results: Four global themes emerged from the data. 1. Oversight and Management; all participants maintained initial apprehension around the workload involved in monitoring a group of students rather than an individual. In practice, most found that the students' monitoring and support of each other was highly effective. This ultimately provided the participants more time to work with individual problems, although some of these did relate to intra-group dynamics. 2. Teamworking and Learning; all participants found that they were largely facilitating learning, rather than being expected to simply 'deliver' it. Most students were reported to take stronger ownership of their own learning when working in teams, although those that did not could be proportionately more demanding on supervisory resources. 3. Patient Contact; universally, participants maintained that each student received more overall hands-on time with patients, and each patient received more overall physiotherapy, when the coaching approach was used. 4. Multi-Disciplinarity; while all students were reported to have profited in learning and confidence from greater opportunities to work with Multi-Disciplinary Teams, the participants described similar personal gains from having worked closely with university staff to coordinatively develop the coaching approach itself. Conclusion(s): Findings indicate that, despite initial misgivings, and some student teamworking difficulties that should not be overlooked, participants' experiences of implementing the coaching approach were overwhelmingly positive, indicating clear benefits for their own workloads, student learning and patient contact. Impact: This research indicates that the coaching approach is worth further investigation as a tool in expanding physiotherapy placement capacity.

Utilising digital health services to enable clinical placement expansion in a cardiac rehabilitation service...Physiotherapy UK Virtual Conference, November 5-6, 2021
Author(s): Phoenix ; Scordis, C.; Leslie, R.
Source: Physiotherapy; vol. 114
Publication date: February 2022
Purpose: The trust was awarded funding from HEE to increase physiotherapy placement capacity throughout this academic year. Aims of our project included:

- Improve student experience and provide them with vital skills for future delivery of healthcare.
- Improve educator experience.
- Enable students to experience rehabilitation during/post pandemic (patients with long term conditions and those that had suffered an acute event).
- Improve patient experience.

Increasing Opportunities for Trainees to Engage in Global Health Radiology: Radiology In Training Abstract only*
Author(s): England, Ryan W; Lugossy, Anne-Marie; Mollura, Daniel J
Source: Radiology; Aug 2021; vol. 300 (no. 2); p. E320
Publication date: August 2021
Medical students and radiology trainees play an integral role in serving the global community, and their opportunities to become involved in global health radiology have continued to grow.

Expanding training capacity for radiographer reporting using simulation: Evaluation of a pilot academy project
Author(s): Harcus, J W; Snaith, B

Source: Radiography (London, England : 1995); Nov 2019; vol. 25 (no. 4); p. 288-293
Publication date: November 2019
INTRODUCTION: Whilst there is increasing demand on radiology services in the UK, pressures are restricting the expansion of the multi-professional workforce. A pilot academy for radiography reporting was established to augment the traditional university and clinical education in a simulated environment using focussed teaching and real image worklists in a dedicated environment away from departments. METHODS: Located at a facility to replicate the clinical reporting environment, the emphasis of the nine-month pilot was to provide extensive 'hands-on' training to eight trainees. Evaluation of the academy was undertaken through focus groups, telephone interviews, and online surveys to consider the experiences of the trainees and their managers and mentors. RESULTS: There was overwhelming support for the academy from trainees, mentors, and managers. Key benefits included relieving pressures on department and mentors; providing an intense, structured, and safe environment to learn; and, perhaps most importantly, an extensive and cohesive peer-support network. Issues identified included conflict within departments due to differences in reporting style and the need for greater collaboration between the university, academy, and departments. CONCLUSION: The use of simulation in education is widely researched, however, there are a number of key factors that need to be considered when implementing it into practise. Peer-support and reflection is seen as essential for its success. Extensive dedicated time to focus on reporting alongside peers can support the development of these skills away from the clinical environment and as such can reduce pressure on service delivery and positively influence learner outcomes.

Service needs, capacity and innovations to extend clinical capacity for sonographer education: An online survey
Author(s): Harrison G.
Source: Ultrasound; 2019; vol. 27 (no. 2)
Publication date: 2019
Sonography is a shortage occupation, with evidence suggesting vacancy rates of between 5 and 25% in England. Ultrasound education is changing to meet service needs; however, one challenge being faced by education providers and clinical staff is the lack of clinical placement capacity. An online survey was sent to ultrasound managers to investigate innovations being used to increase clinical capacity for educating sonographers. Higher education providers were also contacted via email and telephone for their views on innovations in ultrasound clinical education. Additional objectives of the study included determining current and future estimated sonographer shortages and placement capacity. There were 72 responses to the questionnaire. The average shortfall in sonographers was 2.65, with 5% of departments reporting a deficit of 10 sonographers. The predicted number of additional sonographers required to provide the service in five years' time was an average of 4.6 sonographers, with 10% of departments anticipating they will need an additional 10 sonographers. Most departments were involved in clinical ultrasound education, with 51% of students being sonographers, averaging two per department. Several departments had additional capacity for teaching students, with a combined total of 45 places. A number of challenges were raised by respondents, particularly relating to issues of funding for student sonographers, balancing clinical and teaching requirements, staff shortages and the need to teach others, e.g. radiologists because of radiology shortages. A number of different methods are being used to extend the capacity for clinical education of sonographers; these include extended working days and weekend teaching lists, simulation and peripatetic clinical

educators. As ultrasound education is undergoing changes, to meet the increasing service needs, innovative solutions to increase placement capacity are needed. This study provides some ideas to assist education providers, clinical departments and stakeholders to meet these demands.

Diversity and Inclusion

The emerging diverse radiology workplace: case studies on the importance of inclusion in radiology training programs
Author(s): Omofoye and Bradshaw
Source: Academic Radiology
Publication date: June 2022
Radiology remains one of the least diverse fields in medicine. With increasing understanding of the benefits of workforce diversity on health care outcomes, radiology society leadership and radiologists are engaging in necessary efforts to improve diversity, equity, and inclusion. To date, much of the initiatives have focused on pipeline development and recruitment strategies. Literature from organizational psychologists, human resources and business strategists suggest that incorporation of inclusion could overcome some of the persistent barriers to workforce diversity. Using case studies from real-life residency programs, we describe challenges associated with being a member of an underrepresented minority group in radiology. We illustrate concepts in inclusion, proposing concrete ideas for personal and institutional growth in this area, as a strategy for improving workforce diversity and team effectiveness.

The interventional radiology gender gap: perspectives from the international IR training survey. Abstract only*
Item Type: Journal Article
Authors: Theodoulou, Iakovos;Dost, Samiullah;Burrows, Victoria;Lyall, Fiona;Wah, Tze Min and Makris, Gregory C.
Journal: British Journal of Radiology 95(1136), pp. 20210726
Publication Date: Aug 01 ,2022
Abstract: OBJECTIVE: This study sought to examine international interventional radiology (IR) training standards and perceptions. This survey aims to identify gender-based barriers and inequities effecting uptake, retention and experience of trainees in IR. METHODS: An anonymous survey was created using Survey Monkey and distributed as a single-use weblink via eight IR national and international societies around the world. Data analysis was conducted to highlight gender-specific trends and identify any differences. RESULTS: Motivation factors given for following a career in IR revealed gender differences in factors such as mentoring (8.7 F vs 21.6% M) and influence from senior colleagues (15.2 F vs 25.0% M). The overwhelming majority across both genders (82.6 F vs 81.3% M) agreed or strongly agreed that early exposure to IR training at Year 1 had a positive impact on career choice. A good work life balance was positively reported in 48.2% of female respondents compared to 45.2% in males. There were no significant differences in satisfaction with the various aspects of IR training. All differences observed between genders, exceeded the 0.05 significance level. CONCLUSION: This survey offers many insights into the current international landscape of IR training. Ongoing evaluation is vital to inform recruitment practices and initiatives to bridge gender inequities and attract more females into IR. ADVANCES IN KNOWLEDGE: This study has revealed that increasing and optimising mentoring opportunities may be the first step in increasing awareness of IR and maximising potential female recruits.

Female medical student impression of interventional radiology: what can we do to improve this?
Author(s): Huasen ; Suwathep, Perawish; Khan, Aazeb; Connor, Brigid; Holden, Andrew

Source: Diagnostic & Interventional Radiology; vol. 27 (no. 4); p. 542-546
Publication date: July 2021
The number of female medical students has increased significantly in the last decade due to increased gender diversity. However, the number of female doctors going into interventional radiology (IR) does not reflect this trend on an international scale. Methods: A standardized set of questions was created looking into medical students' demographics, awareness of IR, their general opinion, and whether they would consider IR as a potential career path. One-hundred female medical students from the United Kingdom, Germany, Poland, Spain, and New Zealand were approached either directly or via an online survey platform. The students ranged from first to final year study of Medicine and were between 18 and 30 years of age. Results: The majority of medical students (68%) were unaware of what IR is and 98% denied having teaching about IR in their university. Influential factors to choosing IR were more exposure to IR in medical school (15%), more options to allow family life (15%), direct training pathway to IR rather than via diagnostic radiology (13%), options of private practice (13%), and understanding more about radiation protection during pregnancy (12%).Conclusion: A lack of awareness about what IR is and misconceptions, particularly regarding radiation exposure during pregnancy, play an important role in discouraging entry into IR. Additionally, some of the concerns raised were directed at IR training pathway. Female IR consultants should also take leadership initiative to act as role models. More lectures and direct clinical exposure are paramount to their understanding of IR.

Diversity and equity: a radiology society's effort Abstract only*
Author(s): Chew ; Albazaz, R.; Taylor, S.A.
Source: Clinical Radiology; Jul 2021; vol. 76 (no. 7); p. 475-476
Publication date: July 2021
The Equality Act came into force in the UK in 2010 to consolidate and strengthen anti-discrimination law relating to areas such as ethnicity, gender, disability, religious belief, sexual orientation, and equal pay. The aims were to advance equality of opportunity for all and promote a fair and more equal society. Ten years on, inequalities remain. This was highlighted by the resurgence of the Black Lives Matter movement with UK and worldwide mass protests, which along with the COVID-19 pandemic, marked 2020. The gender gap also persists with The World Economic Forum's Global Gender Gap Report 2020 projecting that, on current trends, the gap will take 99·5 years to close. 1

Women in radiology: why is the pipeline still leaking and how can we plug it? Abstract only*
Author(s): Weigel ; Kubik-Huch, Rahel A; Gebhard, Catherine
Source: Acta Radiologica; vol. 61 (no. 6); p. 743-748
Publication date: June 2020
Today, >50% of medical students are women. This proportion, however, dramatically decreases throughout the higher levels of academia, a phenomenon described as the "leaky pipeline." This gender disparity is particularly pronounced in academic radiology, mirrored by a significant lack of women in editorial board positions, key authorship positions, and conference keynote lectures. The scientific invisibility is not only a key hurdle facing women in radiology, the lack of female role models and mentors in this context might also negatively affect career choices of young female radiologists thereby further widen the existing gender gap. In this article, the origins of the "leaky pipeline," the reasons for women's choice or rejection of careers in academic medicine, as well as solutions as to how the continued loss of a large part of the talent pool can be prevented, are discussed. Active monitoring and intervention are needed to identify problems, plan targeted actions, and evaluate their efficacy. Among those are measures that address

a lack of support in the workplace, specific mentoring needs of women, flexible working hours and opportunities to align work and family, financial constraints, and support for returners after career breaks. Cooperative steps of politics and universities need to be taken that ensure a sustainable way forward to enable many talented women in radiology to achieve their full potential.

Medical physics workforce: A global perspective Abstract only*
Author(s): Tsapaki V.; Tabakov S.; Rehani M.M.
Source: Physica Medica; Nov 2018; vol. 55 ; p. 33-39
Publication date: November 2018
The International Organization for Medical Physics (IOMP) performed a detailed study following the first survey published in 2015 with the particular objectives: 1) gather data on global medical physicists (MPs) workforce, 2) identify differences between geographical regions and, 3) investigate whether there is a gender dimension in higher hierarchy positions. Method(s): An online questionnaire was send to IOMP members and contact points in countries where no professional MPs society existed. Information requested: total number (N) of MPs (men and women), N of current elected executive board (EB) of societies and women proportion in the board, president gender and number of women presidents for the last 10 years. IOMP archives were also investigated for data on gender composition related to chairs of committees, officers and IOMP awardees. Result(s): Ninety three countries reported 29,179 MPs, from which 8702 were women (29.8%) and 20,477 men. The most dense MPs population was in Europe (34%), followed by North America (33%) and Asia/Oceania (24%). Societies EB women members constitute 21-40%, but rarely reach the presidential position. The IOMP archived data show that women MP representation decreases in higher hierarchy positions. Conclusion(s): Global MPs production does not meet clinical needs especially in Latin America/Caribbean and Africa (6% of total MPs workforce and small number of MPs/million of population). Rough estimations showed that approximately 58,950 MPs will be required by 2035. Women representation is away from the United Nations and European Commissions goals. Women representation in higher hierarchy position is low.

The Interventional Radiology (IR) Gender Gap: A Prospective Online Survey by the Cardiovascular and Interventional Radiological Society of Europe (CIRSE)
Author(s): Wah T.M.; Belli A.M.
Source: CardioVascular and Interventional Radiology; vol. 41 (no. 8); p. 1241-1253
Publication date: August 2018
A prospective online survey was conducted by the Cardiovascular Interventional Radiological Society of Europe (CIRSE) to evaluate the gender gap within interventional radiology (IR) and the barriers facing women in IR. Material(s) and Method(s): A questionnaire ("Appendix") was devised by the authors and the CIRSE communication and publication team and sent electronically to 750 identifiable female members of CIRSE. Responses were collected from 7 August to 24 August 2017. Result(s): The response rate was 19.9% (n = 149) with highest responses from UK (18%), Italy (11%), Germany (11%), Spain (7%), Netherlands (5%), France (5%), Sweden (4%), USA (4%). 91% of the respondents were between 31 and 46 years, 83% work full time, 62% spend > 50% of their working time in IR, and 67% practice in a university or tertiary referral institution. 85% were in the minority in their department. 52% had no leadership role in their department, but 67% expressed willingness to consider a leadership position. Their main concerns were work/family life balance, the risks of radiation exposure, the effect of pregnancy on training and practice and the male-dominated work environment. Conclusion(s): This survey highlights issues experienced by

women in IR. Clear guidance on concerns regarding radiation exposure particularly during pregnancy is needed. Structured and supportive training is required for female IRs who may wish to train or work flexibly. The male-dominated environment is discouraging, and a scheme to promote female IRs would encourage women to take on senior leadership positions and attract more women into the specialty.

Academy models

Endoscopy Training Academies
Source: HEE
Training Academies for Endoscopy are currently operational in the South East, South West, East of England, London, Midlands, North East & Yorkshire and North West regions.

Imaging Training Academies
Source: HEE
Training Academies for Imaging are currently operational in the South East, South West, East of England, London, Midlands, North East & Yorkshire, and North West regions

Reporting radiography academy training model: an evaluation of the impact for trainees and clinical service Abstract only*
Author(s): Sevens and McGivern
Source: Radiography 28(3) pp. 798-803
Publication date: August 2022
Introduction: Demand on imaging services continues to increase on a background of complex issues and barriers to care. Collaborative cross organisational working through the development of imaging networks is recommended to address these issues including managing reporting workloads. Standardisation of reporting practices and collaborative cross region reporting radiographer training has been recommended to be supported by a regional reporting radiographer academy model to achieve these aims. This research explores the perceptions of trainees and their managers/mentor who undertook radiographer academy training model with a view to integrated imaging network formalisation in the region. Methods: An online questionnaire was designed to capture qualitative and quantitative data with three phases; 1) trainees perception of the academy model, 2) trainees perception of the differences in training models and 3) the perceptions of the managers/mentors related to the academy model. Results: There were overwhelmingly positive opinions of the academy training model from both cohorts in this study, with the two main benefits emerging being the protected study time away from clinical departments and minimal disruption to clinical services due to reduced onus on the local mentors. Peer support was also highlighted as a positive aspect of the model which would facilitate future integrated imaging network working. Conclusion: The academy model has been well received by both cohorts in this study with positive outcomes highlighted and the model being seen as promoting and facilitating integrated imaging network working between departments. The small sample size of the study requires consideration when extrapolating the results to wider academy models, however some themes may be applicable. Implications for practice: Investment in the reporting radiographer academy model is justified and provides a practical alternative to the traditional model.

Support worker roles

A UK Survey exploring the assistant practitioner role across diagnostic imaging: current practice, relationships and challenges to progression
Author(s): Snaith B, Harris M.A., and Palmer D.
Source: British Journal of Radiology, 91 (1091)
Publication date: 2018

Objective: Skill mix has been established as one method of maintaining imaging service delivery, with vertical and horizontal substitution of roles and tasks. Assistant practitioners (APs) have been undertaking limited imaging practice for almost two decades, but there remains a paucity of evidence related to the impact of their roles. Methods: This article reports on an electronic survey of individual APs within the NHS in the UK to explore utilisation, role scope and aspirations. Results: Responses were analysed from APs (n = 193) employed in 97 different organisations across the UK. The majority work in general radiography or mammography, with very few responses from other imaging modalities. Training routes varied across modalities, with most achieving Band 4 under Agenda for Change on completion of education. Limitations on practice vary between organisations and modalities, with many reporting blurring of the radiographer-AP boundary. Many aspire to continue their training to achieve registrant radiographer status, although there were clear frustrations from respondents over the lack of overt career prospects. Conclusion: Integration of the role into imaging department practice does not appear to be universal or consistent and further research is required to examine the optimal skill mix composition. Advances in knowledge: Skill mix implementation is inconsistent across modalities and geography in the UK. Opportunities for further workforce utilisation and expansion are evident.

Assistant radiographer practitioners: Creating capacity or challenging professional boundaries? Abstract only*
Author(s): Palmer D, Smith B., and Harris M.A.,
Source: Radiography, Vol. pp. 247-251.
Publication date: 2018
Introduction: Over the last 2 decades the assistant radiographer practitioner (ARP) role has been introduced into NHS diagnostic imaging departments as a strategy to expand the workforce and create capacity. This skill mix initiative has not been implemented in a standardised way and there is limited knowledge of the current role scope within general radiography (X-Ray). Method: An electronic survey of ARPs working within UK diagnostic imaging departments was conducted. Both open and closed questions sought information regarding basic demographic data (age category; gender; geographic region), scope of practice (patient groups; anatomical regions; imaging outside of the diagnostic imaging department), limitations placed on practice, supervision and additional roles. Results: A total of 108 responses, including 13 trainees, were received. Most sites employ three or less ARPs in general radiography (n = 43/66; 65.2%), although 11 sites have five (range 1-15). The majority undertake imaging of both adults and children (n = 85/108; 78.7%), although limitations on age were described. Their scope of practice covers a broad anatomical range and included some non-ambulant patients. The level of supervision varied with some sites empowering ARPs to check the referral prior to examination (n = 25) or images post acquisition (n = 32) (both n = 20/66; $\chi 2 = 16.003$; 1df; p = 0.000). Conclusion: ARPs are helping to maintain capacity in imaging departments but we suggest there is further scope for expansion. The practice described by the post holders suggests that many are working beyond the scope envisaged by the radiography professional body.

Designing a curriculum for the assistant practitioner of the future: Ensuring interprofessional care aspects and other stakeholder requirements are met Abstract only*
Author(s): Baker D.,
Source: Radiography, Vol. 22, pp.161-165.
Publication date: 2016
The role of the Assistant Practitioner in radiography has been established for over 10 years. Wakefield, Spilsbury, Atkin and McKenna13 (2009) describe how the role was originally introduced to overcome a shortage of registered staff at that

time. Whilst there are clear overarching descriptions of what the role of the Assistant Practitioner is, Wakefield et al. concluded that there are many interpretations of the role and that there are inconsistencies between employers and subsequent uncertainty in workforce planners. Stewart-Lord, McLaren and Ballinger18 (2011) also found that there were a variety of roles and responsibilities undertaken by Assistant Practitioners in the field of radiography. This article outlines the curriculum design process for a foundation degree to develop Assistant Practitioners in diagnostic imaging and the associated challenges faced.

The introduction, deployment and impact of assistant practitioners in diagnostic radiography in Scotland
Author(s): Price R., Miller L., Hicks B., and Higgs A.,
Source: Radiography, Vol. 21, pp. 141- 145.
Publication date: 2015
This article describes the outcomes of an evaluation of the impact of introducing Assistant Practitioners (AP) roles into imaging departments in 13 of the 14 NHS Boards in Scotland. Between 2006 and 2009 some 34 individuals were trained as APs in diagnostic radiography with 33 subsequently taking up AP posts. In 2010 NHS Education for Scotland commissioned an evaluation of the impact brought about through introduction of the diagnostic imaging AP role in imaging departments. The research found that a minority of the managers had considered the workforce implications of introducing the new roles or the supervisory arrangements that would be required. In some sites implementation of the roles had resulted in the release of radiographers for additional training and higher level activities, but in others financial constraints had limited such initiatives. Managers believed that APs had helped maintain or improve service capacity and quality.

Leadership

Leadership in Interventional Radiology - Fostering a Culture of Excellence. Abstract only*
Item Type: Journal Article
Authors: Brady, A. P.;Uberoi, R.;Lee, M. J.;MullerHulsbeck, S. and Adam, A.
Journal: Canadian Association of Radiologists Journal (pagination), pp. no pagination
Publication Date: 2022
Abstract: This invited article reviews the current status of Interventional Radiology (IR), in terms of its status as a speciality, and outlines the conditions needed for IR to function optimally within healthcare settings. Guidance is offered in terms of developing an IR department, ensuring high-quality practice, dealing with administrative and political challenges, dealing with industry and creating a legacy.Copyright © The Author(s) 2022.

Reflections on leadership in advanced and consultant radiographic practice within the UK. Abstract only*
Item Type: Journal Article
Authors: Hudson, D.
Journal: Journal of Medical Imaging and Radiation Sciences 52(2), pp. 164-171
Publication Date: 2021
Abstract: Introduction: This Educational Perspective provides an overview of how leadership fits into advanced and consultant radiographic roles within the UK setting. It draws on research in the area as well as reviewing some of the wider healthcare literature beyond the medical radiation sciences. The reflections outlined suggest how leadership at these levels may look and differ in practice. Discussion(s): Leadership should be seen as fundamental to practice and not necessarily a discreet element to either role, but one that supports all other areas. The

proportion of the role that leadership takes up, along with the degree of influence, increases from advanced to consultant practice. Consideration over conflict with management and leadership within roles is also important. Ultimately leadership is about relationships with people, for which interpersonal skills are required, along with establishing networks, supported by training and development to maximise effectiveness. Conclusion(s): A clearer understanding of leadership is needed to help conceptualise and measure its impact at advanced and consultant levels of practice. The content is intended to provide an opportunity for reflection and discussion around the topic, serving as a development tool in practice.Copyright © 2021

How do consultant radiographers contribute to imaging service delivery and leadership?.
Item Type: Journal Article
Authors: Snaith, B.;Clarke, R.;Coates, A.;Field, L.;McGuinness, A. and Yunis, S.
Journal: British Journal of Health Care Management 25(1), pp. 41-47
Publication Date: 2019
Abstract: Background: Consultant radiographer numbers remain low despite the ongoing capacity challenges in diagnostic imaging. This is compounded by the limited evidence of how such roles can positively impact on service delivery, particularly in relation to their leadership expectations. aims: To examine the activities undertaken by consultant radiographers; evidence the impact of the roles, and consider whether the roles encompass the four domains of consultant practice. Method(s): Six consultant radiographers employed in a single NHS Trust completed an activity diary over a period of 7 days. Interval sampling every 15 minutes enabled the collection of a large volume of complex data. Finding(s): All consultants worked beyond their contacted hours. The documented activities demonstrate the breadth of the roles and confirmed that the participants were undertaking all four core functions of consultant practice. conclusion: The impact of the roles stretched beyond the local department and organisation to the health system and wider profession. Copyright © 2018 MA Healthcare Ltd. All rights reserved.

Leadership and the everyday practice of Consultant Radiographers in the UK: Transformational ideals and the generation of self-efficacy.
Item Type: Journal Article
Authors: Booth, L.;Henwood, S. and Miller, P. K.
Journal: Radiography 23(2), pp. 125-129
Publication Date: 2017
Abstract: Introduction This paper outlines findings from a broader, two-year project investigating the role of Consultant Radiographers (CRs) in the UK, focussing specifically on the leadership aspect of that role. Methods Using a qualitative-thematic approach, the leadership-related experiences of a purposive sample of six participating CRs are explored, alongside the systems through which they evaluated how successful they had been as leaders. Results It is evidenced that many of the ways in which participants describe their own leadership practice, particularly in the intra-team domain, is consistent with the precepts of the Transformational Leadership Model. For example, they highlight how they have asserted positive influence and encouraged collective action and decision-making. However, the experiential focus of the analysis reveals that in specific examples of practice, the transformational approach was not always seen as the most useful route to a productive outcome given constrictions on time and other resources within real professional environments. More 'direct' managerial approaches were sometimes deemed necessary, and at others leadership was reduced to simply 'solving other people's problems'. It was also found that the manner in which participants evaluated their own success as

leaders was a practical concern, based in part upon having satisfied 'hard' institutional goals, but also on the more personal business of having affirmatively 'surprised' oneself, or a general sense of feeling trusted by colleagues. Conclusion These findings may help support CRs in the business of real leadership, not least through better understanding how even apparently mundane outcomes can have significant impacts on professional self-efficacy. Copyright © 2016

Sustainability and climate change

The scope for radiology to contribute to the NHS net zero target: findings from a survey of radiology staff in the UK. Abstract only*
Item Type: Journal Article
Authors: Gendy, D.;Walters, H.;O'Mahony, E. and Zaman, S.
Journal: Clinical Radiology 77(8), pp. e667-e672
Publication Date: 2022
Abstract: Aim: To assess attitudes towards the climate emergency among radiology staff and to identify current practices that may contribute towards the National Health Service (NHS) net zero target. Material(s) and Method(s): An online survey of radiology staff was conducted assessing current attitudes to the climate emergency. Further questions focused on staff travel, home working, virtual conferences, and recycling. Result(s): Two hundred and forty-two responses were received from all staff groups within radiology. There were high levels of concern about the climate emergency among radiology staff. Active travel accounts for a relatively small proportion of commuting related to provision of radiology services. Some energy-saving measures are implemented commonly in radiology departments but these are likely to account for only a small proportion of energy use within a department. Conclusion(s): There is significant scope for reducing the carbon footprint of radiology services by reducing travel, both for work and for radiology education. We discuss the potential for large savings related to energy-saving measures. Copyright © 2022 The Royal College of Radiologists

Radiology and the Climate Crisis: Opportunities and Challenges-Radiology In Training. Abstract only*
Item Type: Journal Article
Authors: Buckley, Bryan W. and MacMahon, Peter J.
Journal: Radiology 300(3), pp. E339-E341
Publication Date: 2021
Summary: Radiology trainees have an important role to play in advancing more sustainable and environmentally conscious radiology practices through research, education, and local advocacy. Introduction: The COVID-19 pandemic continues to challenge our perspective of “normal” within every health care system around the world. The willingness to adapt and rapidly change normal practices has been a crucial component of our response to the pandemic. Within radiology specifically this has been no different, with drastic changes to some areas of practice, including remote reporting, new services aimed specifically at the needs of patients with COVID-19, and even the redeployment of radiology staff. With vaccination programs progressing worldwide, there is now hope that an end is in sight. The ability of health care and radiology to adapt, as it has over the past year, must be harnessed for the next challenge to world health—the climate crisis. As radiology trainees, we must lead in pressing the issue.

The challenge of environmental sustainability in radiology training and potential solutions. Abstract only*
Item Type: Journal Article
Authors: Peters, Seren;Burrows, Susan and Jenkins, Paul
Journal: Postgraduate Medical Journal 97(1154), pp. 755-759
Publication Date: Dec ,2021
Abstract: The environmental impact of training has been poorly

recognised for many years. With the emergence of high-profile climate activists and a wider appreciation of the need for sustainable healthcare, training within radiology can no longer be excused from its responsibility to consider the environment in its actions. In this paper, we aim to evaluate the environmental impact of the travel undertaken by trainees within the Peninsula training programme, with the aim of developing practices and providing suggestions (evidence-based where possible) on how to improve the impact on the environment of trainee travel. We envisage that many of the lessons and suggestions may be transferrable to other training schemes in the UK and further afield. During the early months of 2020, in addition to the environmental crisis, COVID-19 escalated to a pandemic resulting in the alteration of working practices across the UK (and the rest of the world). This led to many environmentally beneficial working practices being adopted in Radiology in the South West Peninsula Deanery, and throughout this paper we have evaluated these changes and used our collective experience of these to inform our suggestions on how to improve the environmental sustainability of Medical and Radiological training. Copyright © Author(s) (or their employer(s)) 2021. No commercial re-use. See rights and permissions. Published by BMJ.

Environmental impact of radiology training within the southwest
Item Type: Conference Proceeding
Authors: Jenkins, P., Peters, S. and Burrows, S.
Publication Details: Clinical Radiology. Conference: RCR20. Virtual, Online. 75(Supplement 2) (pp e5); W.B. Saunders Ltd, Publication Date: 2020
Abstract: Category: Management Purpose: Commuting Results in significant emissions each year, accounting for 4.5% of the total carbon emissions in the UK, with the NHS as a whole contributing 25% of the carbon footprint of the public sector. The South West England, Peninsula deanery is geographically very large and radiology trainees commute around the Peninsula region to enable training - often by car due to poor public transport links. The Peninsula Radiology Academy, based in Plymouth, opened in 2005 and provides a centralised training hub. It is affiliated with five hospitals which provide a networked overnight on-call system. We aim to establish the environmental impact of radiology training within the southwest Methods and materials: A survey was sent to all radiology registrars within the deanery. Information on the number of miles travelled, less-than-full-time (LTFT) status, car age, fuel type, and fuel efficiency was obtained. The number of miles travelled and resultant carbon footprint was then calculated for each trainee. Result(s): On average ~1.84 tonnes of CO2 is released into the atmosphere per year per trainee. This results in a total of ~118 tonnes of CO2 from the training programme, equating to 71 return flights from London to New York. This figure would be higher had centralised academy teaching, networked on-calls and remote reporting not been utilised Conclusion(s): The academy set-up, networked on-calls and remote reporting have reduced the carbon footprint of radiology training within the southwest. However, further efforts to reduce the environmental impact of radiology training within the southwest are required.Copyright © 2020

Skill mix

Direct Access and Skill Mix Can Reduce Telephone Interruptions and Imaging Wait Times: Improving Radiology Service Effectiveness, Safety and Sustainability. Abstract only*
Item Type: Journal Article
Authors: Watura, Christopher;Kendall, Charlotte and Sookur, Paul

Journal: Current Problems in Diagnostic Radiology 51(1), pp. 6-11
Publication Date: 2022
Abstract: Unnecessary telephone calls to reporting radiologists impede organizations' workflow and may be associated with a higher chance of errors in reports. We conducted a prospective study in two cycles, which identified vetting plain CT heads as the most common reason for these calls and vetting CT urinary tracts (KUB) was also frequent. Clear vetting and protocolling guidelines exist for both of these scans, which do not routinely require discussion with a radiologist. Therefore, our approach was to create new flow diagrams to allow radiographers to directly accept routine requests for plain CT head and CT KUB scans in- and out-of-hours. After this intervention, incoming calls to radiology for vetting CT heads decreased by 30% and for vetting CT KUBs by 100%. The average wait time between CT head request and scan completion was reduced by 40%. The number of CT head and CT KUB scans performed remained stable. In future, maximizing the benefit of direct access in-patient imaging pathways will rely on effective and sustained communication of the protocols to the junior clinical staff rotating through the organization, as they were responsible for requesting the vast majority of tests. Copyright © 2021 Elsevier Inc. All rights reserved.

Embracing Skill Mix in the Clinical Oncology Workforce - Capturing Impacts of Consultant Therapeutic Radiographers in the UK.
Item Type: Journal Article
Authors: Tsang, Y.;Roberts, N.;Wickers, S. and Nisbet, H.
Journal: Clinical Oncology 33(5), pp. e239-e242
Publication Date: 2021
About 3.7 million new cancers are diagnosed annually in Europe, with more than 1.9 million associated deaths [[1]]. Radiotherapy is an essential treatment modality in cancer management and is recommended in more than 50% of cases [[2],[3]]. In the UK, there is a growing demand for radiotherapy services due to the reported 3% increase in cancer prevalence per year [[4]]. This increase in demand is set against a background of declining growth in the non-surgical oncology medical workforce. Vacant consultant clinical oncologist posts have more than doubled over the past 5 years to a 10% vacancy rate in 2019, with this shortfall predicted to rise over the next 5 years [[5]]. An emphasis on skill mix and collaboration with the multidisciplinary team has been highlighted as one way to help meet demand and patient expectation.

Competencies

Developing a Framework for Knowledge Based Competencies
Item Type: Conference Proceeding
Authors: Hawkes, N., Eley, C. and Smith, G.
Diagnostic Endoscopy Training
Publication Date: 2022
Publication Details: Gut. Conference: Annual Meeting of the British Society of Gastroenterology, BSG 2022. Birmingham United Kingdom. 71(Supplement 1) (pp A101); BMJ Publishing Group,
Abstract: Introduction In the UK, the JAG oversee certification in diagnostic upper and lower GI endoscopy supported by validated DOPS forms, the JETS e-portfolio and evidence-based training pathways. Given the broad range of professions training in endoscopy, there is a need to provide a definition of the knowledge required to practice safely and to ensure that current learning materials cover that definition. Methods We aimed to 1) Develop a blue print for an UGI and LGI endoscopy KBC framework and 2) Map existing learning resources to the frameworks to assess degree of coverage and identify KBC gaps. To ensure relevance to practice we assessed current

SAC, ISCP and European Specialty Examination in Gastroenterology and Hepatology curriculum documents and the Endoscopic Non-Technical Skills (ENTS) framework. We used an assessment-based blue print grid and adapted this for UGI and LGI procedures. We then analysed and mapped content of existing learning materials - current e- Learning for Healthcare (e-LfH) e-learning modules and SLATE courses to grid codes in the UGI framework to assess the profile of their content. Results We developed an assessment-based blueprint matrix comprising 4 theme domains encompassing 18 themes for UGI and 19 for LGI (A1-5: Case selection, B1-3: equipment and service, C1-2: normal finding, D1-8/9: pathological findings by site) and 3 topic domains subdivided into 11 sub areas, coded a-k, categorising each item as basic sciences, service or clinically focussed. Diagnostic codes linked to the pathological sites provide further granularity to the frameworks allowing coded linkage to questions and the basis for asset library collections. E-LfH courses map to all domains and 17/18 themes, with good coverage of clinical and some service KBCs (including ENTS). SLATE courses teach lesion recognition skills - content maps to all domains and 14/18 themes; providing concentrated learning in clinical anatomy & diagnosis areas. These tools were complementary, covered KBCs in different depths, with identifiable gaps in basic science areas, GI physiology, endoscopic reporting, or endoscopy unit management. Conclusions KBC Frameworks for Diagnostic UGI and LGI endoscopy provide clarity for learners on what they need to know to perform high quality endoscopy. Learning resources displayed different profiles when mapped to the UGI framework, showing where coverage is strong and identifying learning gaps. This may aid commissioning of new resources to address gaps, and allow collaboration towards a comprehensive and inter-connecting range of learning materials to support endoscopy KBCs.

Competencies and training of radiographers and technologists for PET/MR imaging - a study from the UK MR-PET network
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Source: European journal of hybrid imaging; vol. 4 (no. 1); p. 1
Publication date: 2020
Background: After the success of PET/CT as a clinical diagnostic tool, the introduction of PET/MRI is a natural development aimed at further improving combined diagnostic imaging and reduced ionising radiation dose for half-body imaging. As with PET and CT, the combination of PET and MRI presents a series of issues that need to be addressed regarding workforce training and education. At present, there is a lack of agreement over the competencies, training requirements and educational pathways needed for PET/MRI operation. In the UK, following the establishment of the MR-PET imaging network, a task force was created to investigate the status of the workforce training, identify gaps and make recommendations regarding staff training. To do this, we ran a national survey on the status of the workforce training and the local practices across the UK's seven PET/MRI sites, reviewed the literature, and convened a panel of experts, to assess all the evidence and make recommendations regarding PET/MRI competencies and training of nuclear medicine technologists and radiographers. Results: There is limited literature available specifically on competencies and training for technologists and radiographers. The recommendations on the topic needed revisiting and adapting to the UK MR-PET network. The online survey confirmed the need for developing PET/MRI competencies and training pathways. Local organisational structures and practices were shared across the seven sites, based on models derived from experience outside the UK. The panel of experts agreed on the need for PET/MRI competencies

and training strategies. Professional organisations started collaborative discussions with partners from both Nuclear Medicine and Radiography to set training priorities. Multidisciplinary collaboration and partnership were suggested as a key to a successful implementation of competencies and training. Conclusions: The report identified the need for establishing competencies for the PET/MRI workforce, particularly for technologists and radiographers. It also helped defining these competencies as well as identifying the demand for bespoke training and the development of local and national courses to be implemented to fulfil this new training need.

Radiography students achieving competencies through structured interprofessional education.
Item Type: Journal Article
Authors: Botha, R. and Sebelego, I-K
Journal: Radiography (London) 28(1), pp. 115-123
Publication Date: September 2021
Abstract: INTRODUCTION: Interprofessional education (IPE) takes place when representatives of at least two professions work and learn together, about and from each other to provide optimal healthcare. For the successful implementation of an IPE programme, conceptualisation, planning, and operationalisation and coordination among the various professions is crucial, to assist students to obtain the desired competencies of such a programme. The purpose is to investigate if a structured IPE programme assisted radiography students to achieve competencies. METHODS: An online questionnaire was compiled from literature and completed by radiography students who participated in a structured, three-week-long IPE programme. The questionnaire was mainly quantitative (using a Likert scale), though it also consisted of qualitative elements (open-ended questions). A Fischer's Exact test was used to compare the responses of three different year groups. RESULTS: Feedback from the radiography students (n=63) indicated that they achieved this IPE programme's specific competencies: role clarification, interprofessional communication, teamwork, person-centered care and values and ethics. There was good correlation between the feedback from all three year groups. The feedback on the open-ended questions correlated with the quantitative feedback, though some students felt excluded, as there was little reference to their particular profession in the simulation session of the IPE programme. CONCLUSION: The results of the study indicate that radiography students achieved the prescribed competencies of a structured IPE programme. The results provide insight into ways to improve the IPE programme. A recommendation emanating from the results of this study is that, to improve the experience of all healthcare professions students, structured IPE programmes have to promote inclusive teaching and learning. IMPLICATIONS FOR PRACTICE: Radiography students that participate in a structured IPE programme develop competencies necessary for effective collaborative clinical practice.

Competency Frameworks

Sonographer Career Framework
Source: HEE
Publication date: June 2022

Standards for the education and training of reporting practitioners in musculoskeletal plain radiographs
Source: The Royal College of Radiologists
Publication date: 2022
This joint publication from the Royal College of Radiologists (RCR) and College of Radiographers (CoR) defines the education and training required for all members of the multi-professional team who report MSK plain radiographs. This includes the learning outcomes to be achieved, minimum requirements for assessment, and recommendations on how education programmes for MSK plain film reporters should be designed and structured.

Development of a digital competency framework for UK Allied Health Professional
Source: Health Education England
Publication date: 2020
This digital competency framework has been developed over the last year (2019-20) as the primary project within one of the inaugural Topol Digital Health Fellowships. The Topol Review, “Preparing the healthcare workforce to deliver the digital future”, provides recommendations to guide the implementation of innovative technology in practice and facilitate the development of the healthcare workforce. This project was undertaken to support the educational recommendations to support a digitally enabled health system (E1-14)

Professional Competency Framework for Sonographers (Australia)
Source: Australia
Publication date: October 2021
The project developed a professional competency framework for sonographers, which included four major domains: detailed competency standards, sonographer knowledge, sonographer attitudes and a holistic competency matrix
See also article on the development of the framework “Development of a professional competency framework for Australian sonographers – perspectives for developing competencies suing a Delphi methodology”

Palliative Care Competency Framework: Radiography, Radiation Therapy, Nuclear Medicine; Magnetic Resonance and Diagnostic Medical Sonography
Source: Alberta Health Services (Canada)
Publication date: September 2020
This document provides a reference and opportunity to engage in self-assessment of your own knowledge, skills, behaviors and attitudes toward palliative care. Competency statements are organized by areas of expertise for ease of recognition (competency numbers are for reference only). A checkbox marked ‘Educational Opportunity’ beside each competency helps to identify competencies which may require further education and training. Space is provided at the end of each domain for additional notes, including questions or missing competencies you may wish to communicate to the report authors. A glossary of terms is provided in an Appendix.

Training and education framework for radiographers undertaking CT Colonography as part of the Bowel Cancer Screening Service
Source: Society and College of Radiographers
Publication date: March 2018

The purpose of this document is to: 1. Provide a clear framework for the training and education of radiographers who are engaged in delivering a CT Colonography (CTC) service for symptomatic and screening patients 2. Synthesise and disseminate a recommended curriculum and available learning opportunities for radiographers working within the CTC service in order to inform the development of in-house, short course and credit-bearing education programmes 3. Assist employers, commissioners and patients to understand the role, competences and level of education commensurate with each level of CTC practitioner 4. Assist CTC service providers to develop and revise job plans and role descriptions for CTC practitioners, identifying professional development requirements in accordance with BCS QA guidelines (1) and the Society and College of Radiographers education and career framework (2) 5. Provide a point of reference against which structured workplace skills and competencies can be mapped in order to evidence opportunities for accreditation of prior experiential learning (APEL)

Multiprofessional framework for advanced clinical practice in England
Source: NHS
Publication date:2017
This framework builds upon the definition of advanced clinical practice in England. This was developed and agreed by all stakeholders. It is designed to enable a consistent understanding of advanced clinical practice, building on work carried out previously across England, Scotland, Wales and Northern Ireland. The core capabilities for health and care professionals at the level of advanced clinical practice are articulated in this framework and these will apply across all advanced clinical practice roles, regardless of the health and care professional's setting, subject area and job role. Use of the word capabilities is intended to convey the extent to which health and care professionals working at the level of advanced clinical practice can adapt to change, generate new knowledge and apply it in different ways to formulate and problem solve within a context of complexity and uncertaintyii .

Education and Career Framework for the Radiography Workforce
Source: Society of Radiographers
Publication date: January 2013
This third version of the Education and Career Framework is intended for the guidance and support of the whole imaging and radiotherapy workforce. It is an interactive web-based tool, which members can use to support their individual professional development in what is, for many, likely to be a portfolio career pathway. In this way, a degree of future-proofing has been built in. This tool enables individuals to navigate a range of learning and development opportunities starting from where they are and includes example pathways, outcomes, indicative curricula where relevant, case studies and a wealth of hyperlinks to relevant websites and resources. The Framework is intentionally non-prescriptive, reflecting the changing service context.
Revised Education and Career Framework (ECF) Update June 2022 Access restricted to members

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