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ABSTRACT BOOK

VISION AND VALUES:
PUTTING PEOPLE FIRST

BIR British Institute of Radiology

CoR THE COLLEGE OF RADIOGRAPHERS

IPEM Institute of Physics and Engineering in Medicine

SESSION A2

A2.1 Mapping the migrant diagnostic radiographers in the UK: a national survey

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Introduction: The international recruitment of healthcare workers remains a UK strategy to manage workforce gaps and maintain service delivery.[1] Although this is not a new phenomenon, the profile of this has been raised by chronic shortages. There is a need to profile the current international recruits and identify individual motivators to understand the opportunities for future **recruitment** and retention initiatives.
Method: A UK-wide electronic survey was conducted using the Jisc platform. The survey was promoted using social media and researcher networks. Eligibility criteria were: diagnostic radiographers, internationally educated, and currently working in the UK.
Results: 226 responses were received. Most were working in England (93%) and 58% were under 35 years of age. The majority had migrated having moved to the UK since 2020 (65%) and the main drivers were career and/or training opportunities (84%). Initial education was in 30 different countries, the highest number originating from Africa and Asia, with a median of 6 years post-qualification experience (IQR 4-11yrs). Despite experience, most were employed in band 5 (n=72) or band 6 posts (n=95). 56% had postgraduate qualifications on entry and a third had undertaken postgraduate study in the UK. Most respondents were married (63%) and 59% are currently intending to remain in the UK long term.
Conclusion: Based on the survey responses, internationally recruited diagnostic radiographers are motivated to work in the UK through career progression opportunities. The profile is one of a relatively young, educated workforce with family commitments but offers a long-term retention opportunity.

References

[1] NHS England. (2023). NHS Long Term Workforce Plan. Available at: https://www.england.nhs.uk/wp-content/uploads/2023/06/nhs-long-term-workforce-plan-v1.2.pdf. (Accessed December 21, 2023).

A2.2 Integration experiences of internationally educated radiographers working in the UK

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Background: Diagnostic radiography is experiencing severe workforce deficits at a time of expanding demand on services. As part of the strategy to meet demands and sustainably service delivery, recruitment of internationally educated diagnostic radiographers to the NHS has and is being undertaken$_1$.
Method: A JISC survey was distributed throughout the UK via social media and professional networks. The survey comprised demographic, multi-response, Likert scale and free text questions. This presentation reports on the integration experiences, whilst the mapping of migrant diagnostic radiographers from this survey is reported separately. Ethical approval (EC27952).
Results: 226 diagnostic radiographers completed the survey. The majority of respondents felt supported by their colleagues and managers to address any anxiety they felt and expressed satisfaction with the training/mentorship received during their induction. However, there were challenges faced by respondents in their personal transition domains such as feelings of not knowing what to expect and nervousness while adjusting to new work environments. Half felt isolated after starting their new roles while a third felt unable to "fit-in" culturally within the team. Some of these challenges correlated positively with variables such as participants' continent of origin and intentions to remain in the UK.
Conclusion: There are positive indications that internationally educated diagnostic radiographers feel supported to enable their integration into the UK workforce. However, experiences of personal and work transition challenges still exist especially among radiographers from certain continents. This indicates that more can be done to integrate, support, value and maximise talent.

A2.3 Implementation of a collaborative radiotherapy open day to improve student recruitment and retention

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Purpose: Attrition rates amongst students from pre – registration Therapeutic Radiography (TR) programmes are as high as 42.9% in the UK (1.) 'Wrong career choice' has been identified as a major factor in student attrition, with 70% of higher education institutions (HEI) citing this when surveyed (2).

Methods: Four collaborative open day events provided prospective students with information and practical demonstrations on the following:

1. A day in the life of a student
2. Pre-treatment
3. Treatment and imaging
4. Career development opportunities

Pre and post visit questionnaires were completed using a Likert scale.

Results: A significant increase of prospective student's knowledge was identified following attendance at an event. 91% of participants had an increased level of knowledge and understanding regarding a career in radiotherapy (table 1). 79% of participants expressed an increased level of knowledge surrounding the day to day role of a TR (table 2). 89% of prospective students had increased understanding of clinical placements.

Participants describe the event as an "informative insight into Therapeutic Radiography", and that it allowed them to gain "a real feel for the job". Crucially, respondents explained that the open day event "made me realise Therapeutic Radiography is the right course for me", and that "it's definitely the job I want to go in to".

Conclusion: The results demonstrate the effectiveness of an open day at increasing prospective student's knowledge, indicating that the event has the potential to reduce 'wrong career choice' attrition through ensuring students are fully informed prior to admission.

Table

Table 1: On a scale of 1-5 how much knowledge and understanding do you feel you have about a career in radiotherapy?

Table 2: On a scale of 1-5 how much knowledge do you feel you have about the day to day role of a Therapeutic Radiographer?

References

1. The College of Radiographers (2021) Approval and Accreditation Board; Annual Report 2020-2021. Available at: https://www.collegeofradiographers.ac.uk/about-the-college/document-library/documents-and-reports/approval-and-accreditation-board;-annual-report-20 (Accessed 20th July 2023).
2. Health Education England (2021). Reducing Pre-registration Attrition and Improving Retention in Radiotherapy. Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/reducing-pre-registration-attrition-and-improving (Accessed 20th July 2023).

A2.4 Managing the workforce crisis: An overview of the InHealth approach to international recruitment, wellbeing and E,D&I

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By 2030, the WHO estimates there will be a global shortage of approximately 18 million health workers, 20% of the workforce needed. The UK healthcare workforce is not growing fast enough to keep up with demand, and urgent actions are needed to ensure safe patient care, improved outcomes, innovation and service development.
There are many approaches to solving this problem, and in addition to local and national actions, InHealth have developed an international stream so a significant number of new staff join us from abroad every month. Staff have been recruited into many roles including radiographers and nurses from a wide range of countries.
Training and support can start from the home country, and then staff join a tailored programme in the UK to ensure they are competent, confident, welcomed into the team and fully supported to start their life here.
For international staff there are additional considerations around wellbeing and E,D & I, and InHealth continue to optimise how we look after this group of staff and learn from them too.
Our approach incorporates key themes in the NHS People Plan with a focus around looking after our people, growing for the future and how we support our people now and for the long term.
Our joint presentation will include an overview of the InHealth international recruitment programme from our CMO, and a personal journey with highs and lows from one of our senior radiographers who joined us in the pandemic and is now also a Wellbeing Champion.

https://www.kingsfund.org.uk/insight-and-analysis/data-and-charts/nhs-workforce-nutshell
https://www.england.nhs.uk/statistics/statistical-work-areas/rtt-waiting-times/
https://kpmg.com/xx/en/home/insights/2019/03/human-solving-the-global-workforce-crisis-in-healthcare.html

A2.5 Integrating radiography apprenticeships within the independent healthcare sector: A service evaluation of apprentice assistant practitioners' experiences

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Background: In 2023 The Long-Term Workforce Plan was released with an emphasis on increasing the number of apprenticeship programmes to accommodate the increasing demand on health services (1). The increasing career pathway opportunities enable radiology assistants to undertake training to become qualified assistant practitioners (2). In May 2023, a strategic plan was implemented within our private hospitals to provide opportunities for workforce development within radiography.
Aim: To explore the experiences of apprentice assistant practitioners (radiography) working within the independent healthcare sector.
Method: Seven apprentices (N=7) were recruited who had completed their first year of study. An online focus group was used to perform the service evaluation. The qualitative data derived from the focus groups were compared and analysed using interpretative phenomenological analysis (IPA) to gain an in-depth understanding of the lived experiences of being a learner and employee.
Results: Three superordinate themes emerged from the data set: 1) Challenges surrounding obtaining a number of x-ray projections for portfolio 2) building awareness of radiography apprenticeships amongst peers and clinical educators, 3) effective time management practices of study and work. Whilst these findings corroborated with existing literature (3), there are potential strategies to improve these findings.
Conclusion: Potential strategies to support apprentices in meeting their required x-ray projections would be to build relationships and offer reciprocal placement opportunities with NHS trusts. In addition, the use of simulation is gaining momentum to provide more application of learning in the workplace. Raising awareness of apprenticeships within radiography through strategic workforce communications would be advantageous.

References

1. NHS England (2023) NHS Long Term Workforce Plan. Available at: https://www.england.nhs.uk/publications/nhs-long-term-workforce-plan/ (Accessed 10 January 2024).
2. Society of Radiographers (2020) Assistant Practitioners. Available at: https://www.sor.org/learning-advice/career-development/practice-level-information/assistant-practitioners (Accessed 12 January 2024).
3. Green, D, Heales, C, Hughes, D, Marsden, A and Mills, J. (2022) Exploring current undergraduate student perspectives on the introduction of the degree apprenticeship scheme in diagnostic radiography – a single institution study. Radiography 28(4): 1058-1063.

A2.6 Apprenticeships and support worker career development

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Background: Workforce challenges in the NHS presents a greater threat to health services than funding, with current shortages of more than 100,000 staff [1]. The apprenticeship levy was introduced in 2017 with the first programme launched in 2020. There has been considerable work done to develop and enhance apprenticeship degrees[2]. Apprenticeship training differs from the conventional degree route [1]. When first introduced, apprenticeship training for diagnostic radiography raised questions about its impact on the existing market, capacity and how current clinical departments may struggle with day-to-day management. Radiation department assistants (RDA's) have the option of foundation degree apprenticeship level 4/5 and on the bridging to top-up apprenticeship to a diagnostic radiographer. There are options for the full bachelor's degree.

Purpose: This work high-lights what is offered in the trust with the running of engagement sessions for those members of staff who may be looking at career development clinically into diagnostic radiography. In addition, following selection some 'introduction to imaging sessions' are run in the shape of in-house teaching on the basics of imaging. It will also discuss some of the issue which have risen and what the future may hold.

Summary of content: This work looks at current issues including capacity and how the apprentices fit in. What our trust career pathway looks like for support staff. How we support our apprentices, so their experience and knowledge is comparable with undergraduate training. What does the future hold, can we support those on T-levels and will that benefit our work force?

References

1. The health care workforce in England: Make or break? (no date) The King's Fund. Available at: https://www.kingsfund.org.uk/insight-and-analysis/reports/health-care-workforce-england (Accessed: 11 February 2024).
2. (No date) Diagnostic Imaging Network Workforce guidance. Available at: https://www.england.nhs.uk/wp-content/uploads/2022/04/B0418_Diagnostic-imaging-network-workforce-guidance_April-2022.pdf (Accessed: 11 February 2024).

SESSION B2

B2.1 Embedding Peer Mentoring for AHPs into the curriculum for healthcare education and training

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Background: The Reducing Pre-registration Attrition and Improving Retention (RePAIR) report (2018) discussed attrition within preregistration clinical education and the first 2 years post qualification[1]. It makes recommendations to improve attrition rates in undergraduate healthcare education. Recommendation 5 states all Higher Education Institutions (HEIs) should review their approaches to a buddy scheme for healthcare students. The Allied Health Professions (AHP) Peer Mentoring Scheme has run successfully within our healthcare programmes particularly in Speech and Language Therapy (SLT) and Diagnostic Radiography.

Purpose: This project explores how AHP Peer Mentoring embedded into the curriculum enhances peer support amongst AHP students.

Summary of Content: The work was originally running for many years in the SLT programme providing peer support and a culture of belonging across students, designed to supplement the role of personal tutor. As the model evolved it naturally aligned with the RePAIR project which further validated the approach. Peer Mentoring Scheme has been designed to support year 1 students and enhance student experience, additionally, facilitating year 3 student development of mentorship skills required for graduate practice and HCPC registration[2]. Structured Peer Mentoring has been embedded into the curriculum through assessments, creating mandatory requirement for all students to participate. Our work was selected and shared as an example of best practice within the Health Education England AHP Student Buddy Scheme Evidence-based Practice Guide 2022[3], promoting it to wider HEI's. Further developments meet recommendation 6 of the RePAIR project with the extension of the scheme to enhance Year 2 experience.

References
1. Health Education England (2018) Reducing Pre-registration Attrition and Improving Retention. Available at: https://www.hee.nhs.uk/our-work/reducing-pre-registration-attrition-improving-retention (Accessed: 12 Feb 2024).
2. HCPC (2023) The standards of proficiency for radiographers. Available at: https://www.hcpc-uk.org/standards/standards-of-proficiency/radiographers/ (Accessed: 12 Feb 2024).
3. Health Education England (2022) Allied Health Professional Student Buddy Scheme Evidence-Based Guide. Available at: https://www.hee.nhs.uk/sites/default/files/documents/AHP%20student%20buddy%20scheme.pdf (Accessed: 12 Feb 2024).

B2.2 Preliminary clinical evaluation - where are we? A scoping review

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Background The College of Radiographers' vision was, by 2010,[2] diagnostic radiographers in the UK would be writing preliminary clinical evaluations (PCE), or 'comments', on images. Their 2013 policy[4] supporting the use of PCE has not been updated in a decade and it might be suggested PCE practices in the UK have not really moved on since, though elsewhere it appears to have gained traction. The aim of this scoping review was to establish the current global status of the use of PCE with regards to purpose, scope and approach.

Method The Arksey and O'Malley scoping review framework[1] and PRISMA-ScR5 guidelines were used to develop a protocol[3] to identify studies between January 2013 to January 2024 using six databases. Collated literature was screened and analysed using content analysis to identify themes.

Results 58 relevant studies were identified for inclusion though PCE definition and terminology was often ambiguous and heterogeneous. Studies focused predominantly on evaluating accuracy, education, perceptions, and new initiatives. Themes identified a developing role in the use of PCE internationally, perhaps more than in the UK, and in a range of modalities and clinical settings. Barriers and drivers to the use of PCE were identified in addition to quality mechanisms and educational interventions used to support PCE implementation.

Conclusion Considering PCE has been an aspiration for standard practice in the UK for more than a decade, it remains relatively infrequently researched. There is growing scope internationally, particularly in Australia, but less so where it was first purposed in the UK.

B2.3 Scoping exercise to assess the contribution that Imaging Support Workers (ISWs) and Assistant Practitioners (APs) make to imaging services in the North West (NW) of England

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Introduction ISWs/APs, often referred to as 'radiography support workforce', work alongside radiographers providing high-quality care across many diagnostic imaging modalities. To reduce waiting times for diagnosis and treatment, the Radiography Skills Mix review[1] suggested expanding the radiographic workforce, including ISW/APs. The Richard's Report[2] identified a significant increase in numbers would be required pan NW by 2025 to meet demand. There is a well-established ISW/AP workforce in the NW, but a need to develop more to undertake some delegated roles and to increase the scope of practice of the existing workforce. Additionally, there is a requirement to upskill this workforce by seeking alternate ways of working and training staff [3].

Method NHSE (formerly HEE NW) funded research project scoping the contribution that ISWs/APs make to NW diagnostic services. 24 Trusts in the NW were recruited with data collected 01/04/2022 > 31/03/2023. A mixed-methods questionnaire study was administered.

Results/discussion

In relation to ISWs/APs, this paper will discuss:

- Number/banding/wte/vacancies/job titles
- Trends for image acquisition
- Range of modalities/extension scope of practice
- Workforce expansion
- Education/training/qualifications/apprenticeships
- Exploring management responsibilities
- Innovations in deployment
- Barriers to growth/development
- Progression to radiographer/other career progression
- Links between development of support workforce/impact on radiographer roles

Recommendations to:

- Develop appropriate education/training to facilitate upskilling/CPD/progression using a skills escalator approach, aligned to SCOR recommendations3
- Develop consistency in job titles/job plans/descriptions
- Embed a NW Community of Practice for ISWs/APs
- Underpin a safe and effective support workforce by enhancing the governance arrangements

References

1 Department of Health (2003). Radiography Skills Mix - A report on the four-tier service delivery model, London
2 Richard's M. (2020) Diagnostics: Recovery and Renewal – Report of the Independent Review of Diagnostic Services for NHS England
3 Society and College of Radiographers (2022). Developing career pathways for diagnostic imaging support worker roles guidance on roles and responsibilities, London

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B2.4 Research culture, barriers and facilitators within the radiography workforce in the UK – results of a national survey

Dr Katy Knight[1], *Prof Caroline Alexander[2,3], Mr Matthew Beasley[4,5], Dr Tim Donovan[6], Professor Karen Knapp[1], Prof Jeremy Levy[3], Dr Jonathan McConnell[4], Dr Tracy O'Regan[7], Prof Heidi Probst[8], Ms Meera Sharma[9], Prof Helen McNair[10]*
[1]University of Exeter, [2]Imperial College Healthcare NHS Trust, [3] Imperial College London, [4]Leeds Teaching Hospitals NHS Trust, [5]University of Leeds, [6]University of Cumbria, [7]Society & College of Radiographers, [8]Sheffield Hallam University, [9]NHS England, [10]The Royal Marsden NHS Foundation Trust

Background Radiography has been identified as an area with a need to build research capacity and capability. To create strategies to grow and develop the number of research active radiographers it's important to understand the research culture of the workplace. We also aimed to identify barriers and enablers of research activity.

Method A survey was created using a validated research and development culture index [1]. Questions regarding barriers and enablers to research activity were created from a previous questionnaire with content validity confirmed by ten expert radiographers. The survey was distributed, using purposive and then snowball sampling, to radiographers and nuclear medicine technologists via email and social media. Statistical analysis was carried out in R and free text answers analysed for themes with DECIPHER.

Results Of 970 responses under half indicated undertaking some kind of research activity within their role (41%). There was much variation in the levels of research training reported. Almost all respondents (91%) agreed that other work roles

take priority over research and there's a lack of protected time. Management support for research appears lacking (79% agreement) and research mentorship was favoured for enabling research (90% agreement). Representative free text answers include: "lack of staff resulting in all focus on current clinical needs" and "little appreciation and/or knowledge about the role of research".

Conclusion More mentorship, allyship and opportunities for radiographers and nuclear medicine technologists to become active researchers is needed. Further investigation to compare how other professions responded to a similar survey will be carried out.

References

1. Lieschke, G., Giles, M., Ball, J., Ohr, S.O. and Parker, V. (2022) Towards translational research participation for nurses and midwives: a mixed method study. BMC Nursing. 21(1), doi:10.1186/s12912-022-00818-0

B2.5 Risks and benefits to radiographers working beyond standard hours in healthcare provision: The 247 Diagnostic Radiographers At Work Study (247DRAWS) - Initial findings of stage 1

Mr Jason Elliott[1], *Dr Dean Whybrow, Professor Christine Bundy*

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Background Referral increases are causing pressure in UK medical imaging services (GIRFT 2020). Radiology service delivery models routinely include extended working patterns, 7 day service and 24 hour access (Beardmore et al 2016). Increased shift work and faster rotations have been seen to have detrimental effects on medical professionals and lead to safety issues for patients (Elliott & Williamson 2019). This potentially has an impact on retention (Nightingale et al 2023). No previous research has been undertaken on the benefits and risks to diagnostic radiographers working shifts (Elliott & Williamson 2019).

Method A mixed methods sequential study was devised, leading with an online survey - distributed via the College of Radiographers and social media to all UK diagnostic radiographers. Information was gathered on roster patterns, the effects of additional service pressure and utilisation of the Working Time Regulations (1998). Utrecht Work Engagement Scale (UWES9), Oldenberg Burnout Inventory (OLBI) and Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) were completed by participants to give defined measurements of workforce effect.

Results 1.96% of UK Diagnostic Radiographer population (HCPC 2023) participated in the survey (N=925). The survey closed on 20/1/24. Early analysis is in progress within a part time PhD study. Initial findings, descriptive statistics and early correlation calculations will be shared as part of the presentation.

Conclusion This is the first study into UK Shiftworking culture amongst Diagnostic Radiographers. The findings will begin revealing the individual benefits, risks, good practice and recommendations for development to optimise workforce wellbeing, performance and safety.

References

Akudjedu TN, Lawal O, Sharma M et al, 2020; Impact of the COVID-19 pandemic on radiography practice: findings from a UK radiography workforce survey. BJR Open, 2020, 2(1), 20200023.
Beardmore C, Woznitza N, Goodman S, 2016; The Radiography Workforce: Current Challenges and Changing Needs. London, Society of Radiographers.
Elliott J, Williamson K, 2020; The impact of shift work on errors in Radiology. Radiography, 2020 Aug, 26(3), 248-53.
GIRFT 2020; Getting it Right First Time: Radiology. A GIRFT Programme National Specialty Report [online] Accessed via https://gettingitrightfirsttime.co.uk/wp-content/uploads/2020/11/GIRFT-radiology-report.pdf
HCPC 2023; Registrant Snapshot 2023. London, HCPC
Nightingale J, Burton J, Appleyard R et al, 2021; Retention of radiographers: A qualitative exploration of factors influencing decisions to leave or remain within the NHS. Radiography, 2021 Aug, 27(3), 795-802.
Singh N, Knight K, Wright C et al, 2017; Occupational burnout among radiographers, sonographers and radiologists in Australia and New Zealand: Findings from a national survey. J Med Imaging Radiat Oncol; 2017 Jun, 61(3), 304-10.
Society and College of Radiographers, 2023; Diagnostic Radiography Workforce Report 2023. London, Society & College of Radiographers.
Working Time Regulations 1998.

SESSION D2

D2.1 Should patients have a choice in their rectal cancer management ? Review of published Level 1b evidence from a multi-centre European phase 3 randomised trial OPERA (Organ Preservation in Early Rectal Adenocarcinoma)

Professor Arthur Sun Myint[1,2], Dr Rajaram Sripadam[1], Ngu Than[2], Muneeb Al-Haq[2], Miss Catherine Kelly[1], Sarah Stead[1], D Mark Pritchard[2]

[1]Clatterbridge Cancer Centre, Liverpool, United Kingdom, [2]University of Liverpool, Liverpool, United Kingdom

Background Radiation dose escalation with Contact X-ray Brachytherapy (CXB) boost was shown to improve 3 year organ preservation rate in cT3/cT3a-b/cN0/cN1 rectal cancer in patients with PS0-1(1). We investigate whether patients who are fit but stoma averse and refused surgery should be given a choice in their rectal cancer management.

Methods We reviewed the data presented in the OPERA trial. Patients with cT2/cT3a-b/cN0/cN1 <5cm were randomised to either Arm A (standard of care) 45Gy/25/5weeks + capecitabine 825mg/m2 + EBRT (Gy/5//5days) or Am B (experimental arm) EBCRT (as above) + CXB 90Gy/3/4 weeks.

Results Between June 14, 2015, and June 26, 2020, 148 patients were randomised of which 141 were evaluable with Arm A (n=69) or group B (n=72). After median follow up of 38.2 months, 3-year organ preservation rate was 59% (95% CI 48–72) in Arm A versus 81% (72–91) in Arm B (hazard ratio [HR 0·36(95% CI 0·19–0·70; p=0·0026)]. For patients with tumours less than 3 cm in diameter, 3-year organ preservation rates were 63% (95% CI 47–84) in group A versus 97% (91–100) in group B [HR 0·07(95% CI 0·01–0·57; p=0·012)].

Conclusion OPERA trial has provided a level 1b evidence to prove that addition of CXB improved organ preservation rate at 38.2 months (Primary end point) compared to standard of care (Arm A). Therefore, patients who are fit but stoma averse and refusing surgery should be informed about these results when consenting them for their treatment.

Table

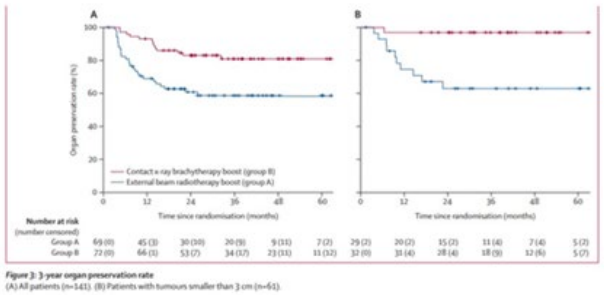

Figure 3: 3-year organ preservation rate
(A) All patients (n=141). (B) Patients with tumours smaller than 3 cm (n=61).

Organ Preservation at 3 years
Arm A 59%
Arm B 81%

<3cm Start with CXB
Arm B 97%
Arm A 63% (p= 0.12)
(HR= 0.07)
Median FU 38.2 months

References

1. Gerard J-P, Barbet N, Schiappa R, Magné N, Martel I, Mineur L, et al (2023). Neoadjuvant chemoradiotherapy with radiation dose escalation with contact x-ray brachytherapy boost or external beam radiotherapy boost for organ preservation in early cT2–cT3 rectal adenocarcinoma (OPERA): a phase 3, randomised controlled trial. The Lancet Gastroenterology & Hepatology. 2023;8(4):356-67.

D2.2 Patient, Public and Practitioner Partnership within imaging and radiotherapy - an exploration of the implementation and use of the College of Radiographers Guiding Principles

Prof Ruth Strudwick[1], Dr Aarthi Ramlaul[2], Mrs Pam Shuttleworth[3], Ms Chioma Fiyebor[4]

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In 2014 the NHS released the Five Year Forward plan2, envisioning a shift in power from health professionals to patients and public. In response the Society and College of Radiographers (SCoR) produced “Patient, Public and Practitioner Partnership within Imaging and Radiotherapy: Guiding Principles” (P4)3 document which was implemented within the four domains of radiography practice; service delivery, service development, education and research. This project explored how these guidelines were implemented; and whether improvement to the quality and scope were needed, making recommendations for updating the document.

Method A qualitative methodological framework was adopted with two phases. Phase 1 – a survey exploring use of the P4 document’s guiding principles. There was no maximum number of participants to ensure inclusivity. Phase 2 - six focus groups from the four domains1.

Results 626 participants completed the phase 1 survey. 18.85% (n=118) of participants were aware of the document and used it as a reference tool for practice, teaching, and research. 81.15% (n=508) of participants stated they were unaware of the document and not informed of its existence.
Themes from phase 2; importance of service user involvement in service delivery and evaluation, resources to ensure service user involvement, suggestions to update the P4 document and use of the P4 document in radiographer education.
Conclusions Participants acknowledged the guidance document, they reported more awareness of patients' needs and effect this has on radiographers in supporting their needs.
The voices of patients must be heard within radiography practice with a positive impact on each domain.

References
1. Boivin, A; L'Espérance, A; Gauvin, F.P; Dumez, V., & Macaulay, A.C. (2018). Patient and public engagement in research and health system decision making: A systematic review of evaluation tools. Health Expectations, 21:1075–1084. DOI:10.1111/hex.12804
2. NHS (2014) Five Year Forward View. [available at] https://www.england.nhs.uk/publication/nhs-five-year-forward-view/
3. Society and College of Radiographers 2018 'Patient, Public and Practitioner Partnership within Imaging and Radiotherapy: Guiding Principles'

D2.3 Shared decision-making in radiotherapy - the patient experience

Ms Laura Howard[1], *Ehab Ibrahim*[1], *Mrs Nicky Hutton*[1], *Carl Rowbottom*[1]
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Background Shared decision-making (SDM) is on the NHS policy agenda, and the preferred model for preference-sensitive decisions (NHSE, 2019). This study establishes baseline patient-perceived SDM and explores patients' views on SDM in a large, specialist Trust.
Method An SDM questionnaire was distributed to all radical head and neck radiotherapy patients (N=165), June-December 2023. This combined a well-validated instrument for measuring SDM from the patient perspective, SDM-Q-9 (Kriston et. al, 2010), with additional questions exploring patient views.
Results 65/165 (39%) questionnaires were returned. SDM-Q-9 mean standardised score was 78.6 (SD 26.3), where 100 is the highest level of SDM. There was a moderate ceiling effect (26.2%). Scores were not sensitive to sex (p=.64) or age (ρ=0.1). Higher levels of SDM were perceived by participants who stated SDM was very important (51/65, 79%) than somewhat or not at all important (82.4 vs. 62.7; p=.02; Cohen d=0.75). Individuals who discussed their personal priorities with the clinician (46/65, 70.8%), were more likely to be very satisfied with their involvement in SDM (89.1% vs. 52.9%).
Conclusion Patient-perceived SDM scores are high for head and neck patients in our trust. Participants who value SDM also perceive higher levels of SDM. Patient satisfaction increases when individuals discuss their personal priorities. The modest response rate and self-selection bias affect generalisability of the results. Only radiotherapy patients were included; those who chose alternative treatment may perceive different levels of SDM. The moderate ceiling effect may limit the use of SDM-Q-9 to measure impact of future interventions to improve SDM.

References
Kriston, L., Scholl, I., Hölzel, L., Simon, D., Loh, A. and Härter, M. (2010). The 9-item Shared Decision Making Questionnaire (SDM-Q-9). Development and psychometric properties in a primary care sample. Patient Education and Counseling, 80, pp. 94-99.
NHS England and NHS Improvement (2019). Shared Decision Making Summary Guide [online]. Available at: https://www.england.nhs.uk/wp-content/uploads/2019/01/shared-decision-making-summary-guide-v1.pdf [Accessed 16th January 2024]

D2.4 CommEmorating the Last Event: calling time on the end of treatment Bell following RAdioThErapy? The CELEBRATE study

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Introduction In the UK it is commonplace for patients completing radiotherapy to be invited to ring a bell as a form of celebration. The project aimed to explore the experiences of the end of treatment (EoT) bell from the perspective of patients who had received treatment for cancer, and therapeutic radiographers who treat patients. The study also aimed to consider possible alternative methods of commemorating the EoT, considering the needs of patients, family members and healthcare professionals (HCPs).
Methods Online focus groups were held with patients (n = 5) and therapeutic radiographers (n = 4) in December 2020; a joint online event (n = 6) was held in March 2022. They were all facilitated by two members of the research team. Thematic analysis was used for data analysis.
Results Participants' views and experiences were mixed; however, there was a consensus that alternative forms of commemoration should be available to meet patients' diverse needs. Features of a specification were considered and suggestions made for alternative practices, with a focus upon patients' transition needs after radiotherapy has ended. The use of a reflection stone and digital app were favoured.
Conclusion The results indicate that departments should consider the harms as well as the benefits conferred by the EoT bell and explore alternative ways to mark an episode of treatment.

Implications for practice A one-size-fits-all approach is not appropriate in relation to marking the end of an episode of treatment.
Keywords - End of treatment; transition needs; patient experience; radiotherapy, therapeutic radiographer

D2.5 Podcasts as a platform for engaging patients and healthcare professionals with radiotherapy research

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Background We conducted a project to engage patients and healthcare professionals with radiotherapy research. By uniting radiation researchers with young adults treated with radiotherapy we created a special series of the podcast RadChat.
Purpose
1) Increase awareness of radiotherapy and radiation research
2) Highlight and understand young adults' experiences of cancer and radiotherapy
3) Promote cancer research to new audiences outside academia

Six young adults were paired with radiation researchers. Online workshops to prepare the podcast participants helped enable conversations and elicit the personal stories and research angles that would be explored.
Summary of Content Each episode featured unique patient experiences, different fields of cancer research and explored personal motivations for participating in engagement projects. Overall, the project was well received and valued by patients and researchers. An external evaluation involved semi-structured interviews with participants and RadChat hosts, and an audience survey. Several key findings include, the importance of the 'human' or relational aspect of the project and the need for a dedicated project co-ordinator.
We achieved our aims, with around 2,400 downloads of the podcast series from listeners across 30 different countries. Audience data showed that the podcasts have successfully increased awareness of radiotherapy as an anti-cancer treatment and promoting cancer research to new audiences. Patient participants felt heard and their contributions valued. Some researchers experienced motivation arising from this unique opportunity to engage with people directly affected by their research.
To conclude, podcasts provide a successful platform for engaging patients and healthcare professionals with radiotherapy research.

D2.6 Equity in radiotherapy skin care assessment

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Background Clinical education highlights 'redness' as a key visual representation of erythema on skin. Radiation induced skin reactions (RISR) are a common side effect from radiotherapy treatment that people can experience. However, this has caused inaccurate assessments of people of colour as healthcare professionals have been directed to look for 'redness' is rarely seen1,2.
Method Using an image-based methodology, crowd sourced images were collated utilising Rad Chat. Rad Chat linked with charities and communities to obtain case studies and images showcasing RISR and cancer treatment related skin changes, as well as various images of radiotherapy tattoos.
Results By utilising an image library, healthcare professionals' confidence in assessing RISR and other treatment related skin reactions across people of colour improved.
Healthcare professionals were able to better manage skincare reactions and provide appropriate advice.
Conclusion Ensuring healthcare professionals have access to a broad demographic of medical imagery, improves assessment and management for people going through cancer treatment.

References

1Jothishankar B, Stein SL. Impact of skin color and ethnicity. Clin Dermatol. 2019 Sep-Oct;37(5):418-429. doi: 10.1016/j.clindermatol.2019.07.009. Epub 2019 Jul 17. PMID: 31896399.
2 Julk-Anderson N, Structural racism in radiation induced skin reaction toxicity scoring. JMIRS. 2023 Oct;54(4)S44-S46 https://doi.org/10.1016/j.jmir.2023.09.021

SESSION E2

E2.1 Pump prime funding for patient engagement in research grant development

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Background Engaging patients and their families in active partnerships is critical in healthcare research, known as Patient and Public Involvement and Engagement (PPIE). PPIE means that members of the public can help influence and shape research throughout the project lifecycle, from project development to dissemination, but this does require careful planning. To enable early PPIE, funding is now available from the National Institute for Health and Care Research (NIHR), Research Support Service (RSS) in England which can support a variety of activities including funding public attendance at research meetings, travel, childcare, refreshments costs.

Purpose This poster aims to share examples of RSS funding impact, through early PPIE on a variety of grant applications to provide more focussed and engaged grant applications.

Summary of Content The presentation will include the development of aims and research questions, modification of recruitment strategies, development of dissemination outputs and the formation of project steering groups. Also included will be challenges to engaging patients and the public in research, managing expectations, using easy to understand language, and discussing difficult subject matter.

We describe the positive benefits of early PPIE incorporation into successful grant applications and acknowledge that researchers gain by developing group facilitation skills and develop a better understanding of the lived experiences of patients and their families.

Heightening awareness of the opportunity for clinical staff to engage in these funding calls will provide more targeted and better designed research grants, allowing increased success for funding calls and research with participants at its core.

E2.2 A Patient and Public Involvement (PPI) co-designed Patient Reported Experience Measure (PREM) of receiving X-ray results

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From October 2023, NHS England[1] required GPs to improve the patient experience through access to online electronic health records (EHR). Empowering patients by benefiting from reading their clinical records and test results. Historically, radiology (X-ray) reports were designed to communicate diagnoses and recommendations to the doctor, not the patient. Thus, the medical language and format may not be patient-friendly and accessible. There have been many published research studies to improve the reporting of radiology reports to patients; many, if not most, have evolved around radiologists[2,3,] general practitioners[4], AI[5,6] or structured templating[7].

This presentation will discuss the active and inclusive collaboration of a Patient Public Involvement (PPI) participatory research activity, learning what members of the public 'valued' in the experience of receiving X-ray results, what was negative about the experience, what they understood from the information (how it was given to them), if it affected their decision making on future management and treatment, and what could have been improved8. PPI involvement (unlike patients as research study participants) has been underrepresented in published radiography studies[9–11].

The public involvement and consultation ensured a broad social perspective, and viewpoint was included when gathering the key 'themes' that patients' valued' in the experience. These were then used to co-design and develop a Patient Reported Experience Measure (PREM) tool (Delphi survey). The PPI groups consulted upon two rounds of the online Delphi survey to assess the themes, consolidate the themes and terminology and rank to pare down the themes into a final Delphi tool.

References

1. NHS England. Changes to the GP Contract in 2023/24 PRN00257. Changes to the GP Contract in 2023/24 PRN00257 2023:1–10.
2. Hartung MP., Bickle IC., Gaillard F., Kanne JP. How to Create a Great Radiology Report. RadioGraphics 2020;40(6):1658–70. Doi: 10.1148/rg.2020200020.
3. Mityul MI., Gilcrease-Garcia B., Mangano MD., Demertzis JL., Gunn AJ. Radiology Reporting: Current Practices and an Introduction to Patient-Centered Opportunities for Improvement. American Journal of Roentgenology 2018;210(2):376–85. Doi: 10.2214/AJR.17.18721.
4. Grieve FM., Plumb AA., Khan SH. Radiology reporting: a general practitioner's perspective. Br J Radiol 2010;83(985):17–22. Doi: 10.1259/bjr/16360063.
5. Brady AP. Radiology reporting—from Hemingway to HAL? Insights Imaging 2018;9(2):237–46. Doi: 10.1007/s13244-018-0596-3.
6. Jeblick K., Schachtner B., Dexl J., Mittermeier A., Stüber AT., Topalis J., et al. ChatGPT makes medicine easy to swallow: an exploratory case study on simplified radiology reports. Eur Radiol 2023. Doi: 10.1007/s00330-023-10213-1.

7. Schwartz LH., Panicek DM., Berk AR., Li Y., Hricak H. Improving Communication of Diagnostic Radiology Findings through Structured Reporting. Radiology 2011;260(1):174–81. Doi: 10.1148/radiol.11101913.
8. Alarifi M., Patrick T., Jabour A., Wu M., Luo J. Designing a Consumer-Friendly Radiology Report using a Patient-Centered Approach. J Digit Imaging 2021;34(3):705–16. Doi: 10.1007/s10278-021-00448-z.
9. Newton-Hughes A., Strudwick R. An exploration of values-based radiography from the perspective of the service user. Radiography 2023;29:S40–5. Doi: 10.1016/j.radi.2023.01.012.
10. Hancock A., Bleiker J. But what does it mean to us? Radiographic patients and carer perceptions of compassion. Radiography 2023;29:S74–80. Doi: 10.1016/j.radi.2023.02.005.
11. Society and College of Radiographers. Patient Public and Practitioner Partnerships within Imaging and Radiotherapy: Guiding Principles, London; 2018.

E2.3 A systematic review of clinical decision support systems (CDSSs) and the key clinical features used by radiologists in prostate MRI scans

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Background: The international Prostate Imaging – Reporting and Data System (PI-RADS) steering committee has recommended the implementation of on-table radiologist monitoring during prostate MRI to reduce both Gadolinium-based contrast agent (GBCA) injections and delayed follow-up metastatic imaging appointments (Schoots et al., 2021). However, the feasibility of this recommendation is hindered by a shortage of radiologists worldwide (Jeon et al., 2023; Sanjay Jeganathan, 2023). Radiographers already monitor patients on-table for image quality and anatomical coverage as part of their roles (Swinburne, 1971). Using a computerised clinical decision support system (CDSS) to support radiographers in implementing this PI-RADS recommended patient pathway could facilitate advanced practice, improving patient experience and outcomes.
Review question: For people undergoing prostate MRI, what CDSSs are used for image analysis and what were the significant clinical variables used in their implementation?
Purpose: Identify CDSSs in prostate MRI analysis and their clinical variables.
Summary of the content: Eligibility criteria- Encompasses studies implementing/evaluating CDSSs for prostate MRI, including RCTs, feasibility, and pilot studies.
Information sources- Search in MEDLINE, Scopus, Web of Science, PubMed, CINAHL, Embase, ProQuest, and The Cochrane Library.
Risk of bias- We will evaluate the risk of bias by using QUADAS-2 tool for multivariable prediction studies.
Synthesis of results- We will present a narrative synthesis categorizing CDSSs, methods, usability, clinical features, disease conditions, modality types, and target professionals.
Reporting- Follow PRISMA 2020 guidelines.
Funding- NIHR303584 (The systematic review will be conducted as part of the project for my NIHR Doctoral Clinical and Practitioner Academic Fellowship award).

References

1. Schoots IG, Barentsz JO, Bittencourt LK, et al. PI-RADS Committee Position on MRI Without Contrast Medium in Biopsy-Naive Men With Suspected Prostate Cancer: Narrative Review. AJR Am J Roentgenol. 2021;216(1):3-19. doi:10.2214/AJR.20.24268
2. Jeon SK, Lee JM, Joo I, Yoon JH, Lee G. Two-dimensional Convolutional Neural Network Using Quantitative US for Noninvasive Assessment of Hepatic Steatosis in NAFLD. Radiology. 2023;307(1):e221510. doi:10.1148/radiol.221510
3. Jeganathan S. The Growing Problem of Radiologist Shortages: Australia and New Zealand's Perspective. Korean J Radiol. 2023;24(11):1043-1045. doi:10.3348/kjr.2023.0831
4. Swineburne K. Pattern recognition for radiographers. Lancet. 1971;1(7699):589-590. doi:10.1016/s0140-6736(71)91180-9

E2.4 Incidence of contrast induced AKI and its correlation with common comorbidities

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Background: There has been a debate about whether iodine-based contrast agents cause any clinically significant kidney injury. The last national RCR audit[1] showed that the CI-AKI incidence was ~0.9%. We conducted a large audit in our hospital to find CI-AKI incidence and its relationship with Type 2 DM, hypertension, and CKD.
Method: Patients' creatinine levels were collated before and 2-7 days after the CT scan. Their correlation with comorbidities analyzed. Linear regression was performed, and the assumptions were checked beforehand. Two-tailed P value of <0.05 was deemed statistically significant.
Results: Details of data related to CI-AKI incidence are demonstrated in Table 1.
Post-CT creatinine was found to be higher in the cohort with hypertension (n=152; compared to the cohort without hypertension, albeit not statistically significant (129 versus 119,p =0.365).

Presence of diabetes alone was significantly associated with a higher Post-CT creatinine (B=22.2, 95% CI (7.41 to 37.02), p=0.003). The presence of diabetes and CKD was associated with a higher post-CT creatinine than the presence of diabetes alone (p<0.001).
Chronic kidney disease alone is not significantly associated with higher rates of CI-AKI in this cohort (P=0.916)
Conclusion: There is a considerable risk of kidney injury after the use of contrast agents. Diabetes is associated with higher post-CT creatinine values. Those with diabetes and CKD have higher post-CT creatinine compared to those with diabetes alone.
Post-CT creatinine is higher in those who have hypertension(p=0.365).
The main study limitation was the lack of creatinine measurements post-CT scan in almost 40% of the patients.

Table

	Total	Excluded	Included in Study	Cr Increased by at least 25% but remains in the reference range	Cr Increased by 25-50% and developed AKI	Cr Increased by at least 50% and developed AKI
Number of Patients	2244	944	1300	54	53	34
Ratio				4.1%	4.0%	2.6%

References
1. Cope, L.H., Drinkwater, K.J. and Howlett, D.C. (2017). RCR audit of compliance with UK guidelines for the prevention and detection of acute kidney injury in adult patients undergoing iodinated contrast media injections for CT. Clinical Radiology, [online] 72(12), pp.1047–1052. doi:https://doi.org/10.1016/j.crad.2017.07.002.

E2.5 The CT venogram in traumatic brain injury - does it change clinical management?

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Background In traumatic brain injury (TBI) with a skull fracture adjacent to a cerebral venous sinus (CVS), CVS thrombosis (CVST) is found in 26.2% of patients1. Traumatic CVST is associated with higher rates of in-hospital mortality and a variety of complications2. While CT Venogram (CTV) is the imaging modality of choice, there is no consensus regarding the optimal timing or the impact on clinical management.
Method A retrospective explorative study was performed in a UK-based tertiary Neurosurgery referral centre to answer 2 questions: 1) Does performing CTVs change clinical management? 2) When are CTVs being performed?
All CTVs performed in trauma patients between June 2022 and June 2023 were recorded from PACS. Data was collected regarding CTV timing, results, and management of thrombi.
Results 56 trauma patients had a CTV in this time-period. Mean time between initial CT Head and CTV was 5.16 hours (SEM=0.857), with 17/56 (30.4%) happening at the same time. 22/56 (39.3%) were found to have a thrombus. Only 3/22 (13.6%) received treatment for their thrombus (warfarin, rivaroxaban and aspirin). 8/22 patients with a thrombus (36.4%) had a repeat CTV at a mean time of 5.13 days (SEM = 1.23). One patient was followed-up 6 months after discharge.
Conclusion This exploratory study showed that doing 56 CTVs changed management in only 3/56 patients (5.4%), questioning the clinical benefit of performing CTVs in this cohort. CTVs were performed early, risking any delayed cases of CVST being missed3. Further research is needed to allow development of local protocols.

References
1) Bokhari R et al. Dural venous sinus thrombosis in patients presenting with blunt traumatic brain injuries and skull fractures: a systematic review and meta-analysis. World Neurosurg. (2020) 142:495–505.e3. 10.1016/j.wneu.2020.06.117
2) Netteland et al. Cerebral venous sinus thrombosis in traumatic brain injury: A systematic review of its complications, effect on mortality, diagnostic and therapeutic management, and follow-up. Front Neurol. 2023 Jan 9;13:1079579. doi: 10.3389/fneur.2022.1079579. PMID: 36698879; PMCID: PMC9869151.
3) Rischall MA et al. MDCT Venographic Patterns of Dural Venous Sinus Compromise After Acute Skull Fracture. AJR Am J Roentgenol. 2016 Oct;207(4):852-858. doi: 10.2214/AJR.15.15972. Epub 2016 Jul 19. PMID: 27440521.

E2.6 Developing a research strategy for your radiography department - the obstacles and opportunities

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Background A strong research culture in a healthcare organisation increases the likelihood that treatment and care is delivered based on the best available evidence(1) and that research questions are developed and investigated relating to

the specific health care setting and the requirements of the population they serve[2]. Engaging in research and having a knowledge of research practice is a mandated standard of proficiency for professional registration[3]. A clear and well thought out strategy supports providers and practitioners in aligning practice to their values and delivering the organisational vision. In practice this means supporting radiographers to engage in research, improve clinical services and patient outcomes and achieve their vision for local research[1].

Purpose A recent College of Radiography Industry Partnership Scheme (CoRIPS) funded survey of radiotherapy and medical imaging departments has demonstrated that despite radiography departments acknowledging the necessity and benefits of a local research strategy few have managed to develop their own as part of embedding a research culture. With case examples, the potential ways in which we might increase radiography engagement and confidence with setting and achieving research ambitions will be explored.

Summary of content The presentation will discuss some of the complexities of research across the radiography disciplines, different sectors and organisational structures. We will present success stories emerging from recent research and examine both the barriers and enablers to local research strategy provided by radiographers in the field.

References

1. NHS England (2014) Strategy development: a toolkit for NHS providers. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/365697/Strategy_development_toolkit_MAIN_22102014.pdf
2. NHS HEE (Health Education England) (2022) Allied Health Professions' Research and Innovation Strategy for England. Available at: Allied Health Professions' Research and Innovation Strategy for England | Health Education England (hee.nhs.uk)
3. Health and Care Professions Council (2013) The standards of proficiency for radiographers. Available at: https://www.hcpc-uk.org/standards/standards-of-proficiency/radiographers/

SESSION F2

F2.1 Rights-based standards for children undergoing tests, treatments and examinations

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iSUPPORT: International collaborative standards to SUpport Paediatric Patients during clinical prOcedures, Reducing harm and establishing Trust

Background Poor procedural experiences can have long lasting negative consequences for children. ISUPPORT is an international group of 50 members, which includes health-professionals, academics, young people, and parents. ISupport have developed standards for children undergoing tests, treatments, or examinations based on international children's rights set out by the UNCRC (1989).

Methods: The rights-based standards were developed through a three phase multi-stakeholder consensus approach. Stage 1 involved extensive consultation and group decision-making within the 50 group members. Stage 2 involved an international on-line survey and face to face consultations to gain feedback and input from children, parents, and professionals. Stage 3 involved further online surveys and face to face consultation to reach a consensus.

Results: The standards propose approaches to minimise the anxiety, distress and harm experienced by children undergoing clinical procedures. They describe good procedural practice; define and promote supportive holding as an approach to prioritising children's rights and challenge the use of restraining holds for non-emergency procedures.
The standards include a version for professionals, a version for children, including a 'prep sheet' to help children plan for their procedures, as well as case studies demonstrating application of the standards to a variety of procedures. The standards are free to access and download on the ISupport website.

Conclusion: The rights-based standards aim to ensure that the short and long-term physical, emotional and psychological well-being of children are of central importance during clinical procedures.

F2.2 Incidence and patterns of fracture of the tibia in infants aged 0 to 36 months at a single UK centre

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Background Injury patterns in paediatrics may change over time with changing activity trends. Over the last decade, injuries associated with trampolines has increased in children1. Injuries of the tibia are among the most common in those under the age of three, and are one of the most common fractures in suspected physical abuse (SPA)2,3. The aim of this study was to explore the incidence and pattern of fractures of the tibia in infants aged three and under presenting at a UK centre.

Method 1500 cased were reviewed (mean age 1.72Y range 1d to 3Y). Cases were excluded if they had poor image quality or were in plaster of Paris. 911 remaining cases were reviewed by an experienced reporting radiographer and fractures categorised.

Results 643 cases had no fracture. 268 with fractures, the following fracture types were identified: n (%): Buckle 71 (26.5%); Spiral 64 (23.9%); Periosteal 54 (20.1%); Oblique 44 (16.4%); Toddler 20 (7.5%); Transverse 12 (4.5%); Greenstick 3 (1.1%).

Conclusion The pattern of fractures is different to those reported by Clark et al in their review of cases in 2007-2008 at a UK centre, with a notable increase in buckle fractures and a decrease in Toddler fractures4. This may result from changing activities, such as an increase in trampoline use, but also due to statistical noise. Around one in eight tibia fractures in those under 18 months may be due to SPA3, so careful correlation with reported mechanism of injury and safeguarding checks are required in this age group.

References

1. systematic review and meta-analysis. Injury prevention 2022; 28(5): 440-5.
2. Loder RT, Bookout C. Fracture patterns in battered children. Journal of orthopaedic trauma 1991; 5(4): 428-33.
3. Worlock P, Stower M, Barbor P. Patterns of fractures in accidental and non-accidental injury in children: a comparative study. Br Med J (Clin Res Ed) 1986; 293(6539): 100-2.
4. Clarke NM, Shelton FR, Taylor CC, Khan T, Needhirajan S. The incidence of fractures in children under the age of 24 months–in relation to non-accidental injury. Injury 2012; 43(6): 762-5.

F2.3 Evaluating the experiences of paediatric patients with neurodevelopmental conditions in the radiology department of an NHS children's hospital

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Background Literature shows patients with neurodevelopmental conditions (NDCs) are receiving poor-quality care and discrimination from healthcare staff. They face barriers to accessing even basic health care, resulting in preventable and premature deaths. The NHS must foster positive healthcare experiences from a young age, so these patients can learn to advocate for themselves and feel involved in their care.
Radiology's role in this is crucial, yet it shows virtually no exploration in the literature. This service evaluation examining the experiences of paediatric patients with NDCs explored what radiology was doing well, how the service could be improved, and what barriers prevented use of reasonable adjustments.
Methods An anonymous online qualitative survey aimed at carers of patients with NDCs was used. This allowed participants to be reached easily, encouraged less guarded responses and was simple to complete. The survey was advertised via social media pages, on posters and via a local NDC charity. Results were analysed by reflexive thematic analysis.
Results 36 participants took part. 61% had a positive experience, yet only 47% felt the department supported their child's neurodisability needs. Themes developed from qualitative data encompassed patient empowerment, carer voices, marginalisation and the lack of training and reasonable adjustments. Much needed to be improved, such as staff training, communication tools, sensory areas and the radiology request system.
Conclusions There is work to be done to improve societal understanding of NDCs, including within the NHS. Radiology needs to urgently recognise the role it must play in this endeavour, and make large-scale changes.

References

1. Heslop, P., Blair, P., Fleming, P., Hoghton, M., Marriott, A., & Russ, L. (2013). Confidential Inquiry into premature deaths of people with learning disabilities (CIPOLD): Final report. University of Bristol. http://www.bristol.ac.uk/cipold/reports/
2. MENCAP (2007). Death by Indifference. MENCAP. https://www.mencap.org.uk/sites/default/files/2016-06/DBIreport.pdf
3. Menezes, M., Robinson, M. F., Harkins, C., Sadikova, E., & Mazurek, M. O. (2021). Unmet health care needs and health care quality in youth with autism spectrum disorder with and without intellectual disability. Autism: The International Journal of Research and Practice, 25(8), 2199-2208. https://doi.org/10.1177/13623613211014721
4. NHS England & NHS Improvement. (2021). Learning from lives and deaths – People with a learning disability and autistic people (LeDeR) policy 2021. (PAR428). https://leder.nhs.uk/resources/leder-policy
5. Ong, N., McCleod, E., Nicholls, L. E., Fairbairn, N., Tomsic, G., Lord, B., & Eapen, V. (2017). Attitudes of healthcare staff in the treatment of children and adolescents with intellectual disability: A brief report. Journal of Intellectual & Developmental Disability, 42(3), 295-300. https://doi.org/10.3109/13668250.2016.1236368

F2.4 They are out there to catch you off guard! Unusual abdominal masses in children

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Background: Abdominal masses can be an unusual reason for children to seek medical attention, frequently leading them to paediatric emergency departments. Among the array of abdominal pathologies presenting acutely, apart from the common conditions like appendicitis, mesenteric adenitis, constipation, there are certain relatively uncommon conditions deserving urgent clinical attention. At our trusts comprising of large university hospitals, we regularly encounter several such paediatric cases. We are presenting five such atypical cases with abdominal masses.
Purpose: The aim of this poster is to underscore the importance of good history taking, clinical examination, appropriate utilisation of various imaging modalities and accurate interpretation of such complex abdominal pathologies in children. We are showcasing five such cases, which were initially misdiagnosed either clinically or on imaging and subsequently identified correctly through collaborative clinical discussions and comprehensive imaging. This poster also serves to stress the significance of interdisciplinary collaboration among radiologists, clinicians, and pathologists to arrive at a timely and accurate diagnosis, which is paramount for effective patient care.
Content: Five paediatric patients, ranging from 1 to 15 years of age presenting atypically in whom initial imaging was either inconclusive or misinterpreted. Further targeted imaging studies, coupled with clinical and histopathological analyses, revealed the elusive diagnoses of Extraosseous Ewings Sarcoma, Cryptorchid Testicular Teratoma, Sacrococcygeal Teratoma, Mesenteric Cyst, and Ovarian Dermoid in these children.

F2.5 Paediatric breast lesions - imaging and intervention

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Background Breast lesions are rare in paediatric patients, the majority of these are benign and do not require intervention. Despite this, due to public awareness of adult breast malignancy, paediatric breast lesions can be a significant source of anxiety (Harper 2023).

An approach to the diagnosis of paediatric breast lesions should consider three categories:

- Normal breast development and variations (such as asymmetry, accessory breast tissue and gynaecomastia).
- Benign entities including: Those unique to paediatric patients (such as infantile haemangioma, lymphangioma and juvenile papillomatosis); and those that overlap with breast disease in young adults (such as fibroadenoma, pseudoangiomatous stromal hyperplasia, phyllodes tumour and papilloma).
- Malignant lesions, which in paediatrics are more commonly metastatic than primary malignancy.

Imaging almost exclusively relies on ultrasound, with mammography seldom used due to risk of ionising radiation and reduced sensitivity in dense adolescent breast tissue (Phadke 2023). The need for diagnostic sampling and intervention should weigh the potential risk to the developing breast bud (Gao 2015).

Purpose After reviewing these cases the learner will be able to:

- Describe the process of normal breast development.
- Recognise the imaging features of common paediatric breast lesions.
- Discuss the special considerations in imaging the paediatric breast.
- Formulate a management plan for paediatric breast lesions.

Summary of Content We present cases with imaging findings of paediatric patients presenting to a tertiary breast unit. These cases demonstrate normal breast development, common breast lesions and imaging findings with emphasis on approach to imaging and management.

References

1. Gao, Y. et al. (2015) 'How to approach breast lesions in children and adolescents', European Journal of Radiology, 84(7), pp. 1350–1364. doi:10.1016/j.ejrad.2015.04.011.
2. Harper, L.K. et al. (2023a) 'Pictorial Review of common and uncommon pediatric breast lesions', RadioGraphics, 43(1). doi:10.1148/rg.220117.
3. Phadke, S. et al. (2023a) 'Imaging of the pediatric breast: Review of normal development and spectrum of disease', RadioGraphics, 43(1). doi:10.1148/rg.220047.

SESSION H2

H2.1 Researching sensitive topics: The value of patient and public involvement and engagement when designing social media recruitment strategies

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Background Patient and public involvement and engagement (PPIE) is essential across healthcare research (Gordon et al., 2018). A PPIE strategy was developed to support the 'Larger Bodies in Radiography' project. This abstract reflects upon the value of this strategy for the Social Media (SoMe) recruitment of participants to an online survey.
Method Due to the sensitivities around weight/size stigma and negativities often associated with SoMe (Waseem and Kumar, 2017), it was imperative our recruitment was respectful and free from any conscious or unconscious bias. PPIE feedback was received via multiple channels and influenced our entire approach to recruitment.
Results Modifications where made based on PPIE feedback. Consultation on terminology and refinement of the wording of posts/reposts led to the phrase 'larger body' being used, alongside our SoMe messaging emphasising that body weight information was not requested. Whilst recruiting for those with 'larger bodies' we realised there was a discrete sub-population within this of those who regarded themselves 'taller than average'. Our PPIE advisers encouraged us to reach out to SoMe special interest groups relating to sub-populations, which had a significant impact upon recruitment.
Discussion Challenges arose in framing recruitment appropriately, with difficulty arising with messaging due to the potential for triggering internalised/externalised weight stigma. Recruiting 'tall people' felt more straight forward. PPIE played a pivotal role in adapting, recommending, and approving recruitment messaging. PPIE was essential in ensuring our SoMe strategy reached our target-group in a respectful way, without making assumptions about who that population might be.

References

1. Gordon J, Franklin S and Eltringham SA. (2018) Service user reflections on the impact of involvement in research. Research involvement and engagement. 4(11).
2. Waseem A, and Kumar R. (2017) A study on positive and negative effects of social media on society. International journal of computer sciences and engineering . 5(10):351-354.

H2.2 Heightened perspectives - exploring radiographic experiences and attitudes among taller individuals

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Background As part of a larger project on the experiences of people with larger bodies of UK radiography services (both medical imaging and radiotherapy), this study focuses on those who self-describe as 'taller than average', a distinct population whose size is beyond their control.
Method An online survey, comprising closed and open-ended questions, was conducted via snowball sampling on social media over two months. Participants needed patient experience of UK radiography, to be >18, and identify as having a larger body. Data analysis used descriptive statistics and thematic analysis. Institutional ethical approval was obtained.
Results Out of 91 survey participants, 30 (32.9%) self-identified as taller (over 5 feet 10 inches), with 18 (60%) being female and 12 (40%) male. Quantitative findings reveal challenges related to the availability of suitably sized equipment, such as gowns and wheelchairs.
Qualitative data highlighted patient distress and discomfort during examinations; "I spent the 1.5hr long scan cold from my legs sticking out." Contortionist themes "try to make myself smaller" and systemic neglect of tall individuals in healthcare emerged, "there is no shortening diet or exercise". Staff attitudes greatly impacted patient experience, with instances of ridicule during height measurements leading to feelings of alienation.
Conclusion Results show that increasing awareness of tall individuals' mental distress during radiographic examinations could enhance healthcare experiences and reduce avoidance. While equipment improvements require time, short-term solutions like multi-sized gowns can address the misconception of "one-size-fits-all." Staff education is crucial for improved patient care and optimising radiation dose for taller individuals.

H2.3 Current radiographers' experiences of inclusive pregnancy checks: LGBTQI+ equalise member perspectives

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Background: Inclusive pregnancy checks have been a topical issue in Radiography practice for both therapeutic and diagnostic radiographers over the last few years, with significant discourse around how best to approach this conversation and make it a positive experience for a wide range of patients, including those who identify as LGBTQI+. After the release of guidance from the SCoR in 2021 which provided useful resources and advice on how to approach these conversations, it is important to consider the current landscape of inclusive pregnancy checks and consider what is happening currently in radiography practice.
Purpose: Perspectives, feelings and real world experiences from members of the SCoR LGBTQI+ Equalise Workers Group will be used to illustrate the successes of the inclusive pregnancy checks but also some of the challenges that LGBTQI+ identifying radiographers can experience within departments themselves. These experiences will be used to highlight key areas for further development for the radiography workforce around implementation of the inclusive pregnancy checks, as well as showcasing examples of good practice and what can be learnt from these examples. This session will encourage reflection on professionals own practice and what can be done to successfully implement these checks and also work as an ally to LGBTQI+ workers in radiography.
Summary of Content: Reflective session looking at current LGBTQI+ workers experiences of inclusive pregnancy checks, considering the attitudes and experiences of radiographers within clinical practice and recommendations for best practice moving forward for the benefit of radiographers and patients.

H2.4 The creation and evaluation of a poster designed to improve radiographer communication with patients with Down's Syndrome

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Minimal research has been undertaken into how radiographers communicate with Down's Syndrome patients and attend to their needs. There has been minimal content on this subject in diagnostic radiography degrees, leading to a lack of confidence in talking to Down's Syndrome patients and has led to suboptimal imaging of Down's Syndrome patients. This study aimed to analyse the impact of a guidance poster designed to educate and improve the confidence of diagnostic radiography students when communicating with Down's Syndrome patients.
The guidance poster was designed and presented to University of Liverpool MSc and BSc degree students, providing strategies for communicating with Down's Syndrome patients. A bespoke questionnaire was designed containing 19 questions exploring various aspects of the communication strategies in the poster to assess its effectiveness in improving the students communication skills with Down's Syndrome patients. Ethical approval was obtained from the University ethics committee.
There was no statistical significance seen between the study year and the strategy selected as most useful . 38% of participants selected Direct Patient Communication as the most useful strategy with p=0.117. There was no statistical significance seen between improvement in confidence and the study year. 98% of students improved their confidence with p=0.668.
Direct Patient Communication was the most useful strategy. Only 2% of participants did not improve their confidence in speaking to Down's Syndrome patients afterwards. There is potential for this study to be developed further in the future to include other university students, qualified radiographers and then to disseminate it more widely.

H2.5 An investigation into the training provided to diagnostic radiography students on the Inclusive Pregnancy Screening guidance implemented in 2021

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Background: The aim of this study was to identify whether sufficient training is being provided to diagnostic radiography students to allow them to perform inclusive pregnancy checks (IPS), as recommended by The Society of Radiographers, confidently and consistently. Limited access to gender-affirming care contributes to mortality rates and health inequalities among transgender, non-binary, and intersex (TNBI) individuals due to a fear of stigmatization and a lack of awareness from practitioners. After a search of several databases, no research was discovered on how undergraduate

diagnostic radiography students are trained for inclusive interactions despite the value of undergraduate education in shaping students' practices and attitudes.
Method: A bespoke questionnaire was emailed out to five cohorts of diagnostic radiography students. The questionnaire covered demographics, knowledge, and confidence levels in incorporating inclusivity into clinical practice and academic studies.
Results: Inconsistencies were revealed in exposure to inclusive pregnancy screening, many lacked the background knowledge of inclusivity required to confidently and sensitively perform IPS checks. Clinical practice appeared to enhance confidence levels, whilst the universities impact appeared to be minimal. Further factors that decreased confidence included patient reactions and a lack of understanding for the reasons why inclusive practice is used.
Conclusion: While students seemed open and willing towards inclusive practice, there are gaps in training. Particularly regarding male and paediatric patients and understanding inclusive terminology. By closing these gaps through further education and training, universities and placement sites can encourage gender-affirming care and equip students with the necessary skills to promote inclusive healthcare.

References

1. Floyd, M.J., Martin, O. and Eckloff, K.J. (2019). A qualitative study of transgender individuals' experiences of healthcare including radiology. Radiography, 26(2). doi:https://doi.org/10.1016/j.radi.2019.10.008.
2. Hizzett, K. and Snaith, B. (2021). Career intentions, their influences and motivational factors in diagnostic radiography: A survey of undergraduate students. Radiography, 28(1). doi:https://doi.org/10.1016/j.radi.2021.09.013.
3. McDermott, E., Nelson, R. and Weeks, H. (2021). The Politics of LGBT+ Health Inequality: Conclusions from a UK Scoping Review. International Journal of Environmental Research and Public Health, [online] 18(2), p.826. doi:https://doi.org/10.3390/ijerph18020826.
4. Pierce, J. (2017). Supporting the Health Care Needs of the LGBTQI Community. Journal of Consumer Health on the Internet, 21(3), pp.297–304. doi:https://doi.org/10.1080/15398285.2017.1353304.
5. The Society of Radiographers (2021). Inclusive Pregnancy Status Guidelines for Ionising radiation: Diagnostic and Therapeutic Exposures. [online] SoR. Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/inclusive-pregnancy-status-guidelines-for-ionising.

H2.6 Literature review - is there a clinical need for British Sign Language in Radiography?

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Background – The Royal National Institute for the Deaf (RNID) estimated that adult hearing loss will hit 14.2 million by 2035, with one in five service users diagnosed as deaf or hard of hearing (1). O'Riordan (2024) proposed that the UK would benefit from British Sign Language(BSL) education to support the rising deaf and neurodivergent population, with existing radiographers and students lacking competence surrounding BSL(3). Existing literature bases have shown limited data and discussion around BSL application in radiography. This review aimed to investigate the clinical benefits of British Sign Language in Diagnostic Imaging(2).
Method – A literature search was conducted using Science Direct and PubMed with the search terms "BSL," "X-Ray," "Makaton," and "Deaf." A critical appraisal with CASP was undertaken to evaluate the current clinical use of British Sign Language through existing studies on deaf patient experiences in radiology. Inclusion criteria will include journal literature published after 2013 in the United Kingdom with References and data related to the NHS.
Results- Data was successfully extracted from 38 papers as a result of a CASP-guided critical appraisal. Findings indicated a poor awareness of BSL across diagnostic imaging, with Radiographers unable to Sign "Hello, my name is". More work is required to strengthen the active awareness of BSL integration by radiographers.
Conclusion – British Sign Language integration displays promising accessibility advancements for the deaf and neurodivergent population with diagnostic imaging. However, greater evidence is required to assess the impact and application of BSL in diagnostic imaging.

References

1. GOV.UK (2023). The British Sign Language (BSL) Report 2022. [online] GOV.UK. Available at: https://www.gov.uk/government/publications/the-british-sign-language-bsl-report-2022/the-british-sign-language-bsl-report-2022.
2. Health and Care Professions Council (2023). The Standards of Proficiency for Radiographers. [online] Hcpc-uk.org. Available at: https://www.hcpc-uk.org/standards/standards-of-proficiency/radiographers/.
3. O'Riordan, J., England, A., Young, R., Albeshan, S., Alashban, Y., & McEntee, M. (2024). The experiences and opinions of deaf service users accessing radiology. Journal of Radiation Research and Applied Sciences, 17(1), 100786. https://doi.org/10.1016/j.jrras.2023.100786

SESSION I2

I2.1 A double transformation: From Exeter Nightingale to CDC - the implementation of a Community Diagnostics Centre

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Background: An example of extensive collaboration: NHS Nightingale Hospital Exeter saw the transformation of a warehouse into a state of the art Covid facility in 2020, being re-purposed and transformed again in 2021 into a Community Diagnostic Centre - National Accelerator Programme. Led by RDUH, partnering Devon Trusts, the vision to accomplish recommendations of the Diagnostics Recovery and Renewal Report (Richards) 2020 and NHS Long Term Plan.
Purpose: Aim to relocate suitable GP and OP work away from acute sites, improving patient experience, reducing waiting times and improving outcomes. Initially focusing on backlog clearance, the facility is part of longer-term planning, enabling radical improvement to cope with increased demand. New pathways to diagnosis by a number of one-stops will be established in 24/25. The latest technology has been heavily invested in with a strive to ensure dose optimisation and reduction. Workforce development includes apprenticeships and advanced practice roles; job satisfaction and a 'great place to work' have been key benefits. Strong collaboration with outsourced providers enabled some services to be rapidly developed and operational.
Summary: Working collaboratively, over 50,000 patients were imaged in the Devon CDC's first year. The CDC offers CT, MR, x-ray, ultrasound and fluoroscopy. Some MSK treatments are available. Clinically led the success of the Centre is attributed to the hard work and persistence of everyone involved throughout the programme, from design of the physical space to implementing services. We are very proud of the CDC and look forward to developing and transforming pathways further this year.

References

1. Richards, M. (2020). Diagnostics: recovery and renewal. NHS England, PAR242, pp.8–47.

I2.2 MRI safety screening - is it time for patients' previous imaging to become part of the conversation?

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Background: Thorough pre-MRI safety screening, to identify any internal implants or foreign bodies (FBs), is essential to determine their MRI status so they can be scanned under the correct conditions(1,2,3). Despite the methods of pre-MRI screening being well established (screening questionnaire followed by verbal review)(4,5), undeclared implants/FBs are still being introduced into the MR Environment(6,7), highlighting a gap in these methods. Patients may not be providing accurate histories or omitting relevant medical history for many reasons, including misinterpretation of the questions, incomplete or inaccurate recollection of their medical history, or unfamiliarity with medical terminology(1,8,9,10).
The exact number of undeclared implants/FBs in MRI is unknown, but MRI incidents/near-misses of all natures are largely underreported internationally(9,11) and undeclared implants are currently not reportable to the MHRA(4). Routine review of existing previous imaging by radiographers during pre-MRI safety screening, currently only mentioned when screening unconscious patients(4,5), could avoid the introduction of undeclared implants/FBs into MRI.
Purpose: To highlight the role of additional screening steps, e.g., image review, for older patients, patients with complex medical histories or those who have had numerous medical interventions, in pre-MRI safety screening.
Summary of contents: Three case studies will be presented (with images), where patients failed to declare they had an implant (one active pacemaker, one passive coil-embolisation, one MR Unsafe breast tissue expander) during their pre-MRI safety screening, despite giving otherwise accurate medical histories. It will examine the implications of missing implants, provide a discussion of risk and look at the pros and cons of reviewing imaging.

References

1. Sawyer-Glover, A.M. and Shellock, F.G. (2000) Pre-MRI procedure screening: Recommendations and safety considerations for biomedical implants and devices, Journal of Magnetic Resonance Imaging, 12(1), pp. 92-106. doi:10.1002/1522-2586(200007)12:1<92::AID-JMRI11>3.0.CO;2-7
2. Sammet, S. (2017) Magnetic Resonance Safety, Abdominal Radiology, 41(3):444-451. doi:10.1007/s00261-016-0680-4.Magnetic
3. Kimbrell, V. (2020) Elements of Effective Patient Screening to Improve Safety in MRI, Magnetic Resonance Imaging Clinics of North America, 28:489-496. doi:10.1016/j.mric.2020.07.005
4. Medicines and Healthcare Products Regulatory Agency (MHRA) (2021) Safety Guidelines for Magnetic Resonance Equipment in Clinical Use. Available at:https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/958486/MRI_guidance_2021-4-03c.pdf(Accessed: 1 December 2023)
5. American College of Radiology (2020) ACR Manual on MR Safety Version. Available at:https://www.acr.org/-/media/ACR/Files/Radiology-Safety/MR-Safety/Manual-on-MR-Safety.pdf(Accessed: 1 December 2023)

6. Rogg, J. (2020) Key Elements of Clinical Magnetic Resonance Imaging Safety: It Takes a Village, Magnetic Resonance Imaging Clinics of North America, 28(4):471-479. doi:10.1016/j.mric.2020.07.001
7. Thomas, H. and Peter, Y. (2022) A practical guide for radiographers focussing on safety during magnetic resonance imaging, Journal of Medical Imaging and Radiation Sciences, 53(4):714-719. doi:https://doi.org/10.1016/j.jmir.2022.09.014
8. Boutin, R.D., Briggs, J.E. and Williamson, M.R. (1994) Foreign Bodies Before Imaging, American Journal of Roentgenology, 162:189-194. doi:10.2214/ajr.162.1.8273663
9. Hudson, D. and Jones, A. A 3-year review of MRI safety incidents within a UK independent sector provider of diagnostic services, BJR Open, 1(1). doi:10.1259/bjro.20180006
10. William, B. and Robinson, L. (2007) Screening for intra-orbital metallic foreign bodies prior to MRI: Review of the evidence, Radiography, 13(1):72-80. doi:10.1016/j.radi.2005.09.006
11. Nugent, B. (2022) The need for mandatory reporting of UK MRI safety incidents and a universal template to harmonise reports. 2022. Available at:https://www.radmagazine.com/wp-content/uploads/2022/07/RAD-Magazine-online-The-need-for-mandatory-reporting-of-UK-MRI-safety-incidents-and-a-universal-template-to-harmonise-reports-Barbara-Nugent.pdf?(Accessed: 27 November 2023)

I2.3 Operational delivery of planned radiology modalities out of an outer London Community Diagnostic Centre - lessons learned

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Background An outer London Hospital Trust's Community Diagnostic Centre (CDC), located in one of the most deprived areas in London, recorded for Q1 and Q2 for 2023/24 that16,939 scans were delivered (= 46.8% of the annual radiology activities).
- The planned CT split i.e., with and without contrast was that 65% of all CTs would be delivered with contrast and remaining without contrast. However, the actual delivery was 40% of all CTs scans were delivered with contrast.
- The planned MRI split suggested 13% with contrast and the remaining 87% without contrast. The actual delivery saw only MRI without contrast

Looking at the acceptance of the CDC using attendance figures as it's indicator the following results were revealed:
- Attendance at CDC for MRI, CT and NOUS was comparable with acute hospital sites
- Cancellations for appointments at CDC sites were slightly higher for MRI and CT but lower for NOUS when compared to acute Hospital sites
- DNA were slightly higher when invited to attend an appointment at local CDC most noticeably for NOUS appointments.

Conclusion Our CDC is accepted by our local community**.** Ongoing engagement with patients is pivotal to maximise attendance and utilising available appointment slots**.** MRI/CT split i.e. with and without contrast may not be the same as national target and is depending on local needs and requirements

Purpose Learning Objectives:
- insight into planned versus actual activities
- ongoing engagement with patients to maximise appointment utilisations
- identify referral source and requested diagnostic types

I2.4 Assessment of vascular parameters and lifestyle factors towards disability prevention in multiple sclerosis patients - a personalised medicine approach

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Background: In South Africa, previous studies conducted on multiple sclerosis (MS) have shown that disability is associated with vascular parameters, lifestyle factors and biochemistry in people with MS (pwMS). MS is an immune-mediated, chronic inflammatory disorder, however pharmaceutical interventions targeting the immune system, have not demonstrated reversal or prevention of disability progression. Incorporation of data-driven insights, such as personal biomarkers, in a personalised medicine healthcare approach for MS is necessary to provide a net benefit to pwMS and address their needs.

Method: Extracranial vascular ultrasound was performed on 51 pwMS and 25 age-matched controls. Sonographic interrogation determined carotid intima-media thickness (cIMT) and blood flow patterns. Disability was assessed using the Expanded Disability Status Scale (EDSS). Lifestyle and biochemical data were obtained for all participants and included in a pathology supported genetic testing (PSGT) tool which forms part of a chronic disease screening programme for pwMS

Results: This ultrasound study demonstrated significant associations ($p<0.01$) between vascular parameters, biomarkers and lifestyle factors. The significant associations with cholesterol, dietary intake and physical activity were included in the

PSGT tool that provides pwMS a personalised risk reduction plan for implementation and can also be used by referring clinicians to monitor and manage treatment.
Conclusion: Associations made between lifestyle and biochemistry data were incorporated into a clinical risk assessment algorithm, integrated with genetic test results, which can be used to write a report for each patient, indicating the steps to be undertaken to reduce their disability.

I2.5 From cataracts to cancer - exploring knowledge, awareness and perception of radiation and risk in relation to the risk benefit discussion

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Background The recent introduction of the European Directive[(1)] increased the onus on those involved in a patients imaging pathway to have a risk benefit discussion with patients. Recent research has shown that medical knowledge was not considered adequate[(2-4)]. The literature in the systematic review came from many different countries and covered many of the professional groups. However, there were only two studies study which mentioned Nurse Practitioners, one in the USA and one in Australia, which given the increase of Advanced Practice in the UK, is an important participant group about which little is known. Minimal studies included student or qualified radiographers.
Method This PhD research was carried out using constructivist grounded theory methodology and included three groups; non-medical referrers, radiographers, and final year students, imminently to become autonomous practitioners, all of whom could be involved in the risk benefit discussion. Semi-structured interviews were carried out and analysed using constant comparison and thematic analysis.
Results Results regarding radiation knowledge were encouraging when compared to what is known about medical referrers, and there were similar themes, with similar results, such as communication. One issue highlighted was the lack of standardisation in IR(ME)R training of non-medical referrers across the UK.
Conclusion This research showed several potential areas for future research and improvement in the training of those involved in the imaging journey including, the potential use of simulation in training of undergraduate student radiographers, and postgraduate education of radiographers and non-medical referrers

References

1. European Council Directive 2013/59/Euratom on basic safety standards for protection against the dangers arising from exposure to ionising radiation and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom. OJ of the EU. L13; 57: 1–73 (2014)
2. FAGGIONI, L., PAOLICCHI, F., BASTIANI, L., GUIDO, D. & CARAMELLA, D. 2017. Awareness of radiation protection and dose levels of imaging procedures among medical students, radiography students, and
radiology residents at an academic hospital: Results of a comprehensive survey. Eur J Radiol, 86, 135-142.
3. KOUTALONIS, M. & HORROCKS, J. 2012a. Justification in clinical radiolgical practice: A survey among staff of five London Hospitals. Radiation Protection Dosimetry, 149, 124-137.
4. PAOLICCHI, F., MINIATI, F., BASTIANI, L., FAGGIONI, L., CIARAMELLA, A., CREONTI, I., SOTTOCORNOLA, C., DIONISI, C. & CARAMELLA, D. 2016. Assessment of radiation protection awareness and knowledge about radiological examination doses among Italian radiographers. Insights Imaging, 7, 233-42.

I2.6 Portable fundamentally safe medical scanner to aid the diagnosis of a stroke at the point of care

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Background: There is a compelling need for a new form of medical scanner to diagnose whether a patient is experiencing a stroke. Crucially the scanner must be fundamentally safe and portable so that it can be readily transported to and deployed at the site of the emergency (e.g. the patient's home) with no prior planning or specialist shielding. That will shorten the time between the onset of stroke symptoms and a formal diagnosis, which will improve the outlook of these patients and reduce the £billions cost of stroke to the UK economy(1) since fewer stroke survivors will require long term care.
Method: The authors are developing a proof of concept demonstrator of a new scanner that uses low intensity electro-magnetic waves in the radio-frequency/microwave band. Initially the beam was propagated through the whole subject and detected on the far side(2). However, now the reflected portion of the beam is used which has greatly improved the quality of the acquired data.
Results: An extensive programme of scans has been performed on materially correct phantoms of a human head containing a stroke-affected region in the brain. The results using the reflected portion of the beam confirm that this new scanning method is capable of more reliably detecting the stroke-affected region in these subjects.

Conclusion: Scanning at radio-frequency/microwave frequencies affords several benefits over X-ray CT and MRI which could be game changing for stroke diagnosis. Extracting data from the reflected portion of the beam has been shown to be the preferred approach.

Research

1. The Stroke Association. (2018) State of the Nation - Stroke Statistics February 2018.
2. Heatley, D., El rube', I. and Abdel-Maguid, M. (2020) Stroke detection by scanning with low intensity radio frequencies. UKIO 2020, Liverpool, UK.

Session J2

J2.1 Keeping abreast of the 2 week wait breast referrals - mammographer led triaging service at a DGH

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Background: The "two week wait" symptomatic breast pathway was launched in 2010 to provide guidance for general practitioners to formulate referrals that can be enacted in a timely manner. Overtime, increased numbers of primary care referrals have continued to rise instigating a mismatch between capacity and demand.
Method: We analysed our mammographer led triaging service of the 2WW referrals that are streamlined into 2-stop pathways. These include triaging "direct to breast clinic" or "direct to imaging with follow up in breast clinic".
Results: Over 8 weeks, a total of 761 patients were referred via the 2WW pathway. Of these, 431 patients were referred with lumps (57%) and were sent direct to imaging +/- biopsy with follow up in breast clinic for review and results. Those with benign imaging were taken off the 2WW pathway and seen in clinic at the next availability. 147 patients presented with mastalgia (19%), 64 patients with axillary symptoms, 48 with nipple symptoms, 27 with skin concerns and 27 were male patients who were all triaged direct to breast clinic with some avoiding the need for imaging. The remaining 17 patients presented with other concerns related to implants, incidental findings on imaging and HRT advice.
Conclusion: Our results highlight the effective services provided by a mammographer led pathway to accelerate those with true red flag symptoms. It also highlights the need for segregating certain patient cohorts such as those with mastalgia, being redirected out of the cancer diagnostic pathway via specialist nurse practioners to ease capacity.

J2.2 A world-first interactive self-assessment educational tool to improve breast cancer diagnosis with MRI technologies

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Introduction: Breast cancer remains a global health concern. Magnetic resonance imaging (MRI) has emerged as a valuable adjunct to traditional breast cancer screening and diagnostic modalities, offering enhanced sensitivity and specificity. However, the full potential of breast MRI has yet to be fully realized, as its interpretation needs optimised reader expertise. To address this need, Australian and UK clinicians and scientists have collaborated with industry to develop an innovative interactive and clinically realistic on-line education platform to improve breast MRI diagnosis.
Methods: A cloud-based platform was developed to display high-resolution images and administer diagnostic responses to readers with immediate feedback on performance. The interface is designed to completely reflect individual behaviour when interpreting breast MRI. High-quality, MRI breast cancer cases with ground truths have been fed to the platform and AI algorithms are tailoring education to the individual clinician.
Results: A world-first breast MRI educational platform has been developed. Radiologists read each case, mark findings and answer specific questions that typify a clinical decision-making process. Then, sensitivity, specificity, lesion sensitivity, ROC and JAFROC scores are presented to the radiologist and specific image-based feedback is provided where ground truth is compared to truth. CME/CPD certification is automatically provided and algorithms are being implemented to provided tailored recommendations to accelerate learning.
Conclusion: Intelligent platforms designed for improving radiologists' performance in detecting breast cancer in mammography, ultrasound and digital breast tomosynthesis are available. We now have the equivalent for MRI diagnosis and our novel platform is currently undergoing clinical validation.

J2.3 Perception and understanding of the risks of cardiovascular late effects following radiotherapy for early left-sided breast cancer

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Adjuvant radiotherapy for early left-sided breast cancer (BC) plays a major role in its treatment. There is an increase of lifelong risk of cardiovascular disease (CVD) from adjuvant radiotherapy, and survivors must live with this burden1.
A qualitative study was undertaken to explore UK patients with BC perceptions and understanding of the risks of CVD late effects following adjuvant left-sided radiotherapy. Higher Education Institution ethical approval was granted for the use of guided online semi-structured interviews. Participants were recruited through Breast Cancer Now, expressions of

interest were stratified to ensure diversity across the sample. Interviews were, audio-recorded, transcribed in-verbatim and thematically analysed following the principles of Braun and Clarke 2.
Ten semi-structured interviews were completed with female participants aged between 42-56, across four UK regions and with academic qualifications ranging from GCSE through to postgraduate and doctoral level. Each had left-sided radiotherapy for BC between 2014 – 2021. Analysis established four themes: Knowledge and perception of risk, Heart-health follow-up, Heart-healthy behaviours and Needs and preferences. Crucially, participants were only indirectly aware of CVD risks because they had been informed of heart volume mitigation techniques by their radiotherapy healthcare professionals. The participants reported a lack of direct information and felt a sense of 'downplay' of the risks.
The provision of timely information can support the process of informed consent and support patients to be active in their own self-management and care, helping to mitigate long term CVD risk. Radiotherapy professionals must consider and review how this information is communicated.

References

1. Taylor, C., Correa, C., Duane, F.K., Aznar, M.C., Anderson, S.J., Bergh, J., Dodwell, D., Ewertz, M., Gray, R., Jagsi, R. and Pierce, L., 2017. Estimating the risks of breast cancer radiotherapy: evidence from modern radiation doses to the lungs and heart and from previous randomized trials. Journal of Clinical Oncology, 35(15), p.1641.
2. Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. Qualitative research in psychology, 3(2), pp.77-101.

J2.4 Can Artificial Intelligence (AI) assist with improving breast cancer patient care? A three-way observer performance study between radiology and surgical trainees and AI

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Introduction: The perception, interpretation and location guidance of cancers with medical imaging allows for both diagnosis and surgical planning for women with breast cancer, the most common female cancer worldwide. This study explores the observer performance of radiology and surgical trainees and compares their performance against four trained artificial intelligence (AI) models.
Methods: A test set of 20 mammography cases (6 cancer, 14 cancer free) was created from BreastScreen Australia (BSA) and 18 surgical trainees and 32 radiology final year trainees reviewed the cases via the Breast Screen Reader Assessment Strategy (BREAST) platform. Transfer learning was undertaken with the AIs with different Australian cases, and then deployed on the BSA test set[1]. The performances of participants and AIs were calculated in term of sensitivity, specificity, location sensitivity, Receiver Operating Characteristics (ROC) Area Under Curve (AUC) and Jackknife Alternative Free Response Receiver Operating Characteristics (JAFROC).
Results: No significant differences were observed between surgical and radiology trainees in sensitivity or lesion sensitivity, with higher performance by radiology trainees in specificity ($P < 0.01$). AI models had higher average specificity, sensitivity, lesion sensitivity, ROC and JAFROC than those from surgical and radiology trainees ($P < 0.01$).
Discussion: Higher AI performance suggests supportive AI tools could enhance radiologists and surgeons' own perception and performance, with re-excision rates as high as 30% in Australia.[2] AI in the surgical theatre has potential to guide surgeons to excision areas, especially in detecting difficult cancer margins, non-palpable cancers and real-time imaging, with the potential to improve patient care.

References

1. Jiang Z, Gandomkar Z, Trieu PD, et. al, (2024). Evaluating Recalibrating AI Models for Breast Cancer Diagnosis in a New Context: Insights from Transfer Learning, Image Enhancement and High-Quality Training Data Integration. Cancers. 2024; 16(2):322. https://doi.org/10.3390/cancers16020322
2. Leeuwen MT, Falster MO, Vajdic CM, et al. (2018). Reoperation after breast-conserving surgery for cancer in Australia: Statewide cohort study of linked hospital data. BMJ Open. 8(4). doi:10.1136/bmjopen-2017-020858

J2.5 Deep learning-based segmentation of breast arterial calcification to enhance cardiovascular risk assessment in women

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Background: Cardiovascular disease (CVD) is a leading cause of death globally, with a significant impact on women (Ibrahim et al., 2023). Breast Arterial Calcification (BAC), identifiable through mammography, is a promising marker for CVD risk(Bui and Daniels, 2019). Traditional manual methods for BAC assessment are inefficient, requiring substantial time and resources. Existing deep learning approaches for BAC segmentation have been limited by small datasets and the use of mammograms from a single brand of scanners or manufacturers, lacking clinical validation for CVD prediction (Ibrahim et al., 2023). This study introduces a deep learning model designed to segment BAC and assist in predicting the risk of CVD in women.
Method: A deep learning model was developed, harnessing a dataset of 2500 mammograms, where BAC was present in each image. A subsequent case-control study of over 7000 women evaluated the model's effectiveness in CVD risk

prediction, employing the Cox proportional hazards model to analyse the association between BAC presence/severity and CVD risk.

Results: The model achieved notable performance metrics: Jaccard similarity of 0.567, accuracy of 0.991, Precision of 0.755, F1-score of 0.739, and Recall of 0.727, confirming its capability in accurately identifying and grading BAC. Additionally, the Cox proportional hazards model analysis revealed a significant association between BAC severity and an increased risk of CVD in women.

Conclusion: This research provides a validated deep learning framework for automated BAC segmentation, offering a novel method for CVD risk assessment in women.

References

BUI, Q. M. & DANIELS, L. B. 2019. A Review of the Role of Breast Arterial Calcification for Cardiovascular Risk Stratification in Women. Circulation, 139, 1094-1101.

IBRAHIM, M. A., SULEIMAN, M. A. E., GANDOMKAR, Z., TAVAKOLI TABA, A., ARNOTT, C., JORM, L., BARRACLOUGH, J. Y., BARBIERI, S. & BRENNAN, P. C. 2023. Associations of Breast Arterial Calcifications with Cardiovascular Disease. Journal of Women's Health.

Session K2

K2.1 Black box no more: a survey to explore AI governance and adoption in medical imaging in the UK

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Background: Artificial Intelligence (AI) applications have shown an exponential increase in medical imaging and radiotherapy (MIRT). Successful adoption of AI tools requires specific procedures regarding AI governance, accreditation, validation and clinical evaluation. This study aims to understand any challenges, opportunities and future opportunities related to AI implementation as perceived by MIRT professionals in the UK.
Methods: An online survey was built on Qualtrics and distributed to UK-based MIRT professionals who had knowledge or made use of AI tools in their clinical practice. Radiographers, radiologists, medical physicists, biomedical engineers and other MIRT professionals were included in this sample. The instrument included both closed and open-ended questions. Descriptive statistics was used to analyse al quantitative data, whilst a content analysis approach was employed for all responses derived from the open-ended questions of the survey.
Results: A total of 245 valid responses were received. Participants highlighted the importance of specific governance frameworks, related training, effective leadership, and teamwork as vital components of successful AI adoption. A strong correlation was noted between prior training and knowledge of AI frameworks, with different professionals showing different affinity to certain frameworks. Lack of knowledge, lack of funding, data-related issues, and lack of explainability were highlighted as important challenges. Potential opportunities included time savings, increased diagnostic accuracy, more efficient reporting, and enhanced patient care.
Conclusion: AI implementation in MIRT is impeded by lack of knowledge/training. MIRT professionals are generally unaware of AI governance frameworks. Different professionals identify different priorities for AI adoption.

K2.2 Can artificial intelligence decrease the time to diagnosis of lung cancer – a retrospective-cohort study

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Introduction: Deep learning–based automatic detection (DLAD) algorithms for chest X-ray (CXR) interpretation have shown success in early detection of lung cancer (LC), however, there remains uncertainty related to 'real-world' clinical validation.
Method: CXRs and their corresponding chest-CT scans were retrospectively collated from a single institution between January 2019-2020. A commercially available, DLAD-algorithm was used to evaluate 320 CXRs (<6years prior to diagnosis) from 105 positive LC patients and 103 historic controls. Clinical reports were extracted and coded to correlate against DLAD findings.
Results: Of 105 LC patients, (57[55%] men, median[IQR] age 73[68-83] years), clinical reports identified LC in 64(61%) patients whereas DLAD identified 95(90%) cases. This resulted in diagnostic(image-level) and prognostic(patient-level) sensitivities of 57.6% and 90.0%, respectively. The DLAD detected 21% (22/105) of nodules on CXRs performed >12 months prior to diagnosis with 21 from 22 having negative clinical reports for lung nodule/mass. The potential average reduction in time-to-diagnosis whereby DLAD identified nodule(s) on previous CXR, but clinical report was negative, was 495 days (median[IQR] 193[42-598]days). Of the 103 'negative' controls (48[47%] men, median[IQR] age 69[61-77] years) 20 patients had a nodule abnormality score above threshold, generating a false-positive rate of 19%.
Conclusion: The DLAD showed excellent performance for detecting LCs that initially went undetected on the CXRs original clinical reports. This study demonstrates the algorithm's potential to increase sensitivity to the presence of lung nodule/mass whilst also reducing time-to-diagnosis of LC. Using the DLAD, in conjunction with a radiologist, could increase reporting accuracy and potentially improve clinical outcomes.

References

1. Chutivanidchayakul, F., Suwatanapongched, T., Petnak, T. (2023). Clinical and chest radiographic features of missed lung cancer and their association with patient outcomes. Clin Imaging 99:73-81. doi:10.1016/j.clinimag.2023.03.017
2. Dwyer-Hemmings, L., Fairhead, C. (2021). The diagnostic performance of chest radiographs for lung malignancy in symptomatic primary-care populations: A systematic review and meta-analysis. BJR Open 3(1):20210005. doi:10.1259/bjro.20210005
3. Ellis, P.M., Vandermeer, R. (2011). Delays in the diagnosis of lung cancer. J Thorac Dis. Sep 3(3):183-8. doi:10.3978/j.issn.2072-1439.2011.01.01

4. Gavelli, G., Giampalma, E. (2000). Sensitivity and specificity of chest X-ray screening for lung cancer: review article. Cancer. 89(11 Suppl):2453-6. doi:10.1002/1097-0142(20001201)89:11+<2453::aid-cncr21>3.3.co;2-d
5. Homayounieh, F., Digumarthy, S., Ebrahimian, S., et al. (2021). An Artificial Intelligence-Based Chest X-ray Model on Human Nodule Detection Accuracy From a Multicenter Study. JAMA Netw Open. 4(12):e2141096. doi:10.1001/jamanetworkopen.2021.41096
6. Jang, S., Song, H., Shin, Y.J., et al. (2020). Deep Learning-based Automatic Detection Algorithm for Reducing Overlooked Lung Cancers on Chest Radiographs. Radiology. 296(3):652-661. doi:10.1148/radiol.2020200165
7. Nam, J.G., Park, S., Hwang, E.J, et al. (2019). Development and Validation of Deep Learning-based Automatic Detection Algorithm for Malignant Pulmonary Nodules on Chest Radiographs. Radiology. 290(1):218-228. doi:10.1148/radiol.2018180237
8. The Royal College of Radiologists. (2019). Standards for radiology events and learning meetings.
9. The Society of Radiographers (SOR). (2021). New safety recommendations to avoid lung cancer being missed on chest X-rays; Independent HSIB investigation calls for more research into the use of CT scans.

K2.3 R-AI-diographers: exploring the changing professional role and identity of radiographers in Europe in the era of artificial intelligence (AI)

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While many radiographers report excitement about the capabilities of new AI technologies to revolutionise practice, they are also worried about the implications this change might have on their professional roles and identity, their learned skills and their career progression(1-3). This study aims to gain insights into the changing roles and identities of radiographers in the era of AI. The objective is to propose ways to better support the workforce in the face of fast technological changes.

A European-wide, cross-sectional study utilising a mixed methods online survey was designed and translated from English into eight languages. Snowball sampling was used for distribution via social media. All European radiographers were eligible to participate. The survey collected data on the following areas: a) demographics, b) the perceived short-term impact of AI on radiographer roles, c) the potential medium-to-long-term impact of AI, d) perceived opportunities and threats of AI implementation for radiographers' roles and careers, and e) the preparedness of radiographers to work with AI.

A total of 2,258 responses from 38 European countries were received. Despite some concerns around job security, survey responses were collectively projecting a feeling of optimism for the future of radiographer careers and professional identity. Knowledge, additional training, job satisfaction, better patient care, financial compensation and career advancement were presented as key motivators to professional engagement with AI.

This study provides insights into radiographers' attitudes towards AI implementation on the future of their professional identity. It proposes ways to better support the workforce in harnessing the benefits of AI.

References

1.Rainey C, O'Regan T, Matthew J, Skelton E, Woznitza N, Chu KY, Goodman S, McConnell J, Hughes C, Bond R, McFadden S, Malamateniou C. 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. Front Digit Health. 2021 Nov 11;3:739327. doi: 10.3389/fdgth.2021.739327. PMID: 34859245; PMCID: PMC8631824.
2.Antwi WK, Akudjedu TN, Botwe BO. Artificial intelligence in medical imaging practice in Africa: a qualitative content analysis study of radiographers' perspectives. Insights Imaging. 2021 Jun 16;12(1):80. doi: 10.1186/s13244-021-01028-z. PMID: 34132910; PMCID: PMC8206887.
3.Malamateniou C, McFadden S, McQuinlan Y, England A, Woznitza N, Goldsworthy S, Currie C, Skelton E, Chu KY, Alware N, Matthews P, Hawkesford R, Tucker R, Town W, Matthew J, Kalinka C, O'Regan T. (2021) Artificial Intelligence: Guidance for clinical imaging and therapeutic radiography professionals, a summary by the Society of Radiographers AI working group. Radiography (Lond). 2021 Aug 19:S1078-8174

K2.4 AI-Assisted Pediatric Fracture Detection

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Introduction: Fractures in pediatric patients are frequently encountered, necessitating prompt diagnosis for effective treatment. However, interpreting pediatric radiographs presents unique challenges due to evolving bone structures and growth plates, compounded by the difficulty in eliciting clear symptoms from young patients. Here, we introduce our AI model, qMSK, designed for fracture classification and segmentation, showcasing promising performance on the GRAZPEDWRI-DX dataset, focusing on pediatric trauma wrist radiographs.

Method: Our AI model employs an EffnetV2 encoder, coupled with SpinalnetFC for classification and Unet++ for segmentation. Training data comprising 450,000 X-rays across 15 body parts, including the wrist, were meticulously labeled by expert radiologists to ensure precise annotations. Performance metrics including AUC, AP, sensitivity, and specificity were computed on pediatric datasets.

Results: Evaluation on the GRAZPEDWRI-DX pediatric dataset, comprising 6,091 patients treated at the University Hospital Graz between 2008 and 2018, revealed promising outcomes. Across 10,643 studies (20,327 images), the model

achieved an AUC of 0.8593 (CI 0.8544 - 0.8642) and AP of 0.9315, with sensitivity and specificity reaching 0.7918. Stratified by gender, the model exhibited robust performance, yielding an AUC of 0.8522 (CI 0.8442 - 0.8602) and AP of 0.9053 for female patients, and an AUC of 0.8596 (CI 0.8532 - 0.8661) and AP of 0.9451 for male patients.
Conclusion: qMSK offers valuable assistance to pediatricians and clinicians in identifying and managing pediatric fractures, aiding in early detection for improved treatment outcomes, and minimizing post-healing complications. Its reliability in fracture detection from pediatric radiographs enhances clinical decision-making and patient care.

K2.5 Simulating radiotherapy induced skin reactions with moulage on all skin types, Phase 2 findings

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This project draws on local expertise from tutors and students at the City of Liverpool College who use theatrical special effects make-up techniques to create realistic radiotherapy skin reactions. The project **aims** were:
1. To develop a written and video guide explaining how to mimic radiotherapy radiation reactions of different grades on all skin types
2. To gain clinical staff evaluation of realism and validation of simulated reactions on all skin types
3. To create a sustainable resource pack for the simulation of radiotherapy radiation skin reactions of different grades on all skin types.
Results Pre-reg radiotherapy students and clinical staff felt simulated skin reactions were realistic.
Liverpool make up students were very positive about the effects they created and enjoyed working collaboratively with radiotherapy students and academic staff.
Conclusion Within the fields of nursing, medicine and other health professions, simulation of pathologies and injuries provides realistic training and a range of wearable "moulage" resources are commercially available. Within the field of radiotherapy, however, there is no guidance supporting the creation of simulated skin reactions on all skin types.
There is an unacceptable lack of representation of the diverse patient population in educational imagery and skin care guidance currently used in radiotherapy practice. We want to change this and ensure that inclusive imagery and skin toxicity descriptors are available as a teaching resource. We hope our simulation work will be a catalyst for change. Ensuring that radiotherapy skin toxicity educational resources are inclusive and representative of the diverse patient population.

References

Stokes-Parish, J.B., Duvivier, R. and Jolly, B. (2018) 'Investigating the impact of moulage on simulation engagement — A systematic review', Nurse education today, 64, pp. 49–55. Available at: https://doi.org/10.1016/j.nedt.2018.01.003.
Sezgunsay, E. and Basak, T. (2020) 'Is Moulage effective in improving clinical skills of nursing students for the assessment of pressure injury?', Nurse education today, 94, pp. 104572–104572. Available at: https://doi.org/10.1016/j.nedt.2020.104572.
Shiner, N. and Howard, M.L. (2019) 'The use of simulation and moulage in undergraduate diagnostic radiography education: A burns scenario', Radiography (London, England. 1995), 25(3), pp. 194–201. Available at: https://doi.org/10.1016/j.radi.2018.12.015.

K2.5 The use of an AI communication skills simulation for therapeutic radiographer education

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Background Formal communication specific teaching is integral to pre-registration healthcare programmes, but translating approaches to clinical practice can prove challenging. Simulation offers an opportunity to practice communicating in a professional context, and to develop skills in a supportive, low-pressure environment. The aim of this study was to evaluate the value of using an AI communication simulation as a complementary resource, prior to students embarking on their first clinical placement.
Method Bespoke radiotherapy-specific communication scenarios were developed with an AI software provider. The software runs on a laptop, allowing students to have real-time simulated conversations with AI patients. Transcripts for each conversation can be downloaded for debriefing.
A cohort of 21 first year therapeutic radiography students were randomised to either peer role play, or to complete three AI "patient" interactions, prior to completion of a formative assessment. Anonymised formative scores were compared between standard and AI intervention arms. Students were also invited to complete an anonymous online survey related to their experience.
Results Equivalence of learning was demonstrated across the standard and intervention groups. 85% of participants indicated they found AI simulation enjoyable and useful for skills development. Students valued the accessibility and low-pressure environment, highlighting the advantages of knowledge application, confidence-building, instant feedback and reflection.

Conclusion A foundational AI communication simulation can be an accessible learning tool to facilitate development of skills and confidence, prior to students embarking on clinical placement. Future work will aim to expand the range and complexity of scenarios to evaluate use with more advanced learners.

References

1. Ketterer S-J, Callender J, Warren M, Al-Samarraie F, Ball B et al. (2020) 'Simulated versus traditional therapeutic radiography placements: A randomised controlled trial', Radiography, 26 (2),140-146.
2. Rosenbaum M.E. (2017) 'Dis-integration of communication in healthcare education: Workplace learning challenges and opportunities', Patient Education and Counselling, 100 (11), 2054-2061.
3. Silverman J, Kurtz S, Draper J. (2013) Skills for Communicating with Patients. 3rd edn. Milton: Taylor & Francis Group; 2013.

Session L2

L2.1 Evaluation of the impact of dementia education on student diagnostic radiographers' knowledge, confidence and attitudes towards dementia

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Background: Radiographers lack confidence in caring for people with dementia, and people with dementia report negative experiences during imaging (Challen et al 2018). The incidence of dementia is increasing but there is a lack of Radiography-specific dementia training, and there is no standardised approach amongst pre-registration programmes in the UK (Higgins et al 2023).
We designed, implemented and evaluated a bespoke dementia education package for undergraduate diagnostic radiography students, comprising of a lecture and authentic clinical simulation and co-produced with people living with dementia.
Method: The sample was 2nd year undergraduate Diagnostic Radiography students at a UK HEI who undertook the education package as part of one of their modules. Pre and post intervention survey with closed and open-ended questions were used to evaluate the efficacy of the radiography dementia education package, including pre-defined knowledge, confidence and attitudes scales.
Results: Prior to the education students reported a lack of knowledge and confidence when imaging people with dementia, highlighting a lack of training and experience. Students reported increased confidence in working with people with dementia after the education. Most preferred the simulation, giving reasons such as liking the opportunity to interact with real people with dementia and receive feedback about their practice.
Conclusion: Students benefit from authentic training on dementia care. We developed an effective educational intervention which was rated positively by students. Co-production with service users was crucial to developing student's interpersonal skills. A similar model could be adopted in other diagnostic radiography and healthcare programmes.

References

1. Challen, R., Low, L. F. and McEntee, M. F. (2018) Dementia patient care in the diagnostic medical imaging department. Radiography. 24, S33-S42.
2. Higgins, R., Spacey, A. and Innes, A. (2023) Delivering person-centred dementia care: Perceptions of radiography practitioners within diagnostic imaging and radiotherapy departments. Dementia. 22 (7), 1586–1603.

L2.2 The perceived confidence of diagnostic radiography students in providing preliminary clinical evaluation: a mixed method, single institution study

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Background: The Society and College of Radiographers recommend preliminary clinical evaluation (PCE) to reduce image interpretation errors within emergency departments. The uptake of PCE has been slow, leading to disparity in the clinical experience student radiographers receive. This study aimed to explore the confidence of diagnostic radiography students in producing PCE and to provide the rationale behind their ratings of perceived confidence.
Method: A convergent mixed methods design was utilised. Data collection was via an online cross-sectional questionnaire and in-person focus groups. Quantitative data were analysed descriptively and via non-parametric methods. Qualitative data were analysed using thematic analysis.
Results: 43 participants completed the questionnaire (37%) with 9 participating in the focus groups. Confidence was consistently highest for fracture identification and lowest for PCE across all radiograph types. Confidence was highest for appendicular radiographs, then axial and lowest for paediatric across fracture identification, red dot, and PCE. Those with PCE experience were significantly readier to participate in a PCE system than those without ($p=0.002$). Confidence was significantly lower in the clinical environment compared to the university for all conditions ($p<0.006$). Four main themes were identified: Confidence aligns with experience; Confidence suffers due to environmental pressures; Challenges with image interpretation and writing PCE; Unsatisfactory PCE exposure and education.
Conclusion: Diagnostic radiography students at this institution are generally confident in their fracture identification abilities, however, they are considerably less confident in their PCE ability. PCE confidence is affected by clinical and university experience, anatomy location, and environmental pressures.

L2.3 As clinical supervisors are you doing enough? Understanding student radiographers' first experience of encountering open wounds

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Background Student radiographers find working with trauma patients difficult, yet clinical staff perceive students' abilities differently, expecting them to rise to the challenge (Shiner 2019; Hyde, 2015). The dissonance between this perception and students' experiences can alter the support delivered. Understanding first-year students' experiences when seeing open wounds and sharing this knowledge with clinical partners serves to strengthen relationships, offering a cohesive support network for the students.
Method First year diagnostic radiography students (n=97) completed visual analogue scales to record their emotions when seeing their first open wound, analysed using SPSS. Seven students attended an interview to further evaluate their experiences. Interviews were analysed using an interpretative phenomenological approach. Merging of the quantitative and qualitative data using a convergent design generated meta-inferences.
Results Five master superordinate themes were developed from the interviews: experiencing a new environment, navigating new relationships, preparation, engagement with wound and emotional management. Further analysis led to the development of three meta-inferences: simulation to reality, knowledge is power, and emotional support. The latter two will be the focus of the presentation.
Conclusion Students suffered from increased anxiety and a lack of closure due to limited debriefing. Students were left working through their emotions individually, feeling more comfortable 'offloading' with peers. There is a risk if emotional support and knowledge are insubstantial, first-year students may be on a journey to emotional exhaustion, leading to burnout and ultimately reducing the level of care received by the patient.

References

1) Hyde E. (2015) A critical evaluation of student radiographers' experience of the transition from the classroom to their first clinical placement. Radiography. Vol 21 (3) pp. 242-247. https://doi.org/10.1016/j.radi.2014.12.005
2) Shiner N. (2019) Can Simulation impact on first year diagnostic radiography students' emotional preparedness to encounter open wounds on their first clinical placement: A pilot study. Radiography. Vol. 25 (4) pp. 294-300. https://doi.org/10.1016/j.radi.2019.04.009

L2.4 Find the gap - the potential perils of self-reported training needs in the clinical environment

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Background: Healthcare professionals often work between areas that require distinct knowledge, skills and competence [1]. In radiotherapy, one of these areas is pre-treatment CT. IR(ME)R stipulates that employers must ensure that staff carrying out an exposure are "adequately trained [4]." So, when anecdotal evidence suggested training needs on CT, a working group was formed with the aim of formally capturing these needs.
Method: The pre-validated WHO Hennessy-Hicks Training Needs Analysis Questionnaire was adapted for local use. It was piloted with staff of different grades for clarity and suitability. It asked respondents to rate both the importance of a range of CT tasks and their own ability to perform each task on a scale of 1-7. Self-assessment is a cornerstone of professional practice. The GMC, NMC, HCPC, IPEM and SOR all require registrants/members to recognise the limits of their own competence [2,3,5,6,9]. Results were analysed as per the Hennessy-Hicks Training Needs Analysis Questionnaire and Manual [7].
Results: Gaps were noted. However, when plotted as the questionnaire developers suggest, results showed no intervention was required. This was unexpected and led to a further evaluation of the literature. Studies suggest that self-reported confidence is rarely a predictor of clinical competence [8]. However, we routinely depend on self-reported data as a time and resource efficient way to identify gaps in knowledge.
Conclusion: Although limited as a single-institution study with a small sample size (n=16), in the context of the literature our experience demonstrates the potential for self-reported training needs to mis-represent actual training needs.

Table

References
1. Al Jabri, F.Y.M., Kvist, T., Azimirad, M. and Turunen, H. (2021). A systematic Review of Healthcare Professionals' Core Competency Instruments. Nursing & Health Sciences, [online] 23(1), pp.87–102. doi:https://doi.org/10.1111/nhs.12804.
2. CODE OF PROFESSIONAL and ETHICAL CONDUCT. (2018). Available at: https://www.ipem.ac.uk/media/ogripbyz/03-07-05-0217-08-00-code-of-professional-and-ethical-conduct.pdf?ver=2019-01-28-154948-337 [Accessed 11 Feb. 2024].

L2.5 The student perspective of a research-informed teaching activity using simulation

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Background: The opening of our new £3 million Centre for Medical Imaging offered a novel opportunity for students to undertake a research-informed teaching activity to design a survey tool and collect data that compared the two new X-ray imaging rooms while wearing sensory equipment to simulate what a person living with dementia might experience in each room. One of the imaging rooms has been designed to be dementia-friendly, with the other being a standard clinical design.

This presentation reports the evaluation of the student perspective of this group-based, research-informed teaching activity that used simulation.

Method: This was a multi-method, two-phase (online survey followed by an asynchronous focus group) qualitative research study. The New World Kirkpatrick Model formed the theoretical framework to evaluate the student experience.

Findings and Discussion: 21 out of 71 students completed the survey, with 7 students participating in the asynchronous online focus group.

We found that students overwhelmingly agreed that this activity had enhanced their learning and developed their self-efficacy with research skills. The use of simulation was seen as a key attribute in their learning and as part of their professional practice in optimising person-centered dementia care within the imaging department. Being able to undertake the research as a group was also identified as a key factor in supporting student learning.

According to Jenkins and Healy [1], all undergraduate students should experience learning about research. The introduction of learning activities that combine research and teaching can have a positive impact on student learning and employability skills.

References
1. Jenkins, A. and Healey, M. (2005) Institutional strategies to link teaching and research. York. The Higher Education Academy.

L2.6 Building autonomy - evaluating the impact of a simulated placement for final year diagnostic radiography students

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Background Simulated practice education has been demonstrated to effectively prepare students for the transition from student to qualified practitioner (Hough et al., 2019) and is a valuable pedagogical approach for diagnostic radiography (DRAD) education. This approach ensures a secure and consistent learning environment, fostering active learning and competency building without compromising patient safety, (Tuttle and Horan 2019). Previous research acknowledges the efficacy of simulated placements in enhancing preparedness of first-year DRAD students for clinical practice (Partner et al 2022). A gap remains in understanding the impact of such placements for final-year students on their transition to autonomous practitioner.

Method Final-year DRAD students completed a two-week simulated placement involving clinical scenarios with actors, e-learning and reflective activities. Debriefing played a crucial role in enriching the learning experience (Zhang et al. 2019). Students completed an evaluation questionnaire. A Likert scale and open-ended questions for qualitative insights were used. Data was analysed using descriptive and thematic analyses.

Results Fifteen students from a cohort of 49, completed the questionnaire. The majority of respondents recognised the value of the simulated placement in enhancing their development as radiographers. Participants found the simulation weeks engaging and interesting, with positive impacts on their clinical skills, communication and reflective skills. Participants felt the experience contributed to a deeper understanding of professional behaviours and expectations, and had enhanced their confidence for autonomous practice.

Conclusion Despite a small number of respondents, findings suggest that a well-structured simulated placement for final-year DRAD students can significantly contribute to their development as autonomous practitioners.

References

1. Hough J, Levan D, Steele M et al. (2019) BMC Medical Education 19:463
2. Tuttle, N., Horan, S.A. (2019) The effect of replacing 1 week of content teaching with an intensive simulation-based learning activity on physiotherapy student clinical placement performance. Adv Simul 4 (Suppl 1), 14 .
3. Zhang, H, Mörelius, E Goh, Sam H, Wang, W, (2019). Effectiveness of Video-Assisted Debriefing in Simulation-Based Health Professions Education: A Systematic Review of Quantitative Evidence. Nurse Educator 44(3).

Session L8

L8.1 Double Indemnity: The arrival of the Digital Twin

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The concept of a digital twin is not new - the term first appearing in relation to radiology in 1994.[1] However, the growth of artificial intelligence algorithms in recent years has seen an exponential rise in publications using this term within the medical literature over the past five years,[2] and is drawing the attention of mainstream media.[3] The use of digital simulations, whether of individual patients, specialist clinics or healthcare systems at a national level is said to promise major health benefits across the board.[4] Both radiologists and oncologists will welcome the opportunity to deliver more personalised care, moving away from the notional "average" patient. Nevertheless, a comparator or exploitable "twin", digital or otherwise, is a longstanding idea within and beyond medicine.

This paper delves into literature, movies and TV to explore what twins and body doubles, and their perception within the popular imagination, can teach us as we move into the era of the digital twin. From Kazuo Ishiguro to Black Mirror, Michael Bay to Christopher Nolan and from The Dark Knight to The Two Ronnies, an eclectic range of References will demonstrate a longstanding fascination with duality and alter-egos. Applying a thought experiment inspired by these reflections provides insight into how best to utilise healthcare resources as we embark upon the era of artificial intelligence.

L8.2 John Poland of Blackheath and the development of paediatric orthopaedics

Adrian Thomas[1]
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Background John Poland (1855-1937) was an orthopaedic surgeon at the Miller General Hospital in Greenwich. He was particularly interested in paediatric skeletal trauma which was a difficult area of clinical practice before radiography. Poland became interested in the newly discovered X-rays, and produced his hugely influential book 'Traumatic Separation of the Epiphyses' in 1898 incorporating new knowledge gained from radiography. In that same year he published the first bone age atlas.

At the Miller Hospital Poland worked with the surgeon Thomas Moore and the scientist William Webster. In the March of 1896 Moore and Webster had radiographed the fractured ribs of a child attending the Miller Hospital, and this persuaded the committee of the Miller Hospital to install an X-ray apparatus. This X-ray Department, founded in 1896, was one of the first in the world.

Purpose

- To understand how radiography contributed to the understanding of normal, developmental and pathological anatomy.
- To learn about John Poland's insights into the optimal way to introduce new technology.
- To celebrate the life of this remarkable surgeon.

Summary of Content A presentation will be made of:

- The life and times of John Poland FRCS.
- Poland's contributions to paediatric orthopaedics.
- Early radiology at the Miller Hospital.

References

Thomas, A.M.K. (2022) Invisible Light, The Remarkable Story of Radiology. Boca Raton: CRC Press (Taylor and Francis Group).

L8.3 Florence Stoney: formidable feminism in the history of radiology

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[1]*University of CumbriaUnited Kingdom,* [2]*Canterbury Christ Church UniversityUnited Kingdom*

Background: Florence Ada Stoney is a pioneer of Radiology, but her successes often remain overlooked. She is credited as being the first female radiologist in the United Kingdom, but her life and work are not well documented compared with other pioneers of the time. Florence Stoney's life and work are evidence of the struggles she faced due to her gender. She overcame many social constraints faced by women of the period, to train in medicine and contribute to the medical effort during World War I. Even today a gender gap in Radiology is evident. Each year fewer female students choose Radiology

as their medical specialism, compared with their male peers. On the other hand, Radiography is a female dominated profession, with fewer male students studying and working in this field of healthcare. **Purpose:** - To celebrate the life of Florence Stoney. - To consider Florence Stoney's achievements, and their impact on Radiology. - To explore the current position of medical/radiography education in the UK. **Summary of Content:** This submission focusses on Florence's life, education, and work, celebrating Florence's achievements and her contribution to Radiology. This submission also explores the socio-economic and gender issues of the period, which created barriers for Florence to overcome, some of which continue to have an impact on medical education in the United Kingdom today.

L8.4 The million volt radiotherapy x-ray set at St Bartholomew's Hospital in 1938

Dr Edwin Aird[1], ***Adrian Thomas***[1]
[1]*BSHR, Rickmansworth, United Kingdom*

Background In the 1930s high voltage X-ray tubes were in use, including 200-250kV x-rays, to treat cancer.
It was realised that X-rays at higher energies were needed to penetrate further into the body. Several attempts around the world, and particularly in the USA, will be discussed; however very few units were successful at treating large numbers of patients.
St. Bartholomew's Hospital was fortunate to have a major donation from Mrs Myer Sassoon, and appointed George Innes to investigate this problem, and on May 21, 1948, Innes presented his results in a presentation to the Section of Radiology of the Royal Society of Medicine.

Purpose

- To understand the supply and installation of a continuously evacuated X-ray tube.
- To learn about the high voltage D.C. generators that were needed to operate at a guaranteed voltage of 600,000 volts.
- To have an understanding of an X-ray therapy unit that was designed to operate continuously at one million volts.
- To celebrate this remarkable machine, the last major development in X-ray therapy before modern apparatus.

Summary of Content

Metropolitan Vickers Electrical Company installed an X-ray tube, which by 1938, operated successfully at 1MV, and treated treating patients until 1962. The presentation will discuss:

- X-ray Tube design.
- The high voltage generator.
- Room design and its protection.
- X-ray properties at 1MV.
- Treatment Plans compared with 200-250kV.

References

Innes GS. The million-volt X-ray plant; its development and application. Proc R Soc Med. 1948 Oct; 41(10):691-703.
Phillps R (with the technical assIstance of Innes G). Supervoltage X-ray therapy: a report for the years 1937-1942 on the Mozelle Sassoon supervoltage x-ray therapy department, St. Bartholomew's hospital. Wellcome Collection

L8.5 Francis H Williams – an American radiology pioneer

Dr Arpan K Banerjee[1]
[1]*Brit Soc Hist Radiology, SOLIHULL, United Kingdom*

Francis Henry Williams was born in Massachusetts on July 15, 1852. He graduated from Harvard Med School and followed this with two years of training in Vienna and Paris. His early research was in infections, in particular the use of diphtheria antitoxin.
Although Williams started of as a physician, the discovery of X-rays by Rontgen fired his interest in its potential applications. In 1896 he reproduced Rontgen's experiments in the laboratory of physics at the Massachusetts Institute of Technology, which was headed by Charles Cross. In 1896 Williams opened a radiology unit in the basement of Boston City Hospital and X-rayed patients from Harvard, Tufts, and Boston Universities.
By 1897 had produced over 409 volumes (each of around 250 pages) of drawings of patients with chest diseases. He was one of the earliest radiologists to describe the apical changes on chest X-ray in patients with tuberculosis. He also described other chest X-ray findings such as emphysema and pleural effusions.
He was an early adopter of fluoroscopy and collaborated with Walter Cannon. In 1901 he produced his famous book 'The Rontgen Rays in Medicine and Surgery' one of the early radiology textbooks.
He became President of the Association of American Physicians from 1917-18 and an honorary member of the American Rontgen Ray Society and the Radiology Society of North America. He died on June 22, 1936 at the age of eighty-three. Today he is remembered as the father of American radiology.

Session M2

M2.1 Real-world resources required to sustain a CBCT-guided online adaptive radiotherapy service

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At Royal Surrey we have treated 1677 CBCT-guided online-adaptive radiotherapy (oART) fractions using the Varian Ethos, predominately for bladder (960#) and cervix (681#). The additional resources required to maintain an oART service were extracted from data on delivered fractions.
Initial treatments were resource-intensive, requiring two treatment radiographers, one physicist and one clinician. This has been reduced to having only treatment radiographers present for the majority of fractions; the clinician is additionally required for the first fraction of Cervix treatments.
Mean treatment time (from CBCT to close of session) was 22.2 and 33.6 minutes for Bladder and Cervix respectively. Range of times was 16.8 – 41.0 minutes (mean 25.8), compared to an IGRT treatment slot of 12 minutes. Treatment time has a slight downward trend over time. Each fraction is reviewed offline by a physicist (15 minutes/#) and weekly by the clinician (10 minutes/#). An average of 2.4 and maximum of 8 oART fractions were delivered per day. The oART planning is estimated to be 1-2 hours in addition to the standard planning time, with a similar amount of additional time needed for plan checking including preparation of a backup Truebeam plan.
The additional time per patient for oART compared to IGRT is approximately 19 hours per patient, split between the professions. This increase in resource requirements has been absorbed into standard working practices within our NHS department, delivering significant reduction in organ doses and improving target coverage. Additional resources are likely to be required to further expand the service.

M2.2 Exploring non-medical prescribing by therapeutic radiographers - perspectives of prescribers and managers in Scotland, Wales and Northern Ireland

Ms Karen Crowther[1], Dr Judith Edwards[2], Prof Nicola Carey[3], Dr Sonyia McFadden[1], Prof Ciara Hughes[1]
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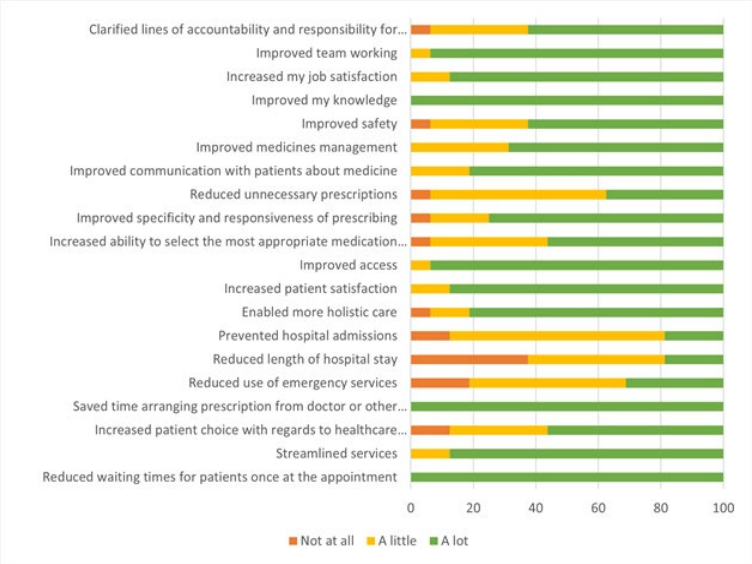
Background: In the United Kingdom (UK), non-medical professionals are authorised to prescribe licensed medical products, allowing improved access to medicines and cost-effectiveness. Limited information exists about the opinions and experiences of therapeutic radiographers (TRs) and Radiotherapy Managers (RTMs) regarding non-medical prescribing (NMP) in the UK's Devolved Administrations.
Methods: A mixed methods study was undertaken during 2022-2023, comprising an NMP-TR online survey (n=20) and semi-structured interviews with NMP-TRs (n=7) and RTMs (n=6). Survey participants were invited to NMP-TR interviews; RTMs were contacted via email. Survey data were analysed using SPSS® V28, with interviews conducted via MS-Teams, recorded, and transcribed verbatim. Anonymised data were thematically analysed to generate themes and sub-themes.1,2
Results: The top three identified benefits of NMP were reduced patient waiting times, saving time accessing medicines and improved TR knowledge (Figure 1). Frequently reported factors delaying and/or preventing prescribing related to legislative restrictions and implementation challenges (n=7, 63.6%). From the interviews, four main themes emerged. The most frequently mentioned was 'Advantages & Impact of TR NMP', with the subthemes: 'Optimising workforce resources' highlighting improved staff skills/workload utilisation; 'Improving medicines access & service efficiency'; 'Patient experience.' Other themes were 'Preparation for the prescribing role', 'Disadvantages of NMP', and 'Implementation and governance.' While NMP-TRs and RTMs shared similarities, the latter focused on challenges associated with implementation, e.g., funding streams and succession planning.
Conclusions: TRs in the Devolved Administrations perceive several advantages with NMP despite the identified challenges. These findings provide valuable insights for policymakers and healthcare professionals seeking to enhance NMP practice.

Table



References

1. Braun V, Clarke V. (2006) Using thematic analysis in psychology. Qual Res Psychol2006;3:77-101. doi:10.1191/1478088706qp063oa.
2. Braun V, Clarke V. (2021) One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qualitative Research in Psychology, 18:3, 328352, DOI: 10.1080/14780887.2020.1769238

M2.3 UK survey of cervical cancer image guided and adaptive radiotherapy

Mrs Sophie Alexander[1,2], Dr Susan Lalondrelle[1,2], Prof Helen McNair[1,2]
[1]The Royal Marsden NHS Foundation Trust, Sutton, United Kingdom, [2]The Institute of Cancer Research, Sutton, United Kingdom

Background The gold-standard image-guided radiotherapy (IGRT) protocol for cervical cancer (CxCa) is daily 3-dimentional volumetric verification registered to bony-anatomy with online soft-tissue target coverage assessment[1]. Adaptive radiotherapy (ART) is recommended[1] to reduce radiation dose to normal tissue[2-6], potentially reducing patient toxicity.

We developed a survey to elicit current UK CxCa IGRT practice, gold-standard concordance, ART uptake and implementation barriers.

Method Ten UK multidisciplinary radiotherapy experts piloted the survey. Their feedback on clarity and content was incorporated into the final iteration.

The 28-question CxCa IGRT and ART survey, was hosted on Microsoft forms July-September 2023. All 62 NHS radiotherapy centres were emailed the survey link.

Results Forty centres responded. All perform daily IGRT for CxCa: 36/40 use 3-dimentional, 4/40 utilise 3- and 2-dimentional imaging. Bony-anatomy registration with soft-tissue review is most common (n=23). 32/40 deliver specific CxCa IGRT training.

75% of respondents rated CxCa the pelvic site to benefit most from ART. Yet 30/40 do not deliver ART. The top five barriers were:

- Limited physics time/workforce
- Limited oncologist time
- Staff shortages
- Limited planning time/staff
- Limited therapeutic radiographer time/workforce

Ten centres employ ART utilising plan-of-the-day (n=6), online adaption (n=1) or reactive offline adaption (n=3). Interest in partaking in a CxCa ART training programme was high, 18/40 stated “Yes”, 19/40 stated “Maybe”.

Conclusion Concordance with gold-standard IGRT practice for CxCa is high however implementation of ART is low. The benefit of ART for CxCa is recognised, however considerable barriers exist. A centralised training programme could help overcome these, interest in participation is high.

Table

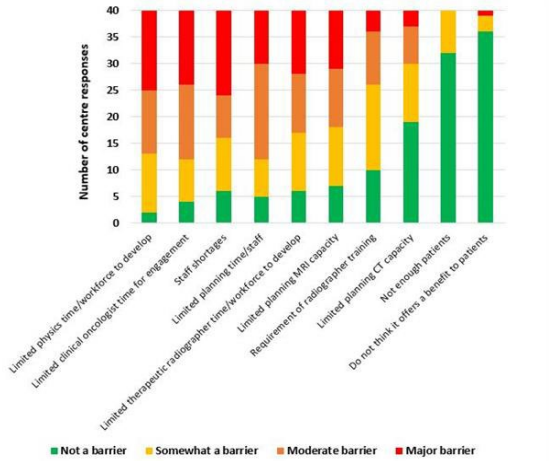


Figure: Barriers that made or are making implementation of cervical cancer adaptive EBRT a challenge.

References
1. Radiotherapy Board. On target 2: updated guidance for image-guided radiotherapy Radiotherapy Board 2021:182.
2. Bondar, M.L., Hoogeman, M.S., Mens, J.W., Quint, S., Ahmad, R., Dhawtal, G. and Heijmen, B.J., 2012. Individualized nonadaptive and online-adaptive intensity-modulated radiotherapy treatment strategies for cervical cancer patients based on pretreatment acquired variable bladder filling computed tomography scans. International Journal of Radiation Oncology* Biology* Physics, 83(5), pp.1617-1623.
3. Heijkoop, S.T., Langerak, T.R., Quint, S., Bondar, L., Mens, J.W.M., Heijmen, B.J. and Hoogeman, M.S., 2014. Clinical implementation of an online adaptive plan-of-the-day protocol for nonrigid motion management in locally advanced cervical cancer IMRT. International Journal of Radiation Oncology* Biology* Physics, 90(3), pp.673-679.
4. Seppenwoolde, Y., Stock, M., Buschmann, M., Georg, D., Bauer-Novotny, K.Y., Pötter, R. and Georg, P., 2016. Impact of organ shape variations on margin concepts for cervix cancer ART. Radiotherapy and Oncology, 120(3), pp.526-531.
5. van de Schoot, A.J., de Boer, P., Visser, J., Stalpers, L.J., Rasch, C.R. and Bel, A., 2017. Dosimetric advantages of a clinical daily adaptive plan selection strategy compared with a non-adaptive strategy in cervical cancer radiation therapy. Acta oncologica, 56(5), pp.667-674.
6. Visser, J., De Boer, P., Crama, K.F., Van Kesteren, Z., Rasch, C.R.N., Stalpers, L.J.A. and Bel, A., 2019. Dosimetric comparison of library of plans and online MRI-guided radiotherapy of cervical cancer in the presence of intrafraction anatomical changes. Radiation Oncology, 14, pp.1-13.

M2.4 Implementation of a late gastrointestinal (GI) effects of pelvic radiotherapy clinic led by Allied Health Professionals

Mrs Rachel Rigby[1]
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Pelvic Radiation Disease (PRD) can cause a range of chronic physical symptoms that can lead to psychological distress and social anxiety. Symptoms are often under-reported or misdiagnosed due to the limited knowledge of PRD amongst health care professionals1. Some of the GI symptoms experienced are entirely manageable with the correct diagnosis or the right supportive interventions2.

Lancashire Teaching Hospitals is piloting a service to manage late GI effects following pelvic radiotherapy. The service provides a multidisciplinary team approach, led by an Advanced Clinical Practitioner, Physiotherapist, and Dietitian; support from gastroenterology is available.

Aim Evaluate the need for the GI late effects service and the benefits of AHP collaboration, for complex and non-complex bowel presentations.

- Evaluate the number of referrals over 12months
- Classify interventions (complex or non-complex)
- Quantify dietetics input and physiotherapy referrals
- Evaluate pharmacological interventions used
- Evaluate patients' response to interventions
- Quantify confirmed diagnoses achieved
- Evaluate Gastroenterology input

Method The late effects data base provided the required data. Patient satisfaction and outcomes have been measured by pre and post Inflammatory Bowel Disease Questionnaires (IBDQ), Patients Global Impression of Change (PGIC) and Satisfaction Questionnaires

Results Fifty-nine new patient referrals were received, 82% of the patients were given dietetic interventions and 27% were seen by the physiotherapist. High levels of patient satisfaction and good response to treatment (IBDQ & PGIC) was shown. Conservative management (45%) and complex management (54%) is required across our patient population. Dietetic and physio support is integral to our specialist service.

References

1. Pelvic Radiation Disease Association and Jo's Cervical Cancer Trust, "I want my life back" (2020). The long-term side-effects of radiotherapy: Gaps in recognition and resourcing leaving patients suffering without treatment. Retrieved from: https://www.prda.org.uk/wp-content/uploads/2020/12/Jos-Trust-PRD-report.pdf
2. Pelvic Radiation Disease Association (2022). Best Practice Pathway for Pelvic Radiation Disease. Retrieved from: https://www.prda.org.uk/wp-content/uploads/2022/09/PRDA_Best-Practice-Pathway_Toolkit.pdf

M2.5 Viability of treating prostate radiotherapy with an empty bladder protocol

Antony Pearson[1], *Jim Daniel, Helen Bayles, Hazel Newcombe*
[1]*South Tees Hospitals NHS Foundation Trust, Middlesbrough, United Kingdom*

Background Prostate cancer patients treated follow a "bladder full" protocol for radiotherapy to move bladder and bowel out of high dose areas. This requires patients void and drink 500ml water 45-minutes prior to treatment/scanning. This protocol doesn't guarantee consistent bladder volumes. An empty-bladder protocol was trialled to help with patient comfort and smoother running of the radiotherapy service.
Methods 30-patients treated for low/intermediate risk cancer to prostate and seminal vesicles received an "empty-bladder" protocol and compared against the control: 30-patients in the same risk group.
Plan metrics compared: target coverage and conformity, organ-at-risk doses and complexity. Image matching times and ease were compared, along with number of occurrences when patients assessed for treatment and asked to re-prep.
Patient experience and acute toxicities compared utilising patient questionnaire and telephone CTCAE scoring.
Results Target coverage and most OAR doses were unaffected. Low dose rectum metrics increased, as did bladder metrics, but plans within protocol limits.
No significant difference between the groups XVI-auto-match to soft-tissue match.
Scan-no-treat rates due to bladder size where comparable, however a 36% reduction for bowel rescans and a 92% reduction in bladder scans was noted for the empty-bladder group.
Majority of acute toxicities had returned to baseline values at 3 & 6-months post treatment, no significant difference was seen between the groups.
Conclusions 30-prostate patients successfully treated with empty bladders. Plans and delivery logistics were similar leading to comparable toxicity results. However, time in department and on-set bladder/bowel issues were reduced leading to increased patient satisfaction.

M2.6 Optimising bowel and bladder preparation for patients undergoing prostate radiotherapy: A comparison study of two different preparation regimens

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[1]*Gloucestershire Hospitals NHSFT, Cheltenham, United Kingdom*

Background This study aimed to compare the standard bowel and bladder preparation at the authors' department for patients undergoing prostate radiotherapy (micro-enema on the day of planning CT, daily micro-enemas during radiotherapy and a full bladder at CT and radiotherapy) with the recommendation by recent NIHR trials (micro-enemas 2 days before planning CT and on day of CT, micro-enemas for the first 10 fractions of radiotherapy and a partially-full bladder at CT and radiotherapy). Nationally, preparation regimens are inconsistent.
Method Two groups of 21 patients received 20 fractions of prostate IGRT. Group 1 followed standard preparation guidelines. Group 2 followed the new preparation. Data compared between the groups included:
*Number of patients requiring repeat CT appointments
*Number of repeated CBCT scans
*Week 4 treatment CTCAE lower GI toxicities
*Number of radiotherapy re-plans
Results Micro-enema use for 2 days before CT did not reduce the number of repeat CT appointments. There was no significant difference in the number of repeated CBCT scans fractions 11-20 for bowel issues (Group 1: M=0.86, SD 1.35, Groups 2: M=0.52, SD=1.03). Only 1 patient in Groups 2 required additional rectal preparation. The number of patients reporting CTCAE graded anal bleeding in Group 1 was higher than Group 2 (Group: 1 n=5, Group 2: n=1). The number of re-plans due to bladder issues was 3 in Group 1, and 1 in Group 2.
Conclusion Direct patient benefit was found with the new preparation. It has been implemented for patients undergoing prostate radiotherapy in the authors' department.

P001 Evaluating human-AI interaction in the detection of lung, breast and colorectal cancers: A systematic scoping literature review

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Background: In forthcoming years, Artificial Intelligence (AI) will become an increasingly integral part of medical imaging practice, and automated image interpretation, including Computer-Aided Detection (CADe), represents a particularly significant application of AI within this domain. It is, therefore, imperative that diagnostic radiographers develop an understanding of the role, value and potential pitfalls of using AI in medical image interpretation. Consequently, this paper reports findings from a systematic scoping literature review of studies addressing human-AI interaction in the detection of lung, breast and colorectal cancers.
Method: The Cochrane Central Register of Controlled Trials, PubMed and ScienceDirect were used to locate CADe observer performance studies in three reading paradigms: second-reader, concurrent and interactive. Conversant experimental studies were also retrieved. Key findings from a total of N=46 articles were extracted and organised according to reading paradigm and imaging modality.
Results: Aggregated evidence indicated that concurrent and second-reader CADe systems improved observer sensitivity, particularly among less experienced observers, but could also deleteriously affect attention allocation. Interactive CADe systems demonstrated a weaker impact upon observer sensitivity, though a smaller number of studies was available for analysis. Evidence also indicated that observer performance with CADe could be influenced by prompt design, level of participant expertise, lesion size and number of CAD false positives.
Conclusions: Concurrent and second-reader paradigms have equivalent potential to improve observer performance, though concurrent CADe is more time-efficient; an important consideration in practical clinical terms. Further research is needed to comprehensively understand the value of interactive CADe, particularly in volumetric imaging.

P002 Challenges and opportunities associated with AI adoption in clinical practice: an exploratory study in the UK using semi-structured interviews

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Background: Artificial Intelligence (AI) is showing a rapid increase in the applications aimed at medical imaging and radiotherapy. It has the potential to transform clinical practice, patient outcomes, workflows, and efficiency; however, many challenges exist around adoption of AI in clinical practice, and this study aims to explore the perspectives of different professionals currently working with AI.
Method: This was a qualitative study that employed online semi-structured interviews (n=5). Participants were medical imaging professionals clinically working in medical imaging or/and radiotherapy and using AI-based tools in their practice. WhisperAI, a Machine Learning-based recognition model was used for verbatim transcription of the interview files. All data was analysed using content analysis to identify common themes and categories.
Results: Professionals in the medical imaging and radiotherapy ecosystem reported fears of AI changing their roles and resulting in staff losing certain skills. Data protection issues were also highlighted. On the contrary, they noted that AI could optimise clinical workflows, support them in decision-making, and enhance patient safety and care. They sought for appropriate education/training, effective leadership, support of staff, and multidisciplinary teams.
Conclusion: Medical imaging and radiotherapy professionals need clear guidance on how to adopt AI in their clinical practice, appropriate education, and support in their clinical tasks. Patient care and safety should be prioritised, and they should be empowered enough to adopt AI by creating new roles and responsibilities.

P003 Evaluation of scatter correction software for clinical pelvic radiographs

Mohammad Sayed[2], Professor Karen Knapp[1], Dr Jon Fulford[1], Dr Christine Heales[1], Dr Saeed Alqahtani[2], Susan Rimes[3], Drew Moffatt[3]
[1]University of Exeter, Medical Imaging Department, Exeter, UK, [2]Najran University, Diagnostic Imaging Department, Najran, KSA, [3]Somerset NHS Foundation Trust, Musgrove Park Hospital, Taunton, UK

Background: Digital radiography for the pelvic region is a crucial diagnostic technique. To reduce scattered X-rays, an anti-scatter grid is conventionally used. The presence of a grid increases patient doses because more X-ray photons are needed to compensate for the grid's absorption of primary X-rays. Image processing software (VG) has recently been developed to correct for scattered X-rays and reduce radiation doses [1, 2]. This study aims to evaluate the performance of scatter correction software on Gridless images.
Method: A retrospective study was performed to collect 30 clinical radiographs. Standard AP pelvic X-ray projection was acquired without a physical grid (PG), and exposure factors were constant (kVp and SID), with automatic exposure control (AEC) conducted. Virtual grid-scatter correction software was applied to Gridless images. For uncorrected and corrected images, the contrast-to-noise ratio (CNR) and signal-to-noise ratio (SNR) were calculated.
Results: The image quality in terms of CNR of the corrected images using VG software was higher (mean±sd= 11.99±2.90) compared to the images acquired without a grid (mean±sd= 2.97±1.02), with a significant difference ($p<0.001$). In terms of the SNR, the mean value of the Gridless images was found to be (9.63±2.03); while after using VG software, the mean SNR was (18.32±3.07), with a significant difference ($p<0.001$).
Conclusion: The scatter correction software significantly improves the image quality of Gridless images. To determine if this may replace the physical grid, further research is necessary.

References
1. KAWAMURA, T., NAITO, S., OKANO, K. & YAMADA, M. (2015). Improvement in image quality and workflow of x-ray examinations using a new image processing method,"Virtual Grid Technology". Fujifilm Res Dev, 60, 21-7.
2. YANG, H.-J. & HAN, D.-K. (2020). A Study on the Usefulness of VGR (Virtual Grid Role) Algorithm for Elevation of Image Quality in DR System. Journal of the Korean Society of Radiology, 14, 763-772.

P004 Assessing the Clinical Effectiveness of Prioritising CT Heads

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Background Accessibility of Computerised Tomography (CT) has seen an exponential increase of acquired scans. In the Emergency Department (ED), diagnostic imaging forms an essential part of patient care. Coupled with the shortfall of radiologistsiii in the UK, innovative solutions are required to expedite reporting and ensure timely treatmentiii iv. Machine learning software has the potential to be a clinical decision maker and triage support tool for radiologistsv. The ACcEPT study aims to evaluate Qure.ai's 'qER' software use in non-contrast CT (NCCT) head scans in ED to determine if it reduces report turnaround time (TAT) of critical findings.
Methods and Analysis A stepped-wedge cluster-randomised study consisting of a retrospective technical evaluation and prospective clinical effectiveness study alongside the evaluation of cost effectiveness through a cost utility analysis. The primary objective is to assess if qER tool-based reporting and triage reduces report TAT of critical findings across four EDs in the UK.
Secondary objectives will look at the utility, safety, and technical performance of qER. A health economic study will also be conducted. Over an eight-month period, NCCT head scans will be analysed and interpreted by qER, with critical findings being prioritised for reporting.
Results Data collection commenced in September 2023. Preliminary results will be presented alongside implementation insights.
Conclusion There is a lack of prospective implementation data in the AI realm. This study represents a significant step forward in using machine learning to enhance radiology reporting, ultimately aiming to improve patient outcomes by reducing delays in critical diagnoses and treatment.

References
i Rimmer, A. (2017). Radiologist shortage leaves patient care at risk, warns royal college. BMJ 359:j4683.
ii Royal College of Radiologists. (2021). New RCR census shows the NHS needs nearly 2,000 more radiologists.
iii Jones S et al., (2022). Association between delays to patient admission from the emergency department and all-cause 30-day mortality. Emergency Medicine Journal, 39:168–173.
iv Greenhalgh R, Howlett DC, & Drinkwater KJ (2020). Royal College of Radiologists national audit evaluating the provision of imaging in the severely injured patient and compliance with national guidelines. Clinical Radiology 75:224–231.
v Saver JL (2006). Time is brain--quantified. Stroke 37:263–6.

P006 Exploring the experiences and perceptions of computed tomography radiologists and radiographers towards introducing artificial intelligence innovations in their practice in Saudi Arabia: A qualitative descriptive study

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Background: Artificial intelligence (AI) has rapidly integrated into the healthcare sector, particularly in radiology. In Saudi Arabia, with the ambitious Vision 2030 aiming for global AI leadership, the impact on radiologists and radiographers is crucial. Thus, this study explores the experiences and perceptions of radiology professionals regarding AI adoption in Saudi Arabia.

Method: Between January and February 2023, a qualitative study was conducted through eight semi-structured online interviews with six computed tomography radiographers and two radiologists from three governmental hospitals in Saudi Arabia. Thematic analysis by Braun and Clarke (2006) was employed to identify key themes related to knowledge, attitudes, and current practice of AI in radiology. Additional two themes focused on drivers and barriers to AI adoption.

Results: Most participants demonstrated adequate knowledge of AI in radiology, despite the absence of formal education or dedicated training. The overall attitude was positive, reflecting excitement about AI integration, a willingness to use AI tools, and a belief in positive impacts on patient care. Some participants were already incorporating AI applications into their current practices. This generally positive attitude was primarily driven by factors such as AI awareness, Vision 2030, perceived AI benefits, and the influence of local champions. Potential barriers were highlighted through interviews, including the lack of AI education and training, associated costs, and resistance to change.

Conclusion: While positivity prevailed, concerns about job insecurity, skills degradation, AI accuracy limitations, and medico-legal issues were raised by participants. Addressing these concerns is crucial for successful AI adoption in Saudi radiology practice.

References
1. Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', Qualitative Research in Psychology, 3(2), pp. 77–101. doi: 10.1191/1478088706qp063oa.
2. Vision 2030. Saudi Vision 2030. Available at: https://www.vision2030.gov.sa/ (Accessed: 27 January 2024).

P007 Beyond Conventional Radiology: Evaluating the Performance of DeepTek CXR Analyzer in Identifying and Localizing Chest Findings

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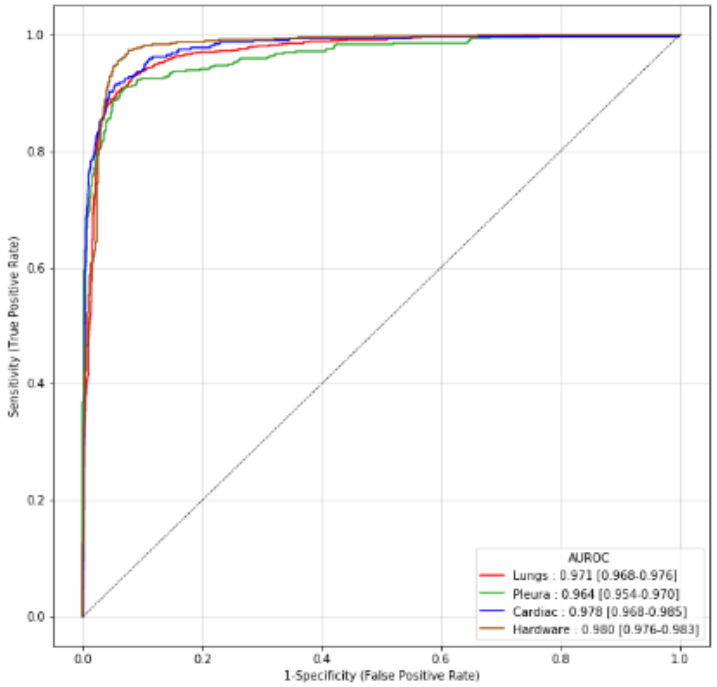
Background: The current study aims to evaluate the standalone and clinical performance of DeepTek CXR Analyzer in detecting and localizing suspicious ROIs in the Lungs, Pleura, Cardiac, and Hardware categories.

Methods: The test dataset consisted of 3,000 scans obtained from the NIH Chest X-ray Database and 13 different sites across the United States. The ground truth for each case and category was determined by the consensus opinion of 2 out of 3 U.S. board-certified radiologists. A subset of 300 scans from the test dataset was selected for a clinical performance assessment study. 24 U.S. board-certified radiologists evaluated each of the 300 scans without and with the aid of DeepTek CXR Analyzer.

Results: DeepTek CXR Analyzer demonstrated a sensitivity of 92.6%, specificity of 93.3%, AUROC of 97.4%, and wAFROC-FOM of 92% across all chest findings. 24/24 readers exhibited an improvement in wAFROC-FOM for localizing suspicious ROIs across all categories when aided by the DeepTek CXR Analyzer. The sensitivity for readers increased from 81% in the unaided session to 88.6% in the aided session. Similarly, the specificity across all readers improved from 91.1% in the unaided session to 94.9% in the aided session.

Conclusions: The observed results of standalone testing demonstrate that DeepTek CXR Analyzer, in the absence of any interaction with a radiologist, can detect and localize suspicious ROIs in Lungs, Pleura, Cardiac, and Hardware categories with high sensitivity, specificity, AUROC, and wAFROC-FOM. The performance of readers was superior when assisted by the DeepTek CXR Analyzer compared to their unaided performance.

Table



References
1. National Institutes of Health Chest X-Ray Dataset, NIH Chest X-rays, (2018). https://www.kaggle.com/nih-chest-xrays/data.
2. X. Wang, Y. Peng, L. Lu, Z. Lu, M. Bagheri, R.M. Summers, ChestX-ray8: Hospital-scale Chest X-ray Database and Benchmarks on Weakly-Supervised Classification and Localization of Common Thorax Diseases, (2017). https://doi.org/10.1109/CVPR.2017.369.
3. About Segmed, About Segmed. (n.d.). https://www.segmed.ai/

P009 Real world outcomes of artificial intelligence triaging of chest radiographs performed in the emergency department

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Background: Between April 2021 and March 2022, only 28% of inpatient and emergency department (ED) radiographs were reported the same day, limiting the amount of radiology input for many patients in ED (NHS England, 2022). We assessed the utility of artificial intelligence (AI) in triaging chest radiographs (CXR) deployed in a NHS hospital ED.
Methods: We reviewed CXR taken between 07/05/2023 and 23/05/2023. CXR were processed by Gleamer Chestview with the AI interpretation made available at time of acquisition. AI identified films as 'positive', 'doubt' or 'negative' for consolidation, pleural effusion, pneumothorax, nodules and mediastinal mass. Radiologist report was used as the gold-standard for comparison.
Results: 831 CXR of 382 females and 449 males (mean age 58.2 years) were analysed. 151, 86 and 594 CXR were identified as 'positive', 'doubt' and 'negative' respectively by AI. The specificity of AI was 89.5% (521 of 582) and sensitivity was 70.7% (176 of 249 abnormal radiographs were identified as 'positive' or 'doubt'). The turnaround times (TAT) for the radiologist report of normal and abnormal radiographs were 1.01 (n=451) and 1.90 days (n=174) respectively ($p<0.0001$, unpaired t-test).
Conclusion: We demonstrate 89.5% specificity and 70.7% sensitivity of CXR triaging in a real world setting, improving triaging accuracy compared to having no method of triaging. However, despite the availability of ChestView's interpretation to radiologists, report TAT remained longer for abnormal radiographs suggesting the need for a locally agreed standard operating procedure to ensure triaging tools available are correctly adopted by staff.

References
1. National Health Service (2022) Diagnostic Imaging Dataset Annual Statistical Release 2021-22, version 1, pp14

P010 Development and Validation of an AI-Based Diagnostic Model for Wrist Fractures

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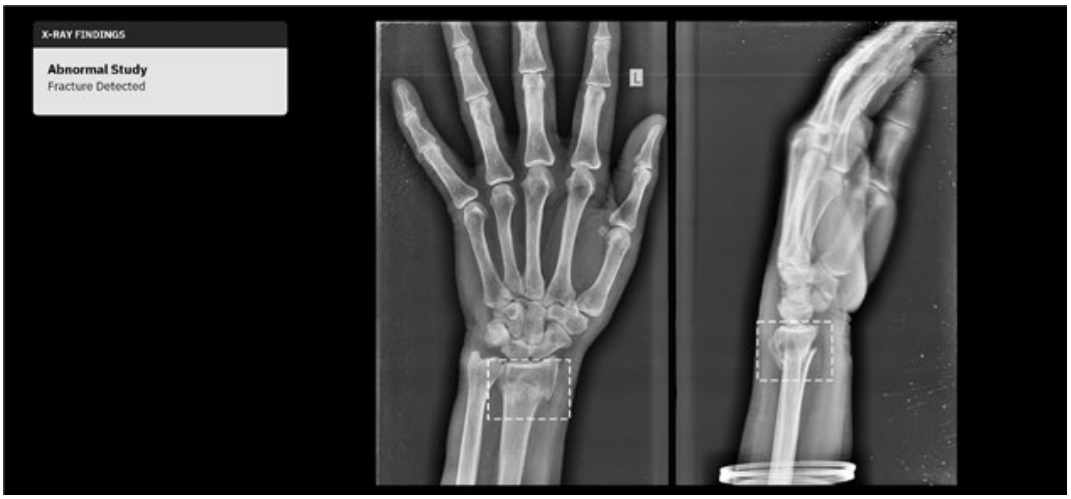
Introduction: Wrist fractures are a prevalent issue in emergencies, accounting for around 25% of fractures in the pediatric population and up to 18% of all fractures in the elderly age group. Traditional diagnostic pathway, reliant on radiographic analysis by clinicians, poses challenges due to their subjectivity and potential for variability in interpretation accuracy. This research uses a novel AI model to enhance the precision of wrist fracture diagnosis, leveraging the capabilities of convolutional neural networks (CNNs) to interpret radiographic images.
Methods: Our AI model consists of UNet, a CNN-based model, to generate segmentation masks for fractures. The algorithm was trained on 300,000 musculoskeletal X-rays and finetuned on 46,000 wrist X-rays. Radiologists with more than seven years of experience marked fracture boundaries to establish the ground truth. The fracture included different types of fractures like Colles' Fracture, Smith's Fracture, Radial Styloid Fracture, and Barton's Fracture.
Results: 7600 wrist scans were acquired from different hospitals across India for the test dataset consisting of 2748 fractures and 4852 normal scans. Our AI model yielded a Sensitivity of 95.41%, Specificity of 87.34%, and IoU of 0.65 on this dataset.
Conclusion: The clinical integration of AI (qMSK), signifies a transformative step forward in enhancing diagnostic processes for common but critical injuries like wrist fractures. This AI model not only has the potential to reduce the workload on radiologists by assisting in the rapid screening of radiographic images but also minimizes the likelihood of diagnostic errors.

Table



References
Nellans KW, Kowalski E, Chung KC. The epidemiology of distal radius fractures. Hand Clin. 2012 May;28(2):113-25. doi: 10.1016/j.hcl.2012.02.001. Epub 2012 Apr 14. PMID: 22554654; PMCID: PMC3345129

P011 Agreement among Radiologists on Enlarged Heart on Chest X-Rays and the Role of Artificial Intelligence

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Background: Cardiomegaly is an early indicator of heart disease. This retrospective study was conducted to evaluate the agreement between radiologists and Artificial Intelligence (AI) in predicting cardiomegaly in Chest X-Rays (CXR).
Methods: 681 Posteroanterior CXR was independently read by three radiologists with at least 10 years-experience. These radiologists drew the cardiac and thoracic diameter and reported the presence or absence of cardiomegaly and enlarged cardiac silhouette. Cardiothoracic ratio (CTR) was derived post-reading from markings and pixel size. All images were processed by qXR (Qure.AI, Mumbai). Numbers and percentage are used for summaries and Fleiss Kappa for strength of agreement.
Results: The mean age of the patients was 59.1 (range:22-90). 48.5% were females. Number of cases reported as having either cardiomegaly or enlarged shadow by the three radiologists were 228, 281, and 155 respectively. It was 222, 278, and 145 when their CTR (>=0.5) was used. Fleiss Kappa for these were identical (0.65). Radiologist 1 missed 69 of 283 cases called as having enlarged heart by the other two. For radiologist 2 and 3, it was 16 of 235 and 142 of 296. AI correctly predicted cardiomegaly for 31 (45%) of the 69 not called by radiologist 1. For radiologists 2 & 3, it was 2/16 (12.5%) and 71/142 (50%). AI accuracy was 89.3% (86.7-91.3) when majority vote was considered as ground truth.

Conclusion & Clinical relevance: There is variability in assessing enlarged heart among radiologists. AI can potentially assist physicians in correctly identifying cardiomegaly for early investigation of heart disease.

P012 Exploring the perceptions of Advanced Adaptors on the implementation of Varian Ethos

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There is growing interest in the role of daily Online Adaptive Radiotherapy (oART) in the UK radiotherapy community.(1,2) The need for a more streamlined integrated solution has led Varian Medical Systems to develop Ethos.

As early adopters of the platform, the host centre has developed processes and in doing so, spearheaded the role of the Advanced Adaptor (AA). Rather than having multiple members of the MDT present at each treatment, their approach has been to upskill and credential a team of professionals from across the MDT to act as AAs.

Ethical approval was gained from all intuitions involved. Semi-structured interviews were used to explore the perceptions of six of the seven AAs in the department (2 physicists, 2 radiographers and 2 dosimetrists). The interviews were conducted face to face by an independent researcher. The interviews were recorded and professionally transcribed verbatim. Thematic analysis was used to analyse the data.(3)

Three themes emerged from the data- 1. Pre-clinical training: Of the three professional groups, the physicists felt that their pre-clinical/university training most prepared them for the role.

2. AA training: All participants felt that the training prepared them for the role. The emulator was seen as a large benefit. It was felt that training impacted significantly on staffing levels. 3. Workflow: Image quality was seen as the largest factor impacting on workflow. Variation in practice, particularly in relation to contouring and the time taken to do this was highlighted. The role was seen as a positive development by all participants.

References
1. Shelley C, Hollingdale R, Bolt M, Rashid M, Reinlo S, Fazel N, et al. Radiographer-Led, CBCT-Guided Online Adaptive Radiotherapy for Muscle Invasive Bladder Cancer Using Artificial Intelligence. Int J Radiat Oncol. 2022 Nov;114(3):e105.
2. Zwart LGM, Ong F, ten Asbroek LA, van Dieren EB, Koch SA, Bhawanie A, et al. Cone-beam computed tomography-guided online adaptive radiotherapy is feasible for prostate cancer patients. Phys Imaging Radiat Oncol. 2022 Apr;22:98–103.
3. Braun V, Clarke V. Thematic analysis : a practical guide. London: SAGE; 2022.

P013 The effectiveness of using scatter correction software for abdomen Gridless radiography

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Background: For abdominal imaging, plain radiography is a crucial diagnostic technique. Conventionally, an anti-scatter grid is used to reduce X-ray scattering. The inclusion of a grid increases patient doses because more X-ray photons are needed to compensate for the grid's absorption of primary X-rays. Image processing software (VG) has recently been developed to correct for scattered X-rays and reduce radiation doses [1, 2]. This study aims to evaluate the effectiveness of the virtual grid software on Gridless images.

Method: A retrospective study was conducted to collect 30 radiographs. AP abdomen X-ray projection was acquired without a physical grid (PG), and exposure factors were constant (kVp and SID), with automatic exposure control (AEC) conducted. Image processing software using virtual grid-scatter correction was performed on Gridless images. The contrast-to-noise ratio (CNR) and signal-to-noise ratio (SNR) were measured.

Results: There was a statistically significant difference in image quality between the Gridless and VG ($p<0.001$). The image quality in terms of CNR of the corrected images (VG software) was higher compared to the images acquired without a grid, with a reduction in noise level in VG images by 75.60%. In terms of the SNR, the median value of the Gridless images was found to be 9.73; by applying the VG software, the median SNR of the VG images was found to be 19.95, which is an increase of 51.22%.

Conclusion: The VG software promises to improve the image quality of Gridless abdomen radiographs.

References
1. KAWAMURA, T., NAITO, S., OKANO, K. & YAMADA, M. (2015). Improvement in image quality and workflow of x-ray examinations using a new image processing method,"Virtual Grid Technology". Fujifilm Res Dev, 60, 21-7.
2. YANG, H.-J. & HAN, D.-K. (2020). A Study on the Usefulness of VGR (Virtual Grid Role) Algorithm for Elevation of Image Quality in DR System. Journal of the Korean Society of Radiology, 14, 763-772.

P014 Interim analysis of LUNIT insight chest x-ray AI tool to aid clinical decision making in acute hospital setting; algorithm performance

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Background X-rays are the most common radiological investigation for chest disease (1). Correct and timely interpretation therefore has an impact on a large number of patients. Due to a shortage of radiologists, there is often a delay in the formal reporting of chest x-rays. In the UK there is a target of reporting unwell emergency department patient x-rays within 12 hours and inpatient x-rays within 7 days (2). Therefore, patient decisions are increasingly reliant on non-radiology clinicians to interpret chest x-rays (CXR). The accuracy of such interpretation may be reduced (3–7). AI solutions could play a role in assisting non-radiology healthcare professionals with their interpretation of CXRs potentially improving diagnostic accuracy. There is little research exploring the interpretation of emergency department and general medical physician's interpretations of CXR with AI assistance.
This interim analysis aims to evaluate the impact of one such tool, LUNIT INSIGHT CXR. It can detect and localise ten common abnormalities on chest X-ray.
Methods The performance of the AI tool was assessed against 500 inpatient and emergency department CXRs from 2 UK hospitals. They were labelled by 2 consultant thoracic radiologists. This was considered ground truth.
Results See table 1 for results. The INSIGHT tool had excellent negative predictive value for all pathologies.
Conclusion The INSIGHT CXR AI tool demonstrates good performance, especially with negative predictive value and could be used effectively as a rule out aid for non-radiology clinicians. Further analysis is being undertaken to assess performance of clinicians before and after AI assistance.

Table

Pathology	Sensitivity	Specificity	PPV	NPV	Disease Prevalence
Nodule	72	79	45	92	20
Pneumothorax	82	98	77	98	8
Pleural Effusion	88	88	58	98	16
Consolidation	89	72	62	93	34
Cardiomegaly	83	91	72	95	22
Fibrosis	90	80	41	98	14
Pneumoperitoneum	95	97	77	99	8
Mediastinal Widening	70	97	72	96	11
Calcification	82	83	40	97	12
Atelectasis	83	84	73	91	34

Table 1; figures as percentages

References
1. Dixon, S. (2022) Diagnostic Imaging Dataset Statistical Release. Available at: https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2022/07/Statistical-Release-21st-July-2022-PDF-875KB.pdf.
2. National Imaging Board NHS England » Diagnostic imaging reporting turnaround times. Available at: https://www.england.nhs.uk/long-read/diagnostic-imaging-reporting-turnaround-times/ (Accessed: 1 February 2024).
3. Al Shammari, M. et al. (2021) 'Family medicine residents' skill levels in emergency chest X-ray interpretation', BMC family practice, 22(1), p. 39. Available at: https://doi.org/10.1186/s12875-021-01390-3.
4. Brunswick, J.E. et al. (1996) 'Radiographic interpretation in the emergency department', The American Journal of Emergency Medicine, 14(4), pp. 346–348. Available at: https://doi.org/10.1016/S0735-6757(96)90045-5.
5. Tranovich, M.J., Gooch, C.M. and Dougherty, J.M. (2019) 'Radiograph Interpretation Discrepancies in a Community Hospital Emergency Department', Western Journal of Emergency Medicine, 20(4), pp. 626–632. Available at: https://doi.org/10.5811/westjem.2019.1.41375.
6. Liu, Y.-Y.M. et al. (2022) 'After-hour trauma-radiograph interpretation in the emergency centre of a District Hospital', African Journal of Emergency Medicine, 12(3), pp. 199–207. Available at: https://doi.org/10.1016/j.afjem.2022.04.001.
7. Eisen, L.A. et al. (2006) 'Competency in Chest Radiography', Journal of General Internal Medicine, 21(5), pp. 460–465. Available at: https://doi.org/10.1111/j.1525-1497.2006.00427.x.

P015 Accelerated MRI protocols with the help of AI reconstructions – cross-vendor phantom assessment

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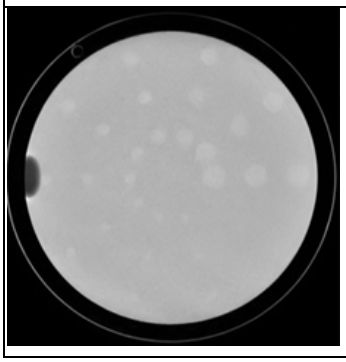
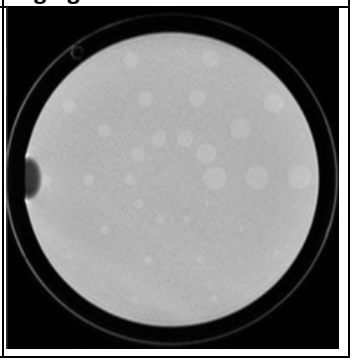
Background AI-based MRI reconstruction algorithms are an important advancement in imaging, accelerating department workflows (Gaasenmaier et al, 2021); for example, Siemens Deep Resolve and GE Air Recon DL. This study quantifies improvements and pitfalls in leveraging AI reconstructions to accelerate MR protocols, using phantom imaging.
Method An ACR phantom (ACR, 2018) was imaged using current (optimised incorporating AI-reconstruction techniques, saving time and maintaining image quality) and baseline sequences from clinical knee and lumbar spine protocols. Images were acquired on 1.5 T GE and Siemens MR systems and analysed for:
-Signal-to-Noise Ratio (SNR) using single image method (McCann et al, 2013)
-High-contrast resolution and low contrast detectability (LCD) using ACR guidance (ACR, 2018)
-Overall artefact and Gibbs ringing scored 1-5 (1=no artefact, 5=significant artefact.
Results Current knee and lumbar spine protocols are faster, with improved SNR in phantom imaging; both AI reconstructions offer superior denoising (Figure 1). Differences in vendors' reconstructions are noted; improved resolution for Siemens protocols (using the Deep Resolve Sharp algorithm), and greater reduction in ringing artefact for GE protocols (from Intelligent Ringing Suppression in the algorithm).
There is minor deterioration in certain aspects of image quality in phantom images; not seen in patient images. Phantom images (using current knee protocol) had worse artefact scoring and all current images show small reduction in visualisation of LCD discs (Figure 2).
Conclusions Phantom imaging shows AI reconstruction has a measurable effect on current clinical protocols (Figure 1). Increased SNR, resolution and decreased scanning time are transferable to clinical imaging.

Table

Parameter	Siemens Knee	GE Knee	Siemens Spine	GE Spine
SNR	+27%	+87%	+11%	+70%
High Contrast Resolution	Improved	Same	Improved	Same
Low Contrast Detectability	-1.5	-0.8	-1.5	-1
Ringing	-0.75	-1	-0.75	-2.25
Artefact	+1.75	+0.25	0	0
Time	-66%	-39%	-71%	-35%

Figure 1: Changes to image quality metrics between current (with AI-reconstruction) and baseline protocols

Knee – current – T1 sag (top) slice 6 – LCD insert (bottom) slice 3 – grid	**Knee – baseline – T1 sag (top) slice 6 – LCD insert (bottom) slice 3 – grid showing ringing artefact**
	

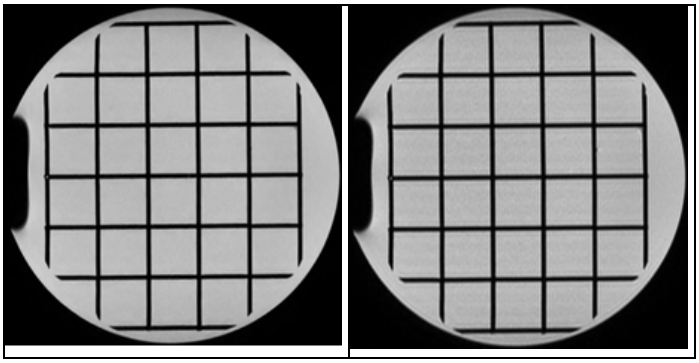


Figure 2: Phantom images comparing current and baseline protocols (GE scanner - T1-weighted sagittal sequence in the knee protocol)

References
1.Gassenmaier S, Küstner T, Nickel D, Herrmann J, Hoffmann R, Almansour H, Afat S, Nikolaou K, Othman AE. Deep Learning Applications in Magnetic Resonance Imaging: Has the Future Become Present? Diagnostics (Basel). 2021 Nov 24;11(12):2181. doi: 10.3390/diagnostics11122181. PMID: 34943418; PMCID: PMC8700442.
2. McCann AJ, Workman A, McGrath C. A quick and robust method for measurement of signal-to-noise ratio in MRI. Phys Med Biol. 2013 Jun 7;58(11):3775-90. doi: 10.1088/0031-9155/58/11/3775. Epub 2013 May 10. PMID: 23665982.
3. American College of Radiology. (2018). Phantom Test Guidance for Use of the Small MRI Phantom for the ACR MRI Accreditation Program. Retrieved from https://www.acraccreditation.org/-/media/ACRAccreditation/Documents/MRI/SmallPhantomGuidance.pdf

P016 Changes in radiology staff attitudes after implementation of an AI tool for triaging lung cancer cases

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Methods and Materials: An online 19 question survey was distributed to all members of radiology staff across two hospitals within South West London, before, and three months after the implementation of an AI tool for chest radiograph triage.

Results: There were 45/195 (23%) and 26/195 (13%) respondents to the first and second surveys respectively. After AI implementation, staff were less willing for AI to act autonomously (58% vs 40%) but more likely to believe that AI could improve patient care (50% vs 40% agree) and more willing to allow AI to triage their own chest radiograph if they were a patient (31% vs 18%). The single most positive factor that staff felt AI would bring to the department was 'time saving for the department and patient' (31%) before the AI implementation, although after AI implementation they were more likely to state 'better patient follow-up care' as the main benefit (31%).

After 3 months of using AI, most users felt they had either no change (37.5%) or a slight improvement in their reporting accuracy (37.5%) but still believed they were confident in knowing when to rely and overrule the tool (50%).

Conclusion: Staff were more likely to agree there was a benefit to patients from AI and more willing to have AI used on their own chest radiograph; however early implementation logistical issues meant they no longer felt AI was a time-saving tool.

Early adopters of AI tools for chest radiographs should not overlook staff opinions and feedback when implementing AI

References
1. Castagno, S. and Khalifa, M., 2020. Perceptions of artificial intelligence among healthcare staff: a qualitative survey study. Frontiers in artificial intelligence, 3, p.578983.
2. Jones, C.M., Danaher, L., Milne, M.R., Tang, C., Seah, J., Oakden-Rayner, L., Johnson, A., Buchlak, Q.D. and Esmaili, N., 2021. Assessment of the effect of a comprehensive chest radiograph deep learning model on radiologist reports and patient outcomes: a real-world observational study. BMJ open, 11(12), p.e052902.
3. Rainey, C., O'Regan, T., Matthew, J., Skelton, E., Woznitza, N., Chu, K.Y., Goodman, S., McConnell, J., Hughes, C., Bond, R. and McFadden, S., 2021. 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. Frontiers in Digital Health, 3, p.739327.

P018 Features and characteristics of interval cancers in the NHS breast screening programme

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Background An interval breast cancer is diagnosed symptomatically within 3 years of a normal breast screening mammogram. In England, approximately 6000 women develop interval cancers (IC) each year. Interval cancers are classified as - 'Satisfactory'', "Satisfactory: with learning points (SWLP)" and "Unsatisfactory"[1]. Previous published studies have focused on one or two features. This study looks at multiple features of IC.

Method Retrospective data collection over 6-years providing 251 interval cancers for review to establish any common mammographic features or tumour characteristics.

Results The interval cancer rate in our unit was 0.25 for 0-12mths, 0.55 for 13-24mths, 0.44 for 25-36mths (target 0.65,1.40 & 1.65 per 1000). 80% were classed as 'Satisfactory'. The average age was 60 years, size at diagnosis was 24 mm - 'Satisfactory', 24mm - 'Satisfactory WLP', 40mm - 'Unsatisfactory'.

'Satisfactory' IC were diagnosed at 25-26 months, 'Satisfactory WLP' 13-24 months and 'Unsatisfactory' 0-12 months. 85% IC were from the incident screening round. More interval cancers were found in BI-RADS B mammograms. Invasive ductal carcinoma was the most common, and 86% 'Satisfactory' IC were triple negative breast cancers. Morphologically interval cancers tended to be masses or asymmetries.

Conclusion Interval cancer review is a vital part of quality control in breast screening, provides educational value and alerts films readers to the potential abnormalities which could progress to interval cancer development.

References
1. NHS England BSP-S18. May 2023. NHS Breast screening programme screening standards valid for data collected from 1 April 2017. BSP-S18: outcome: rates of interval cancers. https://www.gov.uk/government/publications/breast-screening-consolidated-programme-standards/nhs-breast-screening-programme-screening-standards-valid-for-data-collected-from-1-april-2017

P019 An exploration of factors that impact the performance of Radiographic Advanced Practitioners

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Background Since 1995, NHS Radiographers have been trained to interpret Mammograms (Culpan, 2016). For the first time, this detailed study investigates factors that impact radiography advanced practitioners (RAP) diagnostic efficacy. A number of parameters were considered including clinical and non-clinical factors as well as social networking behaviours to identify if these features impacted performance.

Method 60 mammograms of known outcome were interpreted by 18 UK RAPs. Sensitivity, specificity, lesion sensitivity, receiver operating characteristics (ROC) and Jack-knife Free-response operating characteristics (JAFROC) values were established for each reader. In order to explore the factors that affect optimal image interpretation, Student's t or Mann-Whitney tests were performed.

Results Readers who undertook interpretation for the National Health Service Breast Screening Programme (NHSBSP) (0.87) compared to those who did not (0.80) exhibit significantly higher JAFROC values (p= 0.0486). Higher sensitivity values of 90.7% were seen in those RAPs who had an eye test in the last year compared to those who had not 83.2% (p=0.021). Improved performance amongst readers who are regularly involved in informal discussion (0.93) compared to those who only occasionally discuss cases with their peers(0.88) (p=0.0267). Other factors that impacted performance were also identified and these will be fully considered at the meeting.

Conclusion Previously un-identified agents that impact the diagnostic efficacy of RAPs interpreting mammograms have been revealed. A number of these are modifiable and suggest that full consideration may offer some optimisation opportunities.

References
Culpan, A.M. (2016) 'Radiographer involvement in mammography image interpretation: A survey of United Kingdom practice', Radiography, 22(4), pp. 306–312. doi:10.1016/j.radi.2016.03.004.

P020 Exploring Materials for Multimodalities Anthropomorphic Phantom of the Breast: A Literature Review

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Background: Anthropomorphic phantoms, designed to simulate human tissue characteristics and optimise imaging parameters prior to patient scanning, play a pivotal role in medical imaging research (Tuong & Gardiner, 2013). However,

literature regarding anthropomorphic breast phantoms, especially those suitable for multimodal imaging encompassing CT and MRI, remains scant. The challenge lies in developing tissue-mimicking materials that accurately replicate both x-ray attenuation and local magnetic properties of human tissues. An ideal breast phantom should emulate the heterogeneous distribution of fat, fibro-glandular tissues, skin, and pectoral muscle, while also replicating the movement of the tissues during the positioning (Keenan et al., 2016).
Method: A comprehensive literature review was conducted utilising Medline and PubMed databases, employing specific search terms such as "breast," "breast tissues," "phantom," "imaging modalities," "MRI," and "CT." This review aimed to identify suitable materials for constructing a multimodal breast phantom, focusing on durability and practicality within clinical settings.
Results: The initial search yielded over 4000 studies, subsequently narrowed down to 9 that tested the materials for both MRI and CT. Among the identified materials, agarose, water, and polyvinyl chloride (PVC) emerged as frequently utilised substances. However, most of the studies lacked comprehensive assessments of phantom material durability, including physical, mechanical, temperature, and robustness tests, essential for evaluating routine clinical deployment and long-term usage.
Conclusion: The literature review highlights the necessity for more exhaustive investigations into phantom materials, particularly addressing the lack of testing of the materials.
References:
1. Keenan, K E et al. (2016) “Design of a breast phantom for quantitative MRI.” Journal of magnetic resonance imaging : JMRI vol. 44,3 (2016): 610-9. doi:10.1002/jmri.25214
2. Tuong, B, and Gardiner, I. (2013)“Development of a novel breast MRI phantom for quality control.” AJR. American journal of roentgenology vol. 201,3 (2013): W511-5. doi:10.2214/AJR.12.9571

P022 Radiotherapy and Breastfeeding

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Legal requirement under IR(ME)R that prior to any radiation exposure the Operator has enquired whether that individual is pregnant or breastfeeding, if relevant.
Its unclear how UK Radiotherapy Centers are establishing breastfeeding status.
Why is breastfeeding relevant within radiotherapy?
Breastfeeding reduces the risk of cancer. Evidence suggests breastfeeding decreases risk of Breast(1) and Ovarian Cancer (2,3.) Women with a history of breast cancer should particularly be supported to breastfeed as a way to reduce risk (4).
Increasing number of younger patients receiving treatment. Such may may wish to breastfeed with future pregnancies.
What Is Current Practice? Two online Google groups (Radiotherapy Quality Specialist Interest Group and Radiotherapy Information Support & Review Forum) consisting of UK wide Radiographers round were contacted to benchmark best practice within UK Centers in regards to breastfeeding. Participants of the groups were asked;
1. The process used to identify currently breastfeeding patients?
2. Information given to patients about breastfeeding whilst undergoing radiotherapy and information regarding capacity to breastfeed in the future?
No responses were received detailing how and if breastfeeding status is established. One response highlighted published Macmillan information however it is not known if such was provided to patients.
The NWCC contacted the RCR Breast Expert Panel June 2023 for advice. Response received from RCR Breast Panel confirming that a statement will be added to revision 3 of RCR Breast Consent Form regarding breastfeeding.
Further education and guidance is now required as to the impact of such change on clinical practice.
References
1. Reducing your risk of breast cancer (June 2023). https://www.cancerresearchuk.org/about-cancer/breast-cancer/risks-causes/reducing-breast-cancer-risk.
2. Babić, A. et al. (2020) 'Association between breastfeeding and ovarian cancer risk,' JAMA Oncology, 6(6), p. e200421. https://doi.org/10.1001/jamaoncol.2020.0421.
3. Unicef UK (2022) Research on Ovarian cancer - Baby Friendly Initiative. https://www.unicef.org.uk/babyfriendly/news-and-research/baby-friendly-research/maternal-health-research/ovarian-cancer/.
4. Stordal, B.K. (2022) 'Breastfeeding reduces the risk of breast cancer: A call for action in high-income countries with low rates of breastfeeding,' Cancer Medicine, 12(4), pp. 4616–4625. https://doi.org/10.1002/cam4.5288.

P023 Clinical utility of second-look US examination of MR-detected breast lesions in the symptomatic setting.

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Introduction: Breast magnetic resonance imaging (MRI) demonstrates superior sensitivity for detecting breast cancer and in symptomatic patients can identify additional indeterminate lesions not seen on conventional imaging that require further work up. Due to the increasing use of breast MRI, management of these indeterminate lesions is becoming a common challenge faced by breast practitioners. Second-look ultrasound (SLUS) is used as the first line assessment of MRI-detected lesions and aims to assess characteristics and guide biopsy if necessary. This retrospective study aims to evaluate the clinical utility of SLUS in the symptomatic setting and assess the cancer detection rate within our institution.
Methods: Single centre retrospective analysis of all patients undergoing breast MRI within the symptomatic service between 01/08/2022 and 01/02/2024. 92 of these women had MRI detected indeterminate lesions and of these 84 lesions were assessed with SLUS. The cancer detection rate, imaging characteristics, size, background parenchymal enhancement and histopathology were analysed. Where no correlate on SLUS was identified, subsequent MRI guided biopsy or follow up was evaluated.
Results: Our results demonstrate 60% of lesions were correlated with SLUS with a cancer detection rate of 19%. Lesion size, mass or non-mass lesions and background parenchymal enhancement with not significantly different ($p<0.05$) between correlated and non-correlated groups.

P024 Breast cancers identified by single readers in the NHS Breast Screening Programme(BSP): exploring characteristics, clinical and educational significance, and an illustration of intriguing cases

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Background: Double reading in the NHSBSP increases cancer detection rate by about 10%. The Royal College of Radiologists (RCR) recommends a target single reader pick up rate of 5 – 15% and its regular auditing. Analysing single reader cancer data can unveil trends and its dissemination can inform improved screen reading practice and cancer detection.
Method: Data on single reader detected breast cancers in NHSBSP from April 2021 to March 2022 at our centre were collected retrospectively from NBSS, PACS and patient records. The noted trends and a selection of interesting cases were presented to qualified, trainee, and aspiring screen readers within our unit.
Results: Single readers identified 53 cancers, which constituted 13.5% of all screen-detected cases. 60% constituted left breast cancers, and nearly half were intermediate-grade cancers with 25% being high-grade cancers. 75% of the cases exhibited a BIRAD B mammographic density. On the mammograms, 76% of the cancers were visible on both CC and MLO views, 56% measured between 5-15mm and the predominant morphology were masses followed by calcifications. The data along with a selection of cases demonstrating common themes will be presented.
Conclusion: Double reading increased the number of screen detected cancers at our tertiary unit, consistent with NHS BSP and RCR guidance. Characteristics of these screen-detected breast cancers accompanied by a pictorial display of interesting cases aims to offer valuable insights and enhance screen-reading practices. Identification of common themes could allow improved pairing of screen readers to maximise cancer detection rates.

References

1. Duncan, K.A. (2008) Single reader hit and miss rates in the Breast Screening Service, Single Reader Hit and Miss Rates in the Breast Screening Service | The Royal College of Radiologists. Available at: https://www.rcr.ac.uk/career-development/audit-quality-improvement/auditlive-radiology/single-reader-hit-and-miss-rates-in-the-breast-screening-service/ (Accessed: 09 February 2024).

P025 Delivering deep inspiration breath hold (DIBH) breast radiotherapy to non-English speaking patients

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Background The UK 2021 census (Office for National Statistics, 2021) states the proportion of people from minority ethnic backgrounds has risen in recent years and in 2021 our department had 16 patients requiring interpreters for 12 different languages. Language line is also regularly used for communicating with non-English speakers but cannot be used in the radiotherapy CT scanners or treatment rooms.
All patients diagnosed with left breast and/or internal mammary chain cancer are referred for radiotherapy using deep inspiration breath hold (DIBH). Due to the need to understand verbal instructions, an exclusion criterion has been if the patient does not understand English. This did not tie with our Trust's commitment to Equality, Diversity and Inclusion.
Purpose The project's aim was to review the use of live translation via a translator app so DIBH could be offered to all patients. During a six-month period in 2023, the app was used for ten non-English speaking patients and six were successfully treated in DIBH. Three were unable to achieve adequate breath hold.

Our department is now regularly using a translator app to translate DIBH instructions for non-English speaking breast patients. Access and availability to this technique has improved with minimal additional staff input and cost.
Summary of Content We will detail our method in adapting DIBH instructions for non-English speakers and its implementation in a clinical setting. It will highlight on-going issues with accessibility for all non-English speakers and how we intend to expand the use of the translator app to increase inclusion.

References
2021 Office for National Statistics Census 2021 data. Available at: Census - Office for National Statistics (ons.gov.uk) accessed online 17/10/2023

P026 The impact of a radiographer led digital prehabilitation service for breast cancer patients.

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Background: Evidence suggests patient education should be delivered prior to treatment interventions, empowering patients to make informed decisions about their care (1). A group-based prehabilitation service was developed to address common fears associated with radiotherapy treatment.
Method: Radiographer led prehabilitation sessions were developed to address fears associated with radiotherapy treatment such as equipment, side effects, lifestyle changes and additional support. All breast cancer patients were invited to attend a session delivered via MS teams including an information video, power-point presentation and question and answer session. Data was collected post session by anonymous questionnaire on Webropol onlineV sent via email. Questions included reason for attendance, usefulness of service, most helpful section, areas for improvement and likelihood of recommending to others.
Results: From August 2022 to December 2023 143 patients attended, of those 52% (n=74) completed the questionnaire identifying three reasons for attendance. 74% (n=55) sought information about radiotherapy, 11% (n=8) management of side effects and 11% (n=8) wished to see radiotherapy equipment. The impact has been positive with 92% of patients stating they found the service useful. Information most helpful
was an explanation of treatment 82% (n=61), information video 76% (n56), side effect management 66% (n=49) and an opportunity to ask questions 51% (n=38). 96% of patients who attended would recommend to others.

Conclusion: A high percentage of patients found the session to be useful to address their concerns prior to starting radiotherapy treatment. The positive results show the potential for adapting this service to other cancer sites in the future.

References
1.Apor, E., Connell, N.T., Faricy-Anderson, K., Barth, P., Youssef, R., Fenton, M.A., Sikov, W.M., Thomas, A., Rosati, K., Schumacher, A., Lombardo, A., Korber, S., Khurshid, H., Safran, H. and Mega, A. (2018) Prechemotherapy education: reducing patient anxiety through nurse-led teaching session. Clin.J.Oncol. 22(1), 76.
1.Apor, E., Connell, N.T., Faricy-Anderson, K., Barth, P., Youssef, R., Fenton, M.A., Sikov, W.M., Thomas, A., Rosati, K., Schumacher, A., Lombardo, A., Korber, S., Khurshid, H., Safran, H. and Mega, A. (2018) Prechemotherapy education: reducing patient anxiety through nurse-led teaching session. Clin.J.Oncol. 22(1), 76.

P027 Analysing breast dose in female lymphoma patients who received radiotherapy for treatment: a retrospective audit.

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Background and Aims Second primary breast cancers are among the most common risks to female Hodgkin's lymphoma patients following radiotherapy to the mediastinum. The aim of this study was to audit breast dose in women who received mediastinal radiotherapy for lymphoma.
The Objectives were to:

- Extract dose parameter values from suitable plans for comparison between patients.
- Compare dose parameter values in this study to publish results in the literature

Method Ethical approval was obtained before data collection. 23 suitable patient datasets from 2017-2021 were identified using ARIA reports. Inclusion criteria, such as female gender and a 30Gy prescription dose, were applied. Breast contours were retrospectively contoured on anonymised copied data sets according to RTOG/EORTC guidance on Eclipse v15.6.
Results Plans were either fixed field or VMAT (Table.1) No significant difference in breast dose was found between deep inspiration breath hold (DIBH) and non-DIBH, or early or advanced stage patients. Differences were found in V4Gy, V5Gy and mean dose compared to the literature with mean dose being 2Gy in the literature and 4Gy in this audit.

Conclusion Two of 23 patients in this study had breast dose optimisation objectives and this likely explains differences in breast dose between this study and the literature. It is recommended therefore to optimize breast dose where possible in female patients, especially those <36 years old to reduce risk of secondary malignancy in conjunction with other methods of organ sparing such as DIBH.

Table

Treatment delivery method used	Type of plans	Number of plans
Fixed fields	3D-CRT 2 static MLC fields (2 lateral fields)	1
	3D-CRT 3 static fields with wedges (2 anterior and 1 posterior field)	1
	IMRT 3 fields (oblique angles)	1
VMAT	1 Arc	1
	2 Arcs	15
	2 Partial Arcs	2
	3 Arcs	2

Table.1 shows the distribution of the treatment delivery methods used for patients in this audit.

P031 An evaluation of the diagnostic accuracy of thoracic ultrasound and chest X-ray imaging in diagnosing traumatic pneumothorax in adult patients: A systematic literature review.

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Traumatic pneumothorax (TPTX) is a life-threatening condition, accounting for 40%-50% of trauma-related mortality, emphasising the importance of accurate diagnosis (Tran, J et al., 2021). Current NICE guidelines suggest performing CXRs and/or US (e-FAST) without specifying which modality is most preferred (NICE, 2016). CXRs are the initial diagnostic tool in diagnosing TPTX (Tran, J et al., 2021). Concurrently, the US (e-FAST) has become widely used in diagnosing TPTX due to its increased sensitivity (Montoya, J et al., 2016). However, previous literature presented conflicting accuracy data. Therefore, this review aimed to investigate the sensitivity and specificity of US and CXR in diagnosing TPTX.

A systematic approach was conducted using Scopus, Web of Science, and MEDLINE. Various search terms related to the topic area were used to gather literature. To focus on the scope of the review, inclusion and exclusion criteria were set e.g., studies from the last 7 years. A PRISMA flowchart was used to show the filtration and selection processes of the literature and a CASP tool was used to assess the quality of the literature. The papers were selected on reliability and relevance to the aim.

10 papers were eligible for review. The ranges of US (e-FAST) sensitivity were 16.8% to 93.6% and specificity from 81% to 100%. The ranges of CXR sensitivity were 17.24% to 92.9% and specificity from 78% to 100%.

US (e-FAST) has increased sensitivity than CXRs in diagnosing TPTX. However, further research is needed in the UK before these findings are used to influence future practice.

References
1-National Institute for Health and Care Excellence. (2016) Major trauma: assessment and initial management (NICE guideline NG39). Available at: https://www.nice.org.uk/guidance/ng39/chapter/recommendations (Accessed 10 Oct 2023).
2-Tran, J., Haussner, W. and Shah, K. (2021) 'Traumatic Pneumothorax: A Review of Current Diagnostic Practices And Evolving Management,' The Journal of emergency medicine, 61(5), pp. 517–528. Available at: https://pubmed.ncbi.nlm.nih.gov/34470716/ (Accessed 15 Oct 2023).
3-Montoya, J., Stawicki, S.P., Evans, D.C., et al. (2016) 'From FAST to E-FAST: an overview of the evolution of ultrasound-based traumatic injury assessment,' European Journal of Trauma and Emergency Surgery, 42 (2), pp.119-126. Available at: https://link.springer.com/article/10.1007/s00068-015-0512-1 (Accessed 15 Oct 2023).

P032 Multidisciplinary Approach to Superior Vena Cava Obstruction (SVCO): Insights from a Retrospective Cancer Care Review

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Background: SVCO seen in 3-8% of cancer patients, commonly results from the progression of known Lung malignancy or as a presenting feature of primary lung malignancy or metastatic nodes. Treatment outcomes vary based on initial presentation, diagnosis, alerting systems, patient choice, and suitability of available treatment options.
Methods: Retrospective service review of shared cancer care of patients with suspicion or incidental diagnosis of SVCO, focused on lung cancer, between 2 health trusts with clinical audit team approval. Following data retrieval from the trust RIS and PACS over a 2-year period, images were reviewed on PACS, while the radiology reports and clinical data were reviewed on the RIS/ EPR systems.
Results: Preliminary data analysis yielded 17 cases of SVCO, 11 from lung cancer and 6 from others (pacemaker/radiation-induced complications, dialysis line complications, thrombus from distant malignancy, and non-lung cancers - Thymus/thyroid). Of the 11, 7 had clinical symptoms of SVCO, and 4 had incidental diagnoses. SVCO spectrum included vessel effacement in 3 patients, partial occlusion in 4 and complete occlusion in 4 patients. 6 patients had IR stenting, and 1 required further angioplasty for partial or complete occlusion. 9 patients had primary lung cancer, while two had metastatic nodal disease. The radiology alert system was utilized in 6 cases.
Conclusion: The timely diagnosis of SVCO with a robust radiology alert system plays a pivotal role in recognizing and treating SVCO. Tailored management of a varied spectrum of SVCO presentations needs a multidisciplinary approach between diagnostic radiology, acute oncology and interventional radiology services.

References
1. Brzezniak, C., Oronsky, B., Carter, C.A., Thilagar, B., Caroen, S. and Zeman, K., 2017. Superior vena cava syndrome in a patient with small-cell lung cancer: a case report. Case Reports in Oncology, 10(1), pp.252-257.
2. Tamir, S., Friehmann, T., Ratzon, R., Livneh, N., Spectre, G., Atar, E., Grubstien, A., Raanani, P., Brenner, B. and Leader, A., 2019. Computed Tomography Findings Associated With 30-Day Mortality in Patients With Malignant Superior Vena Cava Syndrome. Journal of Computer Assisted Tomography, 43(6), pp.912-918.
3. Uberoi, R., Patel, R. and Cox, P., 2015. CIRSE Quality assurance guidelines for superior vena cava stenting in malignant disease.
4. United Kingdom Oncology Nursing Society (UKONS), 2023. Acute oncology initial management guidelines.
5. Wei, S., Liu, J., Li, X., Song, Z., Dong, M., Zhao, H., Zhao, Q., Chen, G. and Chen, J., 2020. A retrospective stenting study on superior vena cava syndrome caused by lung cancer. Thoracic Cancer, 11(7), pp.1835-1839.
6. Wright, K., Digby, G.C., Gyawali, B., Jad, R., Menard, A., Moraes, F.Y. and Wijeratne, D.T., 2023. Malignant Superior Vena Cava Syndrome: A Scoping Review. Journal of Thoracic Oncology.

P033 RADICAL: a large mixed methods study to assess the clinical effectiveness and acceptability of Qure.ai artificial intelligence software to prioritise chest X-ray (CXR) interpretation in NHS Greater Glasgow & Clyde.

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Background Diagnosing and treating lung cancer in early stages is essential for survival outcomes[1]. Chest x-rays remain the primary screening tool to identify lung cancers in the UK; however, there are a shortfall of radiologists whilst demand continues to rise. Machine-learning software has the potential to support radiology workflows with immediate triage of suspicious x-rays. The RADICAL study will evaluate Qure.ai's 'qXR' software for use in lung cancer pathways at three hospital clusters in NHS Greater Glasgow & Clyde (NHSGGC).
Methods and Analysis This is a stepped-wedge cluster-randomised study consisting of a retrospective technical evaluation and prospective clinical effectiveness study alongside assessment of acceptability via qualitative work and evaluation of cost effectiveness via a cost utility analysis. The primary objective is to assess the clinical effectiveness of qXR to prioritise patients that have suspected lung cancer for follow-on CT. Secondary objectives that will look at the utility, safety, technical performance, health economics and acceptability of the intervention. Over the 12 month study period, outpatient chest radiographs will be securely transmitted to Qure.ai software 'qXR' for interpretation. Images with features of cancer will be flagged as 'Urgent Suspicion of Cancer' (USC) and be prioritised for radiologist review within the existing reporting workflow.
Results Data collection commenced in October 2023. Preliminary results will be presented alongside implementation insights.
Conclusion Real world prospective implementation data is a key NICE early value assessment research gap in the field of AI analysis[2]. RADICAL addresses this gap in a heterogenous service and patient environment.

References
[1] Tsai, C. H., Kung, P. T., Kuo, W. Y., & Tsai, W. C. (2020). Effect of time interval from diagnosis to treatment for non-small cell lung cancer on survival: a national cohort study in Taiwan. BMJ open, 10(4), e034351. https://doi.org/10.1136/bmjopen-2019-034351
[2] NICE, "Artificial intelligence-derived software to analyse chest X-rays for suspected lung cancer in primary care referrals: early value assessment," National Institute for Health and Care Excellence, 2023.

P034 Modulatory effect of Rooibos on cardiac parameters: A comprehensive echocardiography analysis

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Introduction: Echocardiography is crucial for assessing the heart and excluding alternative causes of cardiovascular disease. Elevated blood pressure affects 30.4% of South African adults and is a primary risk factor for cardiovascular disease. The root cause of cardiovascular disease is oxidative stress from reactive oxygen molecules. Rooibos, rich in unique phytochemicals with antioxidant properties, may mitigate cardiovascular disease risk.
Aim: This research study aimed to use Transthoracic Echocardiography (TTE) to evaluate the hearts of individuals to determine the effect of consuming the South African herbal tea, Rooibos (Aspalathus linearis), on cardiovascular function.
Method: The cardiac function was assessed using TTE. Participants consumed one capsule of either the placebo, fermented rooibos, or green rooibos (equivalent to two cups of Rooibos herbal tea) three times a day with meals.
Results: After a 12-week Rooibos consumption, the left atrium (LA) size significantly decreased (p=0.01). The interventricular septum diameter (IVSd) decreased significantly in the placebo group but not in the fermented Rooibos group, while the green Rooibos group also showed a significant decrease (p=0.002). Left ventricle mass (LVM) significantly decreased (p=0.015) in the fermented Rooibos group. Improvements were also noted in the diastolic function.
Conclusion: This study reinforces the cardiovascular protective effects of regular Rooibos consumption concerning LA, IVSd, and LVM. Abnormalities in these parameters may indicate Hypertensive heart disease. The results emphasize the potential benefits of integrating Rooibos into daily diets to promote heart health and mitigate cardiovascular disease risk.
Keywords: Echocardiography, Cardiovascular disease, Hypertension, Aspalathus linearis (herbal Rooibos), dietary antioxidants

P035 International comparison of COVID-19 reporting templates: the good, the bad and the useful via concordance measures of radiologists with chest radiographs

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Background: Many international radiological societies have developed COVID-19 reporting templates to assist with classification of the presence or extent of the disease on chest radiographs (CXRs).[1],[2] This study measures the effectiveness and useability of three international templates through concordance of, and between, radiologists, including the views of the radiologists on structured template usefulness.
Methods: A test set of clinically-acquired CXRs was created: 50 from patients with COVID-19, 10 'normal' and 10 'alternative pathology'. Each radiologist read their test set three times in random order and assigned a classification to the CXR using the Royal Australian New Zealand College of Radiology (RANZCR)[3], British Society of Thoracic Imaging (BSTI)[4] and modified Co-RADS (Dutch, known as mCo-RADS)[5] templates. Fleiss Kappa Coefficient measured Inter-reader variability and intra-reader variability. Qualitative responses about template useability were sought via free-text.
Results: 12 Australian radiologists participated. Highest inter-reader agreement was achieved with BSTI (0.46; 'moderate' agreement), then RANZCR (0.42) and mCO-RADS (0.31). General consistency was observed across classifications and templates, with intra-reader variability ranging from 'good' to 'very good' for COVID-19 CXRs (0.61), 'normal' CXRs (0.76) and 'alternative' (0.68), all with no correlation to experience. Radiologists, despite no prior experience of reporting templates, found them useful for reporting basic presence of COVID-19 disease, but not severity.
Conclusions: Standardised reporting of CXRs from patients with COVID-19 can be achieved with templates following a period of education for radiologists. Future co-design of templates may improve the diagnostic communication to other non-radiology healthcare practitioners and reduce repeat imaging, improving patient care.

References
1. Rubin, G., et al., (2020). The Role of Chest Imaging in Patient Management during the COVID-19 Pandemic: A Multinational Consensus Statement from the Fleischner Society. Radiology, (2020), 296(1), pp.172-180.
2. O'Reilly, P., Lewis, S.J., Reed, W. (2022). Assessing the implementation of COVID-19 structured reporting templates for chest radiography: A scoping review. British Journal of Radiology Open, https://doi.org/10.1259/bjro.20220058
3. RANZCR. (2021). Guidelines for CT Chest and Chest Radiograph reporting in patients with suspected COVID-19 infection | RANZCR. [online] Available at: <https://www.ranzcr.com/college/document-library/guidelines-for-ct-chest-and-chest-radiograph-reporting-in-patients-with-suspected-COVID-19-infection
4. BSTI. (2021). British Society of Thoracic Imaging COVID CXR Proforma [online] Available at: <https://www.bsti.org.uk/media/resources/files/BSTI_COVID_CXR_Proforma_v.3-1.pdf>
5. Prokop, M, et al., (2020). COVID-19 Standardized Reporting Working Group of the Dutch Radiological Society. CO-RADS: A Categorical CT Assessment Scheme for Patients Suspected of Having COVID-19-Definition and Evaluation. Radiology. 2020 Aug;296(2): E97-E104. doi: 10.1148/radiol.2020201473.

P036 Radiographic guide to cardiac pacemakers

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Background: In the UK approximately 50,000 people will have a pacemaker fitted each year (Bhf, 2023). The chest X-ray (CXR) is often performed to assess for any clinically significant complications after a pacemaker has been inserted. Chest reporting radiographers need to have a good working knowledge of various pacemakers, including todays most sophisticated types.

We must have familiarity of their normal radiographic appearances and expected lead positions, to ensure we can correctly identify any suboptimal positioned, displaced, or fractured pacemaker leads and alert clinicians where appropriate to guide patient management.

Purpose of Poster: This poster aims to provide chest reporting radiographers with an everyday reference guide to pacemakers and their radiographic appearances.

We will summarize the history of pacemakers, differentiate between the different types including: the standard pacemaker, cardiac resynchronization devices, implantable cardioverter-defibrillators and leadless pacemakers in turn reviewing their normal radiographic appearances.

Summary of Content:

1. Background history
2. How pacemakers work.
3. Cardiac anatomy and expected lead positions.
4. Radiographic guide to the different types:

a. Standard pacemakers
b. Cardiac resynchronization devices
c. Implantable cardioverter defibrillator
d. Leadless pacemakers

Reference:
British Heart Foundation (2023) Pioneering pacemakers.
Available: https://www.bhf.org.uk/what-we-do/our-research/research-successes/pioneering-pacemakers

P037 Determining the accuracy of imaging central venous catheter complications in adults: a review of evidence comparing ultrasonography to projectional X-ray.

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Background Central venous catheters (CVC) are crucial in providing lifesaving care to critically ill patients. Correct positioning is important for safe, effective use and is most commonly verified by chest x-ray (CXR). National Institute for Health and Care Excellence (NICE) guidelines (2002) already recommend ultrasound for initial CVC venepuncture but there are currently no recommendations for its use in final tip position confirmation.

Method Literature was obtained from Ovid MEDLINE, Scopus and Web of Science databases using relevant search terms. Sources were assessed for eligibility against suitable inclusion and exclusion criteria, and scrutinised for quality using critical appraisal tools, resulting in a yield of 12 relevant studies.

Results Contrast-enhanced transthoracic echocardiography (CE-TTE) utilising an intravenous saline injection for indirect visualisation of CVC tip positioning demonstrated excellent specificity, but lower sensitivity meant it was inappropriate for independent use to rule out malposition. Intra-procedural application of CE-TTE's excellent ability to rule in malpositions allowed immediate CVC repositioning, where indicated, without the need for CXR. CE-TTE was performed significantly quicker than CXR's were acquired . Although ultrasound is an operator and patient dependent modality, non-experts with minimal CE-TTE CVC confirmation training produced equivalent diagnostic accuracy, and a variety of acoustic windows helped to navigate feasibility issues arising from patient habitus.

Conclusion Further research with large patient populations is required to establish the source of sensitivity statistical heterogeneity and to investigate whether shorter time limits for saline visualisation could improve CE-TTE accuracy.

References
National Institute for Health and Care Excellence (NICE) (2002). Guidance on the use of ultrasound locating devices for placing central venous catheters: Technology appraisal guidance. TA49. [online] Available at: https://www.nice.org.uk/guidance/ta49 [reviewed 2016; accessed 2023 February 1].

P038 Mimickers of malignant lymph nodes - A series of cases encountered in the lung MDT

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Background Lung cancer is the 3rd most common cancer in the UK. (1) It frequently presents with associated lymphadenopathy. In this pictorial review, we focus on instructive cases initially referred as possible malignant nodal enlargement which eventually had a final benign diagnosis extracted from our hospital's weekly lung MDT database over the last 2 years.

Purpose of the poster To highlight the radiological appearances of several common and some unusual pathologies or normal variants that mimic malignant thoracic adenopathy.

Summary By analysis of final histology, follow up or further tests, non-malignant diagnoses such as congestive cardiac failure, cardiomyopathy, or sarcoid were made.

Other false-positives illustrated included prominent venous pericardial sleeve, aberrant right subclavian artery, rounded superior pericardial recess, “chicken wing” type of left atrial appendage.

The poster will demonstrate the important radiological features alongside the cross sectional imaging which will serve as an educational experience.

References

1. Cancer Research UK, https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer, Accessed January 2024.

P039 A retrospective planning study to assess the feasibility of VMAT/ARC planning for the radiotherapy management of Impending metastatic spinal cord compression (IMSCC) / Metastatic spinal cord compression (MSCC) within the emergency pathway

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Objectives A retrospective planning study was conducted at a large radiotherapy centre in North West England, investigating the feasibility of creating volumetric modulated arc therapy (VMAT) plans for patients with metastatic spinal cord compressions (MSCC) who received radiotherapy. This project evaluated time constraints and toxicity to organs at risk (OAR).

Patients and methods 10 patient datasets were exported and 11 VMAT plans were created (one patient had two treatment areas). The desired target volumes were contoured with a prescribed dose of 8Gy/1#, and 11 VMAT plans containing 2 arcs were produced. The time taken to plan the treatments was measured, a conformity index (CI) was calculated for the PTV, and dose to OARs were assessed.

Results Planning a VMAT technique for MSCC patients was proven to be feasible, with the longest time taking 32 minutes and 56 seconds, just over 10 minutes longer than the average time taken to plan a single posterior field (SPF). The CI calculation identified that the PTV conformity to the 95% isodose line was statistically significant ($p<0.001$), with a mean CI of 0.91 for the VMAT plans, compared to 0.47 for the SPF plans. The results further highlighted that the VMAT plans delivered higher doses to the OARs than the SPF plans.

Conclusion Using VMAT to plan and treat patients with MSCC at this specific centre is feasible with regards to time and target volume coverage. Further research is required to assess the effects of single fraction radiotherapy on development of acute and late toxicities.

Table

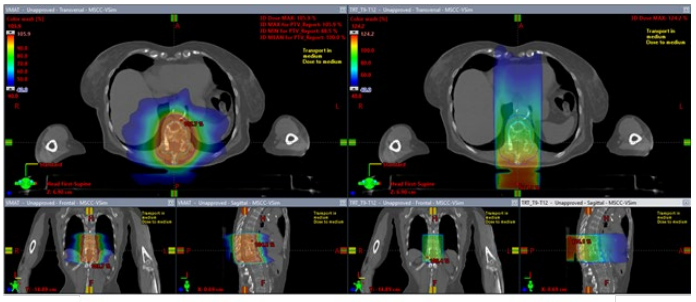

Figure 1 – Plan evaluation showing VMAT plan (left) versus SPF plan (right)

P040 Optimisation of AEC in CT: benefits and challenges in clinical practice

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Background To optimise CT imaging, Automatic Tube Current Modulation (ATCM) was first introduced into clinical practice in 19944. Historically, a fixed mA was manually selected by the operator3. Attenuation through a patient, however, is not constant and mA would be too high through some areas and too low in others1. Often referred to as the "high dose" modality2, modern CT systems integrate Automatic Exposure Controls in an effort to optimise image quality and patient doses. This narrative review aimed to determine how AEC is optimised in clinical practice and the challenges facing this.

Methods A narrative literature review was conducted to cover the following topics: AEC system technology, patient dose reduction, clinical challenges, and education in CT.

Results AEC systems have the potential to benefit patients in multiple ways, however this relies on their optimal use and operator ability. The ability of AEC is often overestimated, and it could be assumed that the system "does the work" for the operator.

Conclusion AEC technology can improve the diagnostic quality in CT however optimising these systems to their full potential in a clinical environment is not always possible. User understanding of AEC systems' and clinical adaptations' impact on patient dose and image quality is vital when adapting examinations in CT clinical practice. It is also important to consider if there is a lack of AEC education in clinical CT practice and how this impacts optimisation of the systems.

References
1. Iball, G.R, Brettle, D.S and Moore, A.C (2006) Assessment of tube current modulation in pelvic CT. The British Journal of Radiology 79, 62-70.
2. Kalender, W.A (2011) Computed tomography: fundamentals, system technology, image quality, applications. Third Edition. Erlangen, Germany: Publicis.
3. Seeram, E (2016) Computed tomography: physical principles, clinical applications, and quality control. Fourth Edition. Australia: Missouri, USA: Elsevier.
4. UK Health Security Agency (2022) 'UKHSA-RCE-1: doses from computed tomography (CT) exams in the UK'. Published online at: UKHSA-RCE-1: doses from computed tomography (CT) exams in the UK - 2019 review (publishing.service.gov.uk) . UKHSA.

P041 CT image protocol optimisation (dose and matrix size) for radiotherapy planning

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Background: A Philips CT- Sim (Big Bore RT) scanner was commissioned for RT Planning with full Iterative Reconstruction (IMR Level 1) and originally 512 matrix size. Image quality was audited after commissioning resulting in the pancreas oncologist requesting image optimisation. For pancreatic cancer patients, limited patient life expectancy in conjunction with challenging delineation due to nearby OARs e.g. duodenum, justified an increased imaging dose by the practitioner. There is no NDRL for pancreas, so information was obtained from another Philips CT-Sim centre who had optimised their pancreas images. As part of protocol optimisation 1024 matrix was implemented.

Method: Image optimisation was done by an MDT ensuring IR(ME)R was followed. Retrospective reconstruction options were discussed with the clinician and CATPhan measurements of image quality were performed. The original pancreas protocol imaging doses were low (4.9 mGy mean CTDI) compared to NDRLs for prostate of 16 mGy CTDI, enabling the imaging dose to double. Dose and image quality measurements were performed on phantoms using the updated pancreas protocol, showing image improvement. The clinician justified this increased dose for clinical use. An audit of patient images obtained with the new protocol was performed.

Results: The clinician was satisfied with the new image quality using 1024 and double the imaging dose. Dose audit showed previous mean CTDI 4.9 mGy to new 9.6 mGy (5 patients).

Conclusion: Improved image quality has been achieved by optimising both dose and matrix size. This work has resulted in a departmental procedure to support image protocol optimisation.

P042 Assessment of machine-generated radiation dose in computed tomography examinations at the Komfo Anokye Teaching Hospital, Kumasi, Ghana.

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Background: Computed tomography plays an essential role in therapeutic decisions. Early discovery of ailment is possible solely through this imaging technique. In spite of the important role played by X-ray in healthcare, it has the potential of causing cancer. Hence, it is imperative to ensure that radiation is kept as low as reasonably achievable through optimized imaging protocols anchored on routine dosimetry and quality assurance. The aim of this study was to assess the radiation

dose imparted to patients during common CT examinations with the newly installed 128 slice CT scanner at the Komfo Anokye Teaching Hospital.
Methods: A quantitative-retrospective study design approach was adopted for this study. Data was collected from the CT scan control console. This included patient demographics, volume CT dose index (CTDIvol), dose length product (DLP), pitch and effective dose (ED) and other exposure factors. Data were analyzed using statistical package for social sciences (SPSS) version 20.0.
Results: A total of 380 computed tomography dose data of the head, chest and abdominal regions were retrieved from the CT console. The mean and the standard deviation (SD) of the
ages of the patients were 43.49±20.94 years, ranged (1 – 100) years.
Conclusion: The machine generated CT doses that were recorded for the study were within the International Commission on Radiological Protection recommended dose reference levels and that of other countries that suggested dose optimization.

References
1. Abdulkadir, M. K., Schandorf, C. and Hasford, F. (2016) Determination of Computed Tomography Diagnostic Reference Levels in North-Central Nigeria. The Pacific Journal of Science and Technology, 17(2), 341–349.
2. Aweda, M.A. and Arogundade, R. A. (2007) Patient dose reduction methods in computerized tomography procedures: A review. International Journal of Physical Sciences, 2(1), 1–9.
3. Toori, A. J. and Nabahati, M. (2015) Dose assessment in computed tomography examination and establishment of local Diagnostic Reference Levels in Mazandaran, Iran. J Biomed Phys Eng, 1; 5(4):177-84

P043 Estimates of foetal dose from diagnosis of Pulmonary Embolism in pregnant patients across differing imaging modalities

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Pulmonary Embolism (PE) is a condition in which a blood clot typically formed within the leg in a Deep Vein Thrombosis (DVT) becomes loose, travels through the system and blocks an artery in the lungs. This can typically cause difficult breathing and coughing up blood. Pregnant women have around five times the risk of developing a PE and it is one of the leading causes of maternal death during pregnancy1.
The most common methods of diagnosis of PE utilise ionising radiation. These are typically standard chest x-ray, a Computed Tomography Pulmonary Angiography (CTPA) or some version of a ventilation- perfusion (V/Q) SPECT CT scan. All exposure to ionising radiation carries a risk commensurate with the level, and for pregnant individuals this also includes a risk to the developing foetus. An analysis of the different doses involved across the imaging modalities has been undertaken, with foetal dose assumed to be equivalent to the dose to the uterus in all cases.

References
'Suspected Pulmonary Embolism in Pregnant Women' – Milton Keynes University Hospital NHS Foundation Trust - https://www.mkuh.nhs.uk/patient-information-leaflet/suspected-pulmonary-embolism-in-pregnant-women
'Overuse of CT Scans for Suspected Pulmonary Embolism Persists' – Todd Neale, tctMD - https://www.tctmd.com/news/overuse-ct-scans-suspected-pulmonary-embolism-persists
'Notes for guidance on the clinical administration of radiopharmaceuticals and use of sealed radioactive sources' - ARSAC - https://assets.publishing.service.gov.uk/media/63ee5a0c8fa8f5612f2a7dfc/guidance-clinical-administration-of-radiopharmaceuticals-and-use-of-sealed-radioactive-sources-2023.pdf

P044 Simulation-based assessments: A new approach to undergraduate clinical assessments for CT head examinations.

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Background: Before this simulation-based assessment diagnostic radiography undergraduate students undertook their Computed Tomography (CT) Head clinical assessment within the placement setting. Although placement-based assessment provides authenticity (Brydges et al., 2015) there are challenges in providing adequate time for student supervisors to conduct these assessments in the face of clinical pressures and growing student numbers (Wilkinson and Cadogan, 2023). An on-campus CT head assessment was developed to circumvent these pressures and provide a more consistent approach to student clinical assessment compared to previously conducted assessments administered across multiple partner placement sites.
Purpose: To allow participants to consider the validity of simulation-based assessment in diagnostic radiography training. Participants will have the opportunity to gain awareness of the benefits and challenges of incorporating simulation-based assessment into a radiography programme.

Summary of content: Overview of the reasoning behind using simulation-based CT assessment, the benefits and challenges encountered during the implementation of this method of assessment. Presentation of results from a comparison of two final year cohorts, one with full access to the on-campus CT scanner and one with limited access, looking at how improvements made between the two run-throughs of the assessment have impacted students' experience and achievement. Considerations on how future simulation-based CT assessments can be developed to be more authentic and assess a broader range of clinical and non-clinical skills.

References
1. BRYDGES, R., HATALA, R., ZENDEJAS, B., ERWIN, P. J. & COOK, D. A. 2015. Linking Simulation-Based Educational Assessments and Patient-Related Outcomes: A Systematic Review and Meta-Analysis. Academic Medicine, 90, 246-256.
2. WILKINSON, E. & CADOGAN, E. 2023. Radiographers' perceptions of first year diagnostic radiography students' performance following implementation of a simulation-based education model. Radiography (Lond), 29, 721-728.

P045 Safeguarding and Simulation: The University of Bradford approach

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HCPC standards mandate radiographers to safeguard the vulnerable. However the concept of preparing Radiographers for the challenge of identifying those at risk is made challenging by the complex and varied patient presentations and the naturally restricted scope that an imaging examination provides.
Academics at the University of Bradford created a simulation even that synthesised key concepts of physical, social and radiographic signs that could present to radiographers in chronological order.
The simulation involved use of imaging requests, photographic images (including the use of moulage (TM)) to represent external manifestations and radiographic images to provide a holistic, and radiography orientated interaction for students to review.
The simulation provided an opportunity to extend beyond the traditional child orientated approach to involve other vulnerable groups and also presented cases that were not considered safeguarding concerns.
The use of a debrief at the end of the simulation allowed students to reflect on their learning, consider their own mental health and consolidate their safeguarding knowledge.
This simulation concept has the potential to be tailored to student needs by extending beyond x-ray imaging to include other imaging modalities.

References
Antwi, W.K., Reeves, P.J., Ferris, C. and Aziato, L. (2018) Behavioural beliefs of Ghanaian radiographers and reporting of child physical abuse. Radiography 25 (1) 51
Beck JJW, Snaith B, Wilson AS and Hardy M (2023) Evaluating the role of the diagnostic radiographer in identifying child safeguarding concerns: A knowledge, attitude and practice survey approach. Radiography 29 (5) 892-7 -7.
Doyle, E. and Vuong, R. (2020) A literature review of 'best practice' for radiographers when imaging suspected non-accidental injury or physical abuse of children in Australia and New Zealand. Journal of Forensic Radiography and Imaging 20.
Hogg, P., Hogg, D., Eaton, C. and Sudbury, J. (1999) Child protection in radiographic practice. Radiography.5 (3) 127-9.

P047 An evaluation of a simulated theatre environment teaching session for third-year undergraduate diagnostic radiography students.

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Simulation-based education (SBE) aims to help bridge the theory-practice gap (Tay, Wei & Chong 2022) and address the national workforce pressures whilst reducing the training burden on placement sites by giving students clinical experience in a safe environment (Partner, Shiner, Hyde & Errett 2022). A theatre radiography appraisal has long been a part of many HEI's assessment of students in this environment and at this institute forms part of the year 3 suite of summative clinical assessment. This study aimed to evaluate the impact of a theatre radiography simulation session on student's confidence.
Following participation in a high-fidelity theatre simulation of a DHS procedure, students were asked to complete a short e-questionnaire to gather their views on theatre radiography in general and the simulation session itself. 55% of students responded.
The survey showed that 42% had observed less than 10 cases in their year 1 and 2 placements. This is echoed by Hughes (2018) who acknowledges that many students gain limited theatre experience.
80% of respondents said they found the session useful. The results showed an average increase in confidence of 17% for setting up the equipment and 18% for positioning and moving the c-arm. Negative comments about the simulation were

"too short", "Would like more hands-on time" and one student who had previous experience of 25+ theatre cases who did not find it useful.
This session will remain part of our year 3 programme. Further development could include longer sessions and a variety of examinations.

References
Hughes, J. (2018) Introduction to Intra-operative and Surgical Radiography. Oxford: Oxford University Press
Partner, A., Shiner, N., Hyde, E. and Errett, S. (2022) First Year Student Radiographers' Perceptions of a One-week Simulation-based Education Package Designed to Increase Clinical Placement Capacity. Radiography [online]. 28, pp. 577-585. [Accessed 11 December 2023].
Tay, X.Y., Ng, G.Y.H., Xue, M., Lim, C.X.Y., Hsiao, C.-W., Wei, Y.M. and Ong, C.C.P. (2023) 'Gear Up and Get Ready': Collaborative Curriculum For Radiographers Supporting Percutaneous Nephrolithotomy in the Operating Theatre. Radiography [online]. 30, pp. 178-184. [Accessed 08 December 2023].

P048 Radiology Simulation Training in preparing for trauma CT on-call

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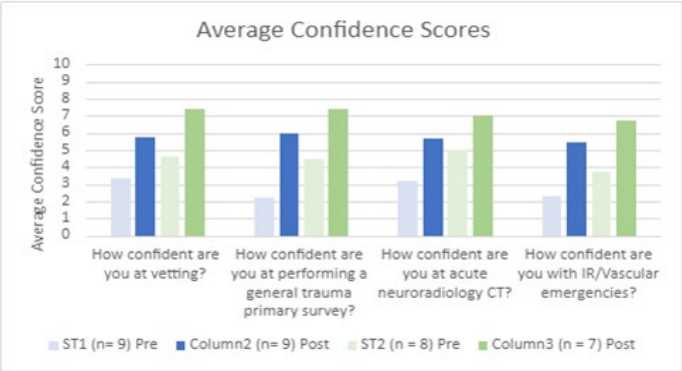
Background Simulation training is widely used in medicine and replicates realistic scenarios with real world challenges in a safe space and with direct support to enhance the educational benefit to those involved(1).
Trainees in Bristol are expected to start on-calls at a major trauma centre from ST2 and many do not feel confident prior to starting especially if having worked at smaller hospitals previously. Simulation training of the on-call was then postulated to bridge this gap in confidence.
Methods A series of half-day simulation sessions were delivered biannually to junior radiology registrars as they prepare to take on acute on-call CT reporting and vetting.
An introduction to acute vetting and then multiple simulated cases of body, neuroradiology and vascular trauma reporting in real time was performed. Registrars would be time pressured and faculty would recreate external pressures as one may experience in the trauma department. A simulated primary survey hot report would then be presented to the trauma team lead.
Feedback was then collected before and after focussing on the students confidence.
Results This well-established simulation training running since July 2022 has found that registrars have had consistent improvement in confidence with both vetting and reporting across all levels of cohort seniority. There was also incremental increased confidence ratings with increased seniority. Excellent feedback was received and subsequent session improved, adapting to feedback.
Conclusion Our project found that radiology simulation training offers the opportunity to accelerate the confidence of trainees, improve patient safety and make for an enjoyable learning experience.

Table



References
Vestbøstad, M., Karlgren, K. & Olsen, N.R. Research on simulation in radiography education: a scoping review protocol. Syst Rev 9, 263 (2020). https://doi.org/10.1186/s13643-020-01531-2

P049 A pilot investigation into using Table-top exercises as a learning activity for undergraduate Diagnostic Radiography students as part of Simulated Clinical Placement

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Background Diagnostic Radiography (DRAD) is essential for accurately triaging patients during major incidents, although departments have been reported as under-represented in major incident planning (Berger et al., 2016). As major incidents are rare, staff may not have experience in managing the increased demands and changes in typical working practices required. Table-top exercises (TTX) are a type of low fidelity simulation typically used by organisations to evaluate plans and responses to major incidents. TTX has been found to be an impactful learning tool for student nurses (Evans and Schwartz, 2019).
Method A TTX was trailed as part of a two-week simulated placement. 1st and 3rd year Undergraduate DRAD students in small groups (6-8) undertook a TTX based around the running of a Radiology department during a Major incident (industrial fire). Students self-allocated roles and attempted to balance resources with the influx of patients, while also managing additional events that occurred in real-time. Feedback was recorded at the end of the block via Likert scales and free text through an online questionnaire.
Results Feedback was highly positive, with over 90% of Students agreeing the TTX was informative in running a department, and over 80% agreeing that it improved their confidence in working during a major incident. Some reported they found the exercise stressful but enjoyable, while others stated the lack of clear roles was confusing at first.
Conclusion TTX can be a useful learning exercise in undergraduate DRAD simulation training, and can build student confidence and skill in responding to major incidents.

References
1. Berger, F.H., Korner, M., Bernstein, M.P., Sodickson, A.D., Beenen, L.F., McLaughlin, P.D., Kool, D.R., Bilow, R.M., 2016. Emergency imaging after a mass casualty incident: Role of the radiology department during training for and activation of a disaster management plan. British Journal of Radiology. https://doi.org/10.1259/bjr.20150984
2. Evans, C.A., Schwartz, R., 2019. Using Tabletop Exercises as an Innovative and Practical Teaching Strategy in Response to External Disaster Scenarios. Nurs Educ Perspect 40, 62–64. https://doi.org/10.1097/01.NEP.0000000000000308

P050 Exploring the effectiveness of video-assisted debriefing in healthcare simulation: A systematic review and meta-analysis

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Background The use of simulation in radiography education is increasing with advances in technology and to address the increased pressure on clinical placements. The potential to replace some placement hours with simulation is attractive to enhance learning opportunities and support the expansion of placements in line with the NHS long-term Plan. However, simulation education needs to be meaningful and add value to the learner. The aim of this systematic review and meta-analysis is to explore the use of video-assisted debriefing to enhance learning from simulation training.
Method Databases were searched using MeSH terms and a keyword search as described in the PROSPERO protocol CRD42023408736. Title and abstract screening was undertaken by four people and quality assessment by two using the QATSDD tool [1]. Meta analysis was performed using the METAFOR package in R.
Results 15586 records were screened at the title and abstract phase and 15513 excluded. 73 full texts were reviewed, 39 met the criteria and were included in the study. Meta-analysis demonstrated an effect size, as measured by Cohen's d, of 0.79 for video assisted debriefing for technical skills indicating a medium effect. However, for non-technical skills the effect size was 0.10, indicating a very small effect.
Conclusion This review supports the positive impact of video-assisted debriefing in simulation training. However, while some learners enjoyed reviewing their own videos, expert debriefing remains essential to ensure learners can identify areas for improvement. The use of skills-based assessments is important when evaluating the impact of simulation training.

References
1. Sirriyeh R, Lawton R, Gardner P, Armitage G. (2012) Reviewing studies with diverse designs: the development and evaluation of a new tool. J Eval Clin Pract.18(4):746-52. doi: 10.1111/j.1365-2753.2011.01662.x. Epub 2011 Mar 16. PMID: 21410846.

P051 The design and implementation of a 2-week simulated placement for level 4 students.

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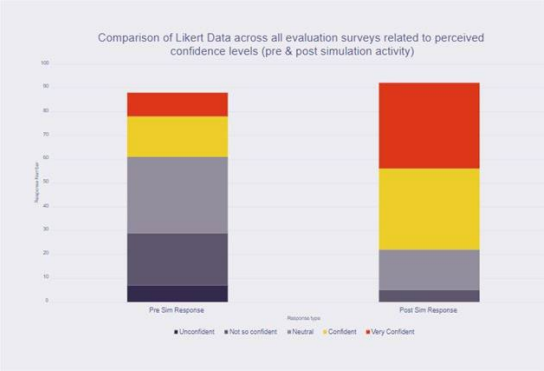
Background Creatively designed placements including simulation-based education (SBE) have recently been shown to maximise student resilience, increase placement capacity, and build a more collaborative learning environment to secure the future workforce (Council of Deans of Health, 2022).
A 2 week simulated placement was designed to be run immediately prior to the challenging first transition from academia to clinical practice (Shiner, 2018), (Jimenez et al., 2023) for a cohort of 50 students.

The simulation curricula was planned and coordinated in line with evidenced based practice in SBE (ASPiH 2016, HEE 2018) and consisted of 9 days of mandatory simulation in small groups of between 5-10.
Simulation sessions included a mix of technology enhanced learning activities and sessions of different fidelities. All sessions were designed with the patient perspective at the heart of the scenarios.
Results A comparative formative assessment was done at the start and end of the placement, more students met more criteria in their final assessment (N=15) than met less (N=13). These assessments did not show a significant improvement but they were performed on different anatomical areas so different competence levels in different anatomical areas may have been a factor in this.
Likert data was also gathered that showed clear improvment in percieved confidence of the students pre and post all simulation activity (figure one)
Conclusion While the formative assessments didn't show a significant improvement pre and post simulation activity the students perception of their confidence greatly improved during the simulation activities.

Table



References
1. Council of Deans for Health (2022) Pandemic Powered improvements
2. Health Education England (2018) National Framework for Simulation Based Education
3. Shiner (2018) Is there a role for simulation based education within conventional diagnostic radiography? A literature review, Radiography, 24(3) 262-271

P052 Immersive scheduling in clinical programmes – A new way of delivery for undergraduate Diagnostic Radiography education

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Objectives: De Montfort University embarked on a bold vision to reimagine undergraduate teaching via an 'Immersive Scheduling' model, where individual topics were taught and assessed in their entirety in a much shorter period 1-4, typically 7-10 weeks. This mode of delivery of educational content replaces the usual long and thin model of module delivery where several different topics are taught (and assessed) simultaneously. This paper presents a review on essential aspects of immersive scheduling/block teaching, and implication on undergraduate radiography education and practice.
Key Findings: The challenge with programmes with a significant work experience element is the continued need to integrate theory with practice[5] throughout the programme. We restructured our programme into 9 modules, delivered across three years, with each module reconfigured with revised learning outcomes to reflect a reduced assessment burden, whilst still retaining the requirement to be able to apply for professional registration upon completion.
We preserved the clinical placement contact hours and were able to adjust the dates when students were on placement to try to address the pressures that clinical departments face.
Conclusion: We have rolled out our new programme to run concurrently with our 'traditional' delivery and have yet to evaluate it in terms of student attainment, and knowledge retention.
Implication for Practice: We have incorporated concentrated teaching periods in the clinical practice blocks to provide a link between the theoretical and practical / technical components, and we have introduced the idea of professional and academic themes to run alongside the block topics.

References
1. Biggs, J (1996) Enhancing teaching through constructive alignment. Higher education 32:347-364, 1996

2. Buck, E., & Tyrrell, K. 2022 Block and blend: a mixed method investigation into the impact of a pilot block teaching and blended learning approach upon student outcomes and experience, Journal of Further and Higher Education, 46:8, 1078-1091, DOI: 10.1080/0309877X.2022.2050686
3. Dixon, L., and V. O'Gorman. 2020. Block Teaching - Exploring Lecturers' Perceptions of Intensive Modes of Delivery in the Context of Undergraduate Education." Journal of Further and Higher Education 44: 583–595. doi:10.1080/0309877X.2018.1564024. [Taylor & Francis Online], [Web of Science ®],
4. Loton, D., C. Stein, P. Parker, and M. Weaven. 2020. "Introducing Block Mode to First-Year University Students: A Natural Experiment on Satisfaction and Performance." Studies in Higher Education (Dorchester-on-Thames). 1–24. [Google Scholar]
5. Savery, J.R, and Duffy T.M. (2001) Problem Based learning: An instructional model and its framework. CRLT Technical report No 16-01, Indiana University

P054 Creating accessible virtual learning environments for undergraduate Diagnostic Radiography students.

Erin Berry[1]
[1]University Of BradfordUnited Kingdom

Background: Virtual Learning Environments (VLEs) allow access to educational material from any location without needing to be on a campus and are utilised as part of a blended learning approach. However, while VLEs are intended to improve access to learning, as digital platforms they have limitations which mean access may inadvertently be reduced for certain learner groups such as students with Specific Learning Difficulties (SpLD) (All-Party Parliamentary Group for Assistive Technology 2018).
Purpose: We reviewed the VLE pages used on our BSc Diagnostic Radiography programme, focussing on accessibility for students with SpLDs. From our findings we made recommendations on best practice for accessible VLEs. Training was then provided to support programme teachers in implementing the recommendations.

Summary: This poster/presentation will highlight the recommendations we have made, some of which include:
- Provide good colour contrast. If using colours for text make sure that the text is clearly distinguishable from the background.
- Use built in text formatting to help with navigation and assistive software.
- If lectures are online automated closed captions and transcripts should be enabled.
- Test VLE pages when editing by running a screen reader or utilising accessibility checker software.

VLEs should be built with accessibility in mind. The above provide a starting point for educators to improve access to learning opportunities for Diagnostic Radiography students with SpLDs. Students with SpLDs face a range of barriers in Radiography education (Murphy 2011) so continuous efforts must be made to ensure inclusive programme design.

References
1. All-Party Parliamentary Group for Assistive Technology (2018) Accessible Virtual Learning Environments: Making the most of the new regulations. Southwark: Policy Connect
2. Murphy, F. (2011) On being dyslexic: Student radiographers' perspectives. Radiography. 17(2) pp. 132-138. https://doi.org/10.1016/j.radi.2010.08.005

P055 BSc (Hons) Diagnostic Radiography (apprentice route) one year on – is it replication or re-design? A sharing of experiences

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Background The two radiography apprentice programmes at Keele University commenced in January 2023 following validation in 2022. The planning of the programme was very much a collaboration between Keele University and local Clinical Partners, delivery was by the teaching team at Keele. This proved to be a very sharp learning curve for Academic staff, being the first apprentice Programme in the School of Allied Health Professions at Keele University.
Purpose This work will describe how collaboration between Academics and Clinical partners has led to greater apprentice satisfaction and the growth of the programme. We will discuss employer contributions, communication and disparities in university processes encountered between apprentices and traditional routes. Methods of communication and resultant changes made during the first year following feedback will be discussed. How these adjustments fed into teaching material, delivery, assessment and time management to plan for the second year of the programme will be outlined. Experiences will be shared and how this feedback will contribute to the smooth running of several radiography programmes being delivered alongside each other for future cohorts.
Summary of Content Rationale for the design of the programme will be discussed, communication with Clinical Partners, challenges and how these were dealt with by the Programme Director and Academic team. University centralized services potentially require alternative working processes to incorporate the apprentice route and challenges and ideas for support will be outlined.

P056 Preparing a modern radiography workforce from lessons learned in industry: service and quality improvement projects by undergraduates

Ms Avril Lowe[1], Jennifer Jones[1], Ifeoluwa Agbeja[1], Mr Steven Allen[1], Kevin Hinton[1], Aaron Kingdon[1], Grant Mitchell[1], Miss Amanda Price[1], Mrs Karran Speakman[1], Siobhan Moyes[1]
[1]University of Plymouth, Plymouth, United Kingdom

Background In 2017 the NHS Institute for Innovation and Improvement began the evidence-based DMAIC project management model for service and quality improvement using Lean 6-Sigma to improve efficiency. The NHS was initially supported by a multinational who developed 6-Sigma in 1995 throughout its manufacturing then human-based transactional processes. Training is available for healthcare staff but until now has not been adapted for undergraduates.
Purpose The diagnostic radiography programme launched relatively recently was an opportunity to develop service and quality improvement (SQI) into a simplified project management model for undergraduates. Introduction to project management in year 2 explores cases through enquiry-based learning (EBL); small group work introduced into medical faculties to improve critical thinking and professional and research skills in evidence-based practice. Teaching in year 3 covers the use of project management tools to enable students to plan and deliver their own service or quality improvement project with data-driven findings and recommendations.
Summary of Content This 3rd year module works in partnership with the NHS and independent sector to identify issues in radiology processes or compare radiographic techniques, for the benefit of the patient. Topics selected by students align to departmental policies and quality procedures, and teaching covers the detail of how to plan and manage a project using DMAIC project management. Assessment is a Society of Radiographers standard poster and journal article. The student achievements are celebrated with a poster show open to the healthcare staff who supported the project, regional managers and the faculty.

References
Bancroft, J., Saha, K., Li, D., Lukacs, G. and Pierron, X. (2018), 'Lean Six-Sigma: the means to healing an ailing NHS?', International Journal of Quality & Reliability Management, 35(9), pp. 1976-1988. Emerald Publishing Limited. Available at: https://doi.org/10.1108/IJQRM-01-2017-0006 (Accessed: 25 January 2024)
Bevan, H., Westwood, N., Crowe, R. and O'Connor, M. (2017), 'Lean Six Sigma: some basic concepts', NHS Institute for Innovation and Improvement. Available at: https://www.england.nhs.uk/improvement-hub/wp-content/uploads/sites/44/2017/11/Lean-Six-Sigma-Some-Basic-Concepts.pdf (Accessed: 25 January 2024)
McDermott, O. et al, (2022), 'Lean Six Sigma in Healthcare: A Systematic Literature Review on Challenges, Organisational Readiness and Critical Success Factors', Processes. Available at: https://repository.londonmet.ac.uk/7947/1/processes-10-01945.pdf (Accessed: 25 January 2024)
Proudlove, N., Moxham, C. and Boaden, R. (2008), 'Lessons for lean in healthcare from using six sigma in the NHS', Public Money and Management, 28(1), pp. 27-34. Available at: https://doi.org/10.1111/j.1467-9302.2008.00615.x (Accessed: 25 January 2024)
Six Sigma (2017) 'Six Sigma Case Study: General Electric', 2024 SixSigma.us. Available at: https://www.6sigma.us/ge/six-sigma-case-study-general-electric/ (Accessed: 9 February 2024)
White, G. (2011), 'An Overview of Six Sigma', NHS Improvement. Available at: https://www.england.nhs.uk/improvement-hub/wp-content/uploads/sites/44/2018/06/An-overview-of-Six-Sigma.pdf (Accessed: 25 January 2024)

P057 Embedding academic skills within a pre-registration diagnostic radiography programme at a UK higher education institution.

Ciara McNally[1], Kayleigh Hizzett[1], Tanja Tolar[1]
[1]University Of Bradford, Bradford, United Kingdom

Background The need for students to develop generic and transferable skills in conjunction with subject knowledge is an integral aspect of the student journey (QAA 2023). Graduates are expected to demonstrate transferable skills consistent with increasing employer and professional expectations, necessitating an effective embedded academic skills provision (Klarare et al. 2022). Despite this, offerings are conventionally generic and lack subject specificity. The academic team at a UK HEI strategized a collaborative, level-specific and contextualised bespoke academic skills offering developed through co-production with key stakeholders and experts. The present study aims to evaluate student and staff satisfaction of the academic skills provision embedded within the curriculum.
Method Mixed-method electronic questionnaires and purposive sampling were utilised. Participants included pre-registration diagnostic radiographers enrolled at the UK HEI in which the researchers are employed. Module leaders instrumental in the integration of academic skills were also approached. Content analysis of qualitative responses elucidated deeper meaning attributed to trends identified by quantitative responses.
Results Students engaged well with the academic skills provision and recognised value to learning due to contextualisation of sessions to module assessment and wider professional responsibilities. Academics initially reported apprehension in delivering skills in which they are not subject experts but upskilling of academic staff through co-production with academic skills collaborators led to increased confidence and effective delivery.

Conclusion Collaboration and co-production of a level-specific academic skills provision at the design level proves effective in preparing students for assessment and beyond. The approach is recommended as a continued academic practice.

Reference
Klarare, A., Rydeman, I. B., Kneck, Å., Bos Sparén, E., Winnberg, E. and Bisholt, B. (2022) Methods and strategies to promote academic literacies in health professions: a scoping review. BMC Med Educ 22 (1), 418.
QAA (2023) The UK Quality Code for Higher Education QAA.

P058 How measuring competencies throughout the day can also save you time - Effective Student Radiographer Assessment through Entrustable Professional Activity

Siobhan Moyes[1], **Mr Steven Allen**[1], Miss Amanda Price[1], Ms Avril Lowe[1], Aaron Kingdon[1], Kevin Hinton[1], Mrs Karran Speakman[1], Jennifer Jones[1]
[1]University of Plymouth, Plymouth, United Kingdom

The shortage of Diagnostic Radiographers has significant implications for the profession. While increasing training places offers a long-term solution, it exacerbates the strain on an already overburdened workforce. In developing the new University of Plymouth Diagnostic Radiography programme, we carefully considered the time required for thorough student evaluation and the implications of temporarily removing radiographers from service delivery to conduct these essential clinical assessments.

Entrustable Professional Activities (EPAs) have long been employed in speciality training for doctors, but our programme is among the first to adopt this approach for undergraduate diagnostic radiographers. Each EPA defines an essential clinical examination that professionals should be able to perform independently after training, such as performing a chest x-ray. Evaluating students' competence for EPAs involves actively working with them on multiple clinical tasks and cases, rather than passively observing one, thereby minimizing the impact on service provision. Radiographers gradually assess students' level of 'entrustability', allowing for ongoing feedback and skill development. Eliminating high-stakes exam days prevents short-term performance inflation.

EPAs serve to bridge the gap between theoretical knowledge and clinical competence, assessing not only clinical skills but also professionalism and teamwork. By defining specific tasks for students to master, EPAs ensure standardised assessments that enhance patient safety and care quality. They establish a framework for evaluating competency, ensuring that graduates meet the necessary HCPC standards before embarking on independent practice.

Our presentation will detail the integration of EPAs into the curriculum, developed in collaboration with imaging departments, and highlight their impact on clinical training.

P059 Career aspirations of diagnostic radiography students - results from the first stage of a longitudinal cohort study.

Nicola Singh[1], Kayleigh Hizzett[2], Professor Bev Snaith[3]
[1]University of Bradford, Bradford, United Kingdom, [2]University of Bradford, Bradford, United Kingdom, [3]University of Bradford, Bradford, United Kingdom

When students begin their undergraduate radiography education, they face the process of wondering whether they should specialise in imaging modalities. Radiography curricula predominantly focuses on general radiography (3)although students also undertake clinical placements within other modalities in radiology (4). Due to the evolving nature of healthcare practice (National Health Service (NHS) England and NHS Improvement, 2019), as well as an update to the HCPC Standards of Proficiency (1), the role of the radiographer has developed and there have become increased opportunities within other specialist areas as well as prospects for role extension and advanced practice (4).

Participants were invited to complete an electronic questionnaire using Online Surveys (JISC Bristol). The invitation is sent via the high education institution (HEI)s virtual learning platform (VLP) along with a participation information sheet. Questionnaires are completed at entry point of training in year 1 and then three points during participants undergraduate training. The cohort will be approached for follow up 1 year post qualification .

The study will use a mixed methods approach using ordinal and open questions. The data is then analysed using pivot tables and thematic analysis. The data over the 3 years will be analysed for comparison, and the first data set from entry level will be assessed initially to identify themes.

Only 25 of 47 participants undertook a form of work placement prior to registering on the Radiography Degree, lending itself to the question of whether attending pre-registration placement would inform students of career pathways in radiography prior to study.

References

1) Health and Care Professionals Council (2023); The standards of proficiency for radiographers https://www.hcpc-uk.org/standards/standards-of-proficiency/radiographers/; Accessed 01 August 2023
2) Hizzett K & Snaith B (2022); Career intentions, their influences and motivational factors in diagnostic radiography: A survey of undergraduate students; Radiography; 28 pg 162-167
3) Sloane, C. and Miller, P.K. (2017); Informing radiography curriculum development: The views of UK radiology service managers concerning the 'fitness for purpose' of recent diagnostic radiography graduates; Radiography 23(1), 16-22
4) Strudwick, R.M. and Taylor, K. (2017); An investigation into breast imaging as part of the undergraduate education of diagnostic radiography students in the UK; Radiography; 23(2), 141- 146.

P060 Sustainable Method of International Knowledge Exchange in Healthcare

Edwin Abdurakman[1], Julie Stokes[1], Chris Alvey[1], Kay Cleaver[1], Anna Mear[1]
[1]Diagnostic Radiography Programme, Leicester School of Allied Health Sciences, De Montfort University, Leicester, United Kingdom

Background: International knowledge exchanges in healthcare have observed shift in method of delivery post Covid-19 pandemic, particularly virtual engagement has gained favour as viable option. Virtual method of engagement offers alternative which removes barriers of time, distance and finance associated with traditional exchanges, while still facilitating engagement with other international healthcare colleagues. Applying an overlay of robust pedagogical theory would strengthen and provide structure to the international exchange activity (Bridgwood et al., 2022).
Purpose: This project explored a sustainable, viable and replicable framework of virtual international knowledge exchange in healthcare education and practice. The collaboration was developed and implemented through a number of virtual engagements between two diagnostic radiography programmes in the UK and Malaysia, which benefitted healthcare students, academics and practitioners.
Summary of Content: The project developed and inaugurated sustainable method of engagement with international university which covers the general healthcare framework of both countries, regulatory body requirements to practice, education structure, clinical practice and social and cultural exchanges. Participants from both countries engaged in selected lectures, workshops and interactive activities virtually delivered by academics and clinicians, which enabled them to share experience and expertise.
Through engagement with similar education programme and clinical background from other country, it allows participants to gain knowledge and skills of global citizenship. This also gives them opportunities to work on shared challenges with people who are different from them either in the classroom or in different part of the world, fostering diversity and inclusivity. This is reflected through overwhelmingly positive feedback from participants.
References
Bridgwooda, B., Woolleyb, K. and Poppleton, A. (2022) A scoping review of international virtual knowledge exchanges for healthcare professionals. Education for Primary Care. VOL. 34(1), 7–15.

P061 Innovation in anatomy education for diagnostic radiography: bridging the gap between theory and practice

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Background With the persistent demand for radiographers, medical imaging continues to be a significant bottleneck for diagnosis. In response, several higher education institutions in the UK have developed undergraduate diagnostic radiography courses that adhere to HCPC standards. Central to these standards is the imperative role accorded to anatomy education for aspiring radiographers. However, despite extensive research on effective approaches to anatomy education for healthcare students, such as those in medicine and nursing, there is a noticeable lack of literature addressing how anatomy is taught to pre-registration diagnostic radiography students.
Purpose In alignment with the HCPC standards of proficiency and informed by the recognized best practices advocated by experienced radiographers, the anatomy curriculum at the University of Plymouth is characterized by innovative and pragmatic pedagogical approaches, aiming to foster an inclusive and comprehensive anatomy learning experience. Through this poster presentation, we aspire to offer educators valuable insights into effective educational strategies for teaching anatomy, thereby equipping a diverse cohort of learners with the requisite knowledge and skills to meet the demands of their careers.
Summary of Content The poster will detail methods used to encourage active and practical learning of anatomy among undergraduate diagnostic radiography students. It will highlight the utilization of technological advancements, specifically virtual anatomy, alongside techniques like surface anatomy to enhance students' grasp of bony landmarks and image interpretation required in simulations. These methods also contribute to enhancing student confidence and nurturing the development of palpation skills, communication and patient positioning essential during clinical placements.
References

1. Cournane, S., Conway, R., Creagh, D., Byrne, D.G., Sheehy, N., Silke, B., 2016. Radiology imaging delays as independent predictors of length of hospital stay for Emergency Medical Admissions. Clinical Radiology 71, 912–918.

P062 Comparison of CNR values of two different CT contrast media at different concentrations

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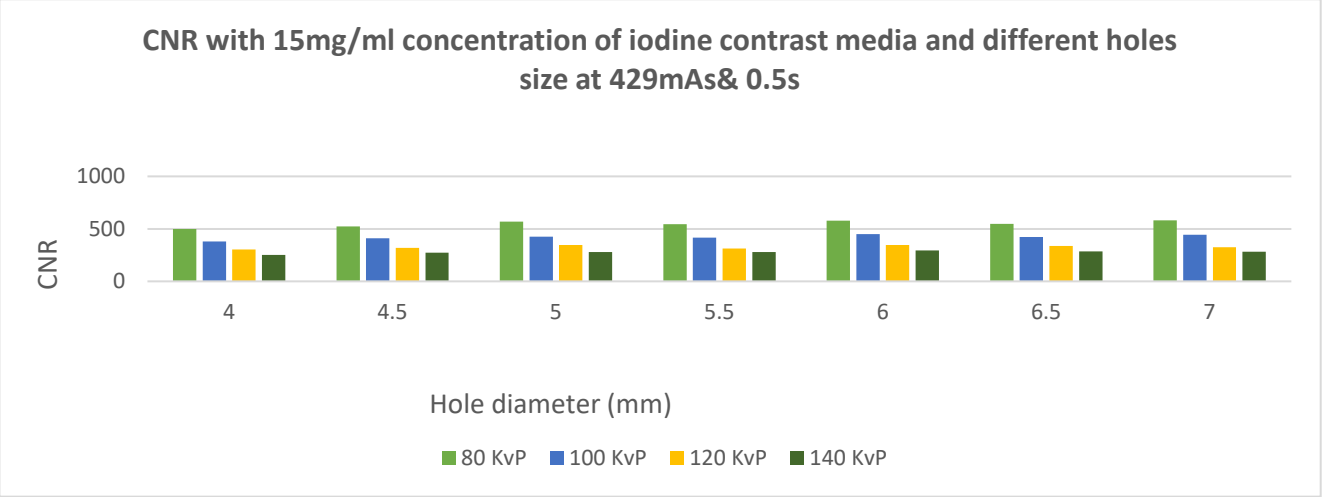
Background Contrast media has been used extensively in CT to improve lesion visualization. This work aimed to compare the CNR values of two different CT contrast media (Iodine and Gold nanoparticles (AuNps) at different concentrations (15 mg/ml and 0.0054 mg/ml) under different exposure factors.

Method A Perspex phantom (30 x 30 cm cross section, 10 cm thick) was fabricated with 91 holes of different diameters and fixed depth of 5 cm and a 1 cm distance between the centres of each hole. Holes were sequentially injected with 15mg/ml of iodine contrast media followed by 0.0054 mg/ml of AuNps with CT scanning taking place for each case. CT was undertaken with a range of exposure factors (kVp ranging from 80-140; mAs ranging from 215-429; rotation time ranging from 0.5-1s). Analysis was performed using ImageJ software by selecting regions of interest (ROIs) within the main body of the Perspex phantom and over the holes. Contrast-to-noise ratios (CNR) for holes were subsequently calculated.

Results The highest CNR value for iodine was similar to that for AuNps, approximately 600.

Conclusion The maximum CNR values of both contrast agents were approximately 600 but at different concentrations (iodine 15mg/ml, AuNps 0.0054 mg/ml). The use of lower concentrations of contrast media is generally desirable, reducing any potential physiological reactions.

Table



References
Owens, T., Anton, N. and Attia, M. (2023) CT and X-ray contrast agents: Current clinical challenges and the future of contrast [Preprint]. doi:10.2139/ssrn.4533881.

P063 Harnessing the benefits of ChatGPT for radiography education

Cletus Amedu[1], Dr Benard Ohene-Botwe[1]
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Background: Radiography education is essential for training competent professionals (England et al., 2017) capable of performing diagnostic imaging and therapeutic procedures. As technology evolves, there is a growing interest in leveraging innovative tools, such as integrating ChatGPT, to enhance traditional teaching methods in radiography.

Purpose: This poster aims to explore the potential integration of ChatGPT, an advanced conversational AI model, into radiography education. The objective is to outline its learning outcomes and practical applications for participants of the UKIO conference.

Summary of Content: The poster discusses the interactive learning opportunities offered by ChatGPT, including self-paced learning, revision platforms, and support for educators in various tasks (Amedu and Ohene-Botwe, 2024). It addresses the benefits and challenges of integrating this technology into radiography education, emphasising the importance of considering academic integrity (Currie et al., 2023) and privacy concerns.

Moreover, the poster will feature a pictorial display of interactive activities with ChatGPT, highlighting areas of strength that could be beneficial to radiography students and educators, while also addressing limitations to be considered when using it.

In conclusion, the poster highlights the prospects and limitations of ChatGPT in radiography education and stresses the need for ethical implementation. Additionally, it outlines how integrating ChatGPT could enhance digital literacy and student outcomes while simplifying the preparation process for educators.

References

1. Amedu, C., & Ohene-Botwe, B. (2024). Harnessing the benefits of ChatGPT for radiography education: A discussion paper. Radiography, 30(1), 209-216. https://doi.org/10.1016/j.radi.2023.11.009
2. Currie, G., Singh, C., Nelson, T., Nabasenja, C., Al-Hayek, Y., & Spuur, K. (2023). ChatGPT in medical imaging higher education. Radiography (London, England: 1995), 29(4), 792–799. https://doi.org/10.1016/j.radi.2023.05.011
3. England, A., Geers-van Gemeren, S., Henner, A., Kukkes, T., Pronk-Larive, D., Rainford, L. and McNulty, J.P. (2017). Clinical radiography education across Europe. Radiography, 23, pp.S7-S15. https://doi.org/10.1016/j.radi.2017.05.011

P064 Adrenal lesions – when to get an adrenaline rush over them…

Hussain Amin[1]
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Background: Adrenal lesions are a common incidental pick-up on many CT scans performed, often at the edge of the field of view in CT Thorax studies in addition to abdominal scans. The majority of adrenal lesions are benign, adenomas being the most common. However, there is a wide differential for adrenal lesions, with several malignant entities possible. It is therefore important to be aware of the signs that point away from benignity and warrant concern. The adrenals are a common site for metastases but there are also several primary malignant lesions of the adrenal glands. Some – for example phaeochromocytoma – should not be biopsied, due to the life-threatening risks associated (e.g. hypertensive crisis), and therefore being able to differentiate between the different adrenal lesions radiologically can have a massive role in the safe management of patients. Given that many lesions are 'incidentalomas' as mentioned, this is a topic of relevance to all radiologists reporting body CTs, regardless of their subspecialty.

Purpose: To provide an overview of the various adrenal lesions that can be encountered and their imaging appearances, and in particular to be able to recognise concerning features.

Summary: This pictorial review aims to provide a summary of the various adrenal lesions that can be encountered in day-to-day reporting and highlight the various imaging features for each entity with examples.

P065 Basics of Image Interpretation

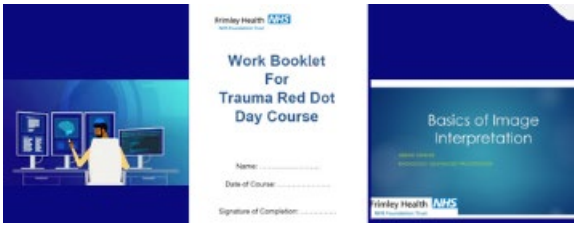
Mr Abrar Anwar[1], Natasha Page-Smith
[1]Frimley Health, London, United Kingdom

Background - My journey of developing an SoR accredited course called Basics of image interpretation for students/radiographers/apprentices.

Purpose - To help educate radiographers in their interpretation of plain film MSK radiographs. Increase staff confidence & help boost motivation and morale. This will help with staff retention levels too. Educating and training people is a passion of mine and something I want to do more of going forward as I want the best possible practice within the department which will help patient outcomes. A key purpose was to get feedback & see how I can further develop the course and the content included.

Summary - I speak about how the course was developed, obstacles occurred, radiographers' thoughts and opportunities in the future. Radiographers' thoughts and feelings were also collected as a form of feedback.

Table



15. Any other comments/feedback

7 Responses

ID	Name	Responses
1	anonymous	N/A
2	anonymous	Well prepared presentation, interesting and leaened a lot
3	anonymous	None
4	anonymous	Thank you Abrar, you were very good at explaining
5	anonymous	GREAT DAY !!! , would attend more
6	anonymous	Worth to attend and I learned more . Very helpful training
7	anonymous	This is definitely helpful. Looking forward for more.

P067 Increasing clinical placement capacity: The role of the practice educator

Mrs Rachel Bridges[1]
[1]University Hospitals Of Leicester, Leicester, United Kingdom

The NHS workforce plans aim is to put staffing on a sustainable footing to allow an improved patient experience. In order to reach the required staffing levels to do so there is a need to increase the number of Radiography students in training. This can be a challenge as most departments are understaffed and have limited support to dedicate time to allow for placement expansion or additional student support.

Through NHSE funding our Trust has been enabled to take on 2 additional Practice Educators within the last 2 years, allowing us to reflect upon our capacity and develop a new innovative roster which is enabling us to increase our capacity by 247% by 2025.

This was done through re-assessing student shift patterns, tapping into under utilized modalities and departments as well as creating bespoke pathways for students to allow them to explore potential future career development routes.

We have linked in with the wider AHP team within the trust as well as the nursing practice educators to allow students to develop skills to become a more well rounded qualified healthcare professional upon HCPC registration.

Alongside this we have designed taught sessions for each cohort of students that support and help meet their clinical portfolios and help to support their professional development.

This new roster and capacity increase would not have been possible without the investment into more practice educators within the trust and is making a noticeable difference to both capacity and student support we are now able to provide.

P068 Collaborative Schema and Model Curricular Design in Radiography: The 4 Co.'s.

Melanie Clarkson[1]
[1]Sheffield Hallam University, Sheffield, United Kingdom

Enhanced level practice is not a new concept in Radiography (NHSE, 2024)[1]. In 2022, in response to the NHS Workforce plan (2023)[2]and AHP's Deliver (2022)[3] a commission to develop a profession specific schema and model curricular was undertaken for 10 of the AHP professions. With a short commissioning period a collaborative innovative partnership group was formed which would utilise the concept of the four Co.'s:

- Co-creation
- Co-design
- Co-delivery
- Co-elevation

The deliverable on the commission was a schema and model curricular for Therapeutic Radiography. The collaborative innovative group was led without authority, where the group became a self-governing team with a shared commitment to the commission. Utilising the 4 Co.'s, authentic development of the group allowed co-creation, providing a safe and nurturing environment where all points of view were considered, ensuring an equal role in the co-design. This integration of a collaborative innovative group means the product is co-delivered with equitable value from the group, creating ownership and commitment to develop the best deliverable possible.

Linked with research and change development theories these principles were applied in a new environment to challenge the development of a profession specific schema and model curricular. Which in turn will empower the workforce, be implemented safely into academic and clinical practice with specific education and training pathways developed.

Alignment of the requirements of all stakeholders and the commitment of the collaborative innovative group allows for a positive implementation and dissemination of the commission.

References

1. NHS England (2024). Allied Health Professions Enhanced Level Practice Schemas with Model Curricula. London
2. NHS England. (2023). The NHS Long-Term Workforce Plan. London
3. NHS England. (2022). The Allied Health Professions (AHP) Strategy for England. AHP's Deliver. London

P069 Graded clinical assessments; allowing clinical superstars a chance to shine

Emma Edwards[1], Miss Eleanor Monaghan
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Background: Enriched education and clinical assessment are the foundation for evolving health professionals capable of delivering high quality care (WHO, 2016). Blended teaching and assessment are essential due to the diversity of learners in the average cohort (Boelens et al,. 2019), thus making an inclusive environment enabling all learners a chance to succeed. Currently, there is no standardised graded clinical diagnostic radiography assessments.

Purpose- Clinical competency is key to success as a radiographer (CoR,2022) implementing authentic clinical assessments will endorse this. Previously, there was no assessment weighted criteria for the clinical components for radiography students. Making the curriculum non-inclusive as it benefits the learners who excel solely in academic assessments and disadvantages students who struggle with academic assessments but excel in the clinical environment disadvantaging their degree classification.

Grading is the focus for change to highlight how well a student has excelled in the clinical assessments, which is the role they undertake after successful graduation. This leaves a wide umbrella of radiographic qualities between the 40% pass mark and the higher percentages but there is no clear academic distinction between these currently.

Summary of content - Moving forwards, the overall aim of having a weightbearing clinical module is for inclusion. Producing a degree classification which truly demonstrates the student's clinical ability and more retrospective of the final product as a graduate clinical radiographer. This outlines the background, implementation of graded clinical assessments, the perceptions of students, Practice Educators, barriers and positives for this process identifying the need for this innovation.

References

1. Boelens, R., De Wever, B., & Voet, M. (2017). Four key challenges to the design of blended learning: A systematic literature review. Educational Research Review, 22, 1–18.
2. College of Radiographers' (CoR). (2022). Education and Career Framework for the Radiography Workforce (4th edition). London: The College of Radiographers
3. World Health Organization WHO. (2016). Nurse educator core competencies. Available at https://www.who.int/hrh/nursing_midwifery/nurse_educator050416.pdf (Accessed 24 January 2024).

P070 Scaffolding of Leadership: The curriculum

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Background: Scaffolding of teaching has been highlighted to make a skill become autonomous (Spadafora et al,. 2020) with this in mind, it is essential that leadership teaching and coaching is embedded into the curriculum for student radiographers to enable this skill to become autonomous upon graduation.

Leadership is an essential for Radiographers as it is required in the standards of proficiency (8.6-8.9) for radiographers (HCPC., 2023). Leadership is no longer seen as Advanced Practice, but it is expected from band 5 level.

Consequently, there is a need for creatively designed curriculum introducing core transferable skills from level 4 strengthening the future workforce. Leadership teaching builds essential leadership skills, resilience and mentorship for student radiographers, thus aiding in future-proofing the workforce to meet the changing demands and priorities of the current workforce.

Purpose of Poster: We aim to develop a robust curriculum to future proof our graduates, successfully shaping radiography students with skills essential to clinical and educational development and enlisting personal strengths and essential characteristics to make them future leaders in radiography.

The opportunities and challenges related to leadership teaching within radiography will be explored with specific reference to scaffolding of teaching throughout the degree programme.

Summary This poster outlines the background to the development of a curriculum with leadership properties and skills embedded into the curriculum at all levels of study. The evidence provided will highlight how leadership teaching is covered by didactic teaching, practical sessions, simulation and teaching and educational leadership placements.

References

1.HCPC (2023) The standards of proficiency for Radiographers (Online). Available at:Radiographers | (hcpc-uk.org) (accessed 10/02/24)
2.Spadafora, N., Downes, T. (2020). Scaffolding in Learning. In: Shackelford, T., Weekes-Shackelford, V. (eds) Encyclopedia of Evolutionary Psychological Science. Springer, Cham. https://doi.org/10.1007/978-3-319-16999-6_1350-1

P071 Imaging of time-critical conditions – online assessment of ST1 Radiology registrars to ensure their knowledge is adequate and to identify areas of weakness

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Background There are conditions which require time-critical diagnosis and treatment for optimal patient outcome. We devised an outline 'curriculum' and assessment for ST1 Clinical Radiology registrars who typically start out-of-hours/indirectly supervised work at the start of their second year of training.

Purpose Trainees in our region come from 9 training schemes, with varied case mix. Day-to-day exposure to time-critical cases would be greater in centres with specialist units e.g. trauma, neuro/stroke or paediatrics, but most schemes did not have all specialities.

The ST1 Pre – on call assessment (SPOCA) offered online training cases covering a breadth of acute presentations, supplemented by Consultant-delivered online webinars. Trainees were then set a timed assessment of 20 cases, which included a number of time-critical cases. There was a standardised mark scheme and pass mark. The outcomes of the assessment were fed back to the training programme directors and registrars.

53 trainees sat the assessment with an 88.7% pass rate. Areas of weakness both generally and individually were identified and additional training offered locally. The areas of weakness included some of the time-critical conditions in neuroradiology, paediatrics and active haemorrhage. This shows individual and collective standardised assessment highlights areas of weakness, thus allowing targeted support to improve patient safety in OOH reporting. There are now increased numbers of cases in these areas in the online training package.

Summary We will present some of the examples of the time-critical cases to highlight the challenges junior radiologists face.

P072 See one, do one, teach one? Supporting the development of the next generation of clinical educators in radiography through the use of a novel pre-registration assessment.

Dr Christine Heales[1], Julie Mills[1], Demelza Green[1]
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Background: The recently published NHS Long Term workforce plan identifies the need for an increase in the numbers of radiographers entering the workforce[NHS,2023]. This has implications for pre-registration radiography education, in terms of capacity within Higher Education Institutes (HEI), and within clinical departments who support pre-registration learners. The College of Radiographers has recently published an Education and Careers Framework which highlights the need for radiographers at all stages of their career to be able to support education and training[CoR,2022]. The Health Care Professions Council (HCPC) also states that radiographers must 'promote and engage in the learning of others'[HCPC,2023].

Purpose: The purpose of this poster is to present an innovative approach implemented by a HEI within their two pre-registration degree apprenticeship programmes. These programmes have introduced a clinical education task, undertaken by the Degree Apprentices in the workplace, which is underpinned by a reflective assessment linking learning theory to their experiences of preparing for and delivering a clinical education activity.

Summary of content :The poster will present an overview of the pressures upon clinical departments in terms of supporting increasing numbers of pre-registration learners. The rationale for introducing a clinical education assessment will then be outlined. The proposed benefits to departments; of having radiographers who are more confident in engaging actively with education of colleagues and pre-registration learners, and how this aligns both with the College of Radiographers Education and Careers Framework and HCPC Standards of Proficiency will be discussed. The poster will conclude by summarising the HEI's early experiences of introducing this assessment.

P073 What Makes a Caring Effective Educator in Higher Education – Experiences at one Specialist Healthcare Institution

Dr Julie Hendry
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Background: This student-staff partnership study explored what makes 'good' content for an effective lecture. It also sought to identify optimal lecturer 'qualities/values' within the teaching role. The domains explored were based upon the Higher Education Learning Framework Matrix (2018) which includes learning as becoming; contextual learning; emotions and learning; interactive learning; learning and thinking; challenge; and deep, meaningful learning.

The concept of what makes a good lecturer has been explored previously. Nushi, Momeni and Roshanbin (2022) considered students' views of a 'good lecturer' in HE. They suggested a relaxed, collaborate approach was preferred by participants but concluded that students' attitudes and perceptions at individual universities be established to maximise effectiveness whilst promoting a democratised approach to learning.
Method: The study was a collaboration between students and educators at a specialist healthcare university. A questionnaire was administered to all students across the institution. A follow up focus group was undertaken to further discover perceptions and experiences of participants. Results will be shared at UKIO.
Alongside providing practical advice on effective lecturing, we aimed to understand if ethical aspects of teaching - taking care of our students and their learning, showing care and love for teaching, are appreciated by students. This is thought to be potentially the single most important aspect of successful teaching (Macfarlane, 2004). Moreover, Hendry (2022) recently showed that a student-centred caring approach to education, enhanced positive experiences.
Findings will be shared at Conference to provide the opportunity for educators to reflect, review and enhance their teaching practice.

P074 INclusive OBserved ASsessment (INOBAS) – A collaborative student project in Allied Health Education

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Background: Within society and HE, concerns remain around structural and systemic racism. This may be a factor in the attainment variation across diverse ethnic and cultural groups of students. Programmes identified students from racial and ethnic marginalised backgrounds were less likely to progress or obtain good degrees (2:1 or 1st).
This project was a collaboration with students from diverse ethnic/racial backgrounds to help identify factors that unintentionally give certain students an advantage over others.
Method: Assessments were critically examined to identify potential barriers to inclusivity.
Results: Impact had far wider reach for all assessments, hearing students' perspectives on what was and was not valued.
Recommendations included:
Verbal/video formats to complement written assessment briefings,
Video to show set up and arrangements of an observed assessment.
Use plain English language in assessment brief with no cultural undertones.
Review rubric/criteria language for wider understanding.
Highlight communication/support prior to assessment.
For staff- review consideration of 'eye contact' in assessment criteria to reflect different cultural understanding
Review verbal (non-verbal) requirements in assessment criteria – e.g. confident voice, or Accent. This might privilege those where English is their first language. Develop strategies to encourage assessors to examine own biases/assumptions.
Provide resources for assessors to learn about different cultures and backgrounds.
Awareness of body language of the examiner – development of an agreed etiquette between examiners and communicate this with students.
Development of consensus between examiners about type (the way it is phrased) and volume of prompting /encouragement of students to continue (to avoid perceived unfairness /favouritism).

P075 Same result, different pathway. The Powers of teamwork

Donna Holdcroft[1], Emma Edwards[1]
[1]Keele University, Stoke-on-Trent, United Kingdom, [2]Keele University, Stoke-on-Trent, United Kingdom
Background The Keele University BSc (Hons) Diagnostic Radiography (apprentice route) was validated alongside the traditional route in June 2022. The first cohort commenced their studies in January 2023, 3 months behind the traditional route. The programme was developed at the request and in collaboration with local Clinical Partners, being the first apprenticeship route being undertaken in the School of Allied Health Professions at Keele University.
Purpose Two programmes, two Programme Directors, two very different cohorts leading to the same degree, one team delivering both programmes, out of synch with each other. This paper describes the challenges and achievements encountered during the delivery of contextually different programmes aiming to produce band 5 radiographers with identical skill sets.
Summary of content Identifying Synergies of teaching delivery and adaptation of traditional teaching material to meet the needs of the apprentices was always going to be a challenge. Additionally, ensuring the teaching met the

specifications of apprenticeship standards in England including Ofsted requirements was a sharp learning curve for Academic staff. Some members of the team were excited at this prospect, others less so. This paper will describe the leadership challenges encountered by the Programme Directors and how these were overcome with a combination of leadership styles as described by Golema (2000). Suggestions for opportunities to combine teaching across both programmes will also be described.

P077 Mind the gap: enquiry-based learning in diagnostic radiography

Ms Avril Lowe[1], Miss Amanda Price[1], Mrs Karran Speakman[1], Aaron Kingdon[1], Jennifer Jones[1], Siobhan Moyes[1]
[1]University of Plymouth, Plymouth, United Kingdom

Background Problem based learning was introduced into Canada's McMaster University medical school in the 1960's as scenario-based teaching to promote self-directed learning and critical thinking. Although used widely now in medical schools, in radiography it is uncommon. The university's faculty of health has an 8-step approach to this small-group work known as Enquiry Based Learning (EBL). It is assessed through reflective writing, group project such as a poster, or examination, and a pass-fail judgment of professionalism and group skills.
Purpose The diagnostic radiography programme launched relatively recently was an opportunity to apply this technique across all year groups. Foundation year has an introduction, Level 4 explores patient pathways and a holistic approach to imaging. Level 5 covers service and quality improvement (SQI) in diagnostic imaging and introduces DMAIC project management tools in preparation for their 3rd-year SQI Project. Level 6 is clinical enquiry and reasoning; confidence in requests, image interpretation and the ability to escalate issues. EBL is student led and encourages development of research questions to a particular issue, concept or trigger scenario.
Summary of Content The delivery has evolved with feedback from the group facilitators and the students. In some instances to increase inclusivity for cohorts with mixed clinical experience from placement as well as their life experiences, in others to simplify the learning of project management. Learning outcomes are both group-work and the module content, developing skills in evidence-based practice and constructive feedback to build the professionalism required for a career in healthcare.

P078 Bridging the gap: Understanding why assistant practitioners choose a radiography UDip pathway

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Background: The UDip Radiography Assistant Practitioner bridging course is designed to allow current Assistant Practitioners (APs) in the UK's National Health Service (NHS) to emulate the level of educational and clinical attainment of a BSc. Diagnostic Radiography student finishing their second undergraduate year. This is with a view to the AP then progressing into the third year of the BSc programme and ultimately qualifying as a state-registered radiographer. Little is known about UDip registrants' rationales for choosing to bridge this gap between AP and qualified radiographer. This exploratory paper therefore qualitatively reports detailed self-reflections on pathways taken and choices made by APs in the early stages of a recently validated UDip programme at a single UK university.
Method: Semi-structured interviews were conducted with N=6 UDip registrants (f=4; m=2). Transcribed data were investigated in line with the Reflexive Thematic Analysis approach detailed by Braun and Clarke (2021).
Results: Analysis revealed four global themes: (1) A funded opportunity to study - a pathway without incurring tuition fees; (2) Prior level of knowledge and skill - the need to be recognised for clinical experience and skills; (3) Limited scope of practice - frustration and the inability to progress; (4) Impact on the future - the personal and professional impact of progression.
Conclusions: It is contended that the findings provide a stronger understanding of registrants' backgrounds and motivations, and the links between them, and will help to more effectively tailor UDip pedagogical provision and personal tuition in the future.

P079 A clinical outcome-based review of FDG PET CT in Unknown primary malignancy.

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[1]Royal Liverpool University Hospital, Liverpool, United Kingdom

Background : FDG PET CT has a wide range of approved clinical indications including in patients with a carcinoma of unknown origin.

Purpose - To evaluate usefulness of FDG PET-CT in patients with unknown primary based on review of imaging and clinical follow up information.
Summary - FDG PET-CT scans of 75 patients performed between 2019 and 2021 were reviewed. There patients were referred with a presumed unknown primary malignancy. At least 12 months post-scan follow up information were retrospectively evaluated in these patients. We formulated a consensus-based proforma to evaluate the usefulness of PET CT. Three broad categories were identified: High - Scan was definitive or immensely helpful in localizing or excluding malignancy; Moderate-Scan helped in leading clinicians in direction of investigation for other tests; but was not considered highly useful or definitive; Low -No definite localization of sinister lesion on PET CT or an abnormal lesion was suspected or diagnosed during follow up. PET CT findings were positive in 42 (24F) and negative in 33 patients (15F). The most common diagnosis in this group of patients was Lymphoma (11%). The usefulness was considered high in 45 patients; 18 -ve and 27 +ve; moderate in 22 patients, 17 +ve, 5 -ve . Usefulness was low in 8 patients, 2 +ve.
In **conclusion**, our clinical outcome-based approach is reconfirming the high value in the workup of patients with unknown primary malignancy. We invite other departments to consider this proforma based approach in their evaluation of such patients.

P080 Image interpretation – the scaffold effect- plain radiographs

Kaley Potts[1], Emma Edwards[1]
[1]Keele University, Stafford, United Kingdom
Background: The ever-evolving scope of practice for radiographer's results in continued innovations in education.
The ability to interpret radiographs is a complex skill, although formal reporting requires postgraduate qualification (RCR, 2022) we must ensure that band 5 radiographers qualify with confidence in image evaluation to fulfil the threshold standards for safe and effective practice.
The new HCPC standards of proficiency (HCPC, 2023) set standards that require band 5 radiographers to be able to evaluate, interpret and appropriately escalate urgent or unexpected findings in a timely manner thus most importantly improving patient safety (Tonks et al., 2023)
Purpose of Poster: Our purpose is to introduce our scaffolded approach to image evaluation across the three-year BSc radiography degree. We will discuss Vygotsky's Scaffolding theory (Van De Pol et al., 2010) and how our image interpretation is delivered at each level.
Scaffolding in the academic setting allows us to measure competencies in a non-risk, "safe" environment which will improve student confidence before they undertake these skills in the high-pressured clinical environment (Müns, et al 2014).
This modular design has encouraged a high number of graduates to undertake formal reporting radiographer training assisting in securing the future workforce.
We will highlight the perceptions of the students involved.
Summary of Content: This poster outlines the background, rational, methods and scaffolded approach to image evaluation in general radiography across the BSc radiography degree starting with simple image evaluation and expanding to image commenting embedded into the curriculum.

P081 Evaluation of educational intervention in improving radiographer confidence in the radiographer role and practice adaptations required during NICU imaging

Rebecca Scott[1], Jeanette Carter, Megan Looksan
[1]Keele University, Stoke On Trent, United Kingdom
Background It has been widely recognised that the critical care environment, such as the Neonatal Intensive Care Unit (NICU), is a daunting setting for inexperienced radiographers (Hayre and Cox, 2020). Recent qualitative evidence has expanded on this assertion, stating that radiographers often feel subservient and subordinate to other health professionals in such environments (Makanjee et al., 2023).
Correct patient positioning is essential for a successful radiographic examination and often requires enhanced MDT communication and consideration of the holistic care of the neonate (Trotman-Dickenson, 2003).
Purpose The aim of this poster is to evaluate an educational intervention in improving radiographer confidence in the valued role and practice adaptations required during NICU imaging.
Pre-intervention likert and qualitative data will be compared to that of post intervention data, to ascertain the value of such an intervention and the ongoing training needs of radiographers in this area of practice.
Summary of Content This poster will evaluate pre and post intervention likert and qualitative data related to perceived confidence levels when imaging in the NICU, perceptions of the role of the radiographer in the NICU environment and the

practice adaptations required to provide high quality of care and diagnostic radiographic imaging when imaging this vulnerable patient group. Snippets of the educational intervention will also be showcased.

P082 CPD across an imaging network- where is the gap?

Miss Helen Watts[1], Dr Ann Anstee[1], Dr Naail Al Zuhir[2], Mrs Laura Berry[1]
[1]North East and North Cumbria Imaging NetworkUnited Kingdom, [2]North East and North Cumbria Regional Imaging Academy, United Kingdom

Background- Continuing professional development (CPD) is a registration/ revalidation requirement for many in the imaging workforce, inclusive of radiographers1, radiologists2 and nurses3. Robust education and training can increase staff recruitment and retention, and aid service planning. The imaging network undertook an exploratory project to understand current CPD provision across the network footprint, and to investigate any potential 'gap'.
Method- Data collection included an online survey to all team members, and through semi structured focus groups with the clinical educators, from imaging departments across the network. Descriptive statistics and thematic analysis were utilised to analyse the data, exploring examples of good practice, barriers to CPD, and areas for improvement.
Results- There were 178 responses to the online survey, with representation from all trusts in the Network and from 16 different role types. Positively, nearly 85% of participants recognised that departmental CPD opportunities were available, however approximately 70% felt that current provision did not, or only partially met their needs. Barriers to CPD included lack of protected time, operational pressures, and lack of awareness of funding. Future CPD must be inclusive of all roles and specialities in imaging, cover a wide variety of topics and through a range of formats.
Conclusion- The network can now address barriers to CPD and facilitate a collaborative approach to training between departments, the network, and the regional imaging academy. While this project was based in one region in England, there are likely themes and issues relating to CPD that would be applicable to various healthcare settings.

P083 Practice Education - empowering connections

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Under NHSE workforce training and development policy staff need the necessary support, training and development to carry out their role.
Therefore, as a Practice Educator within a team of Clinical Liaison Officers, (CLO's). It is our responsibility to run session for all students (BSc/MSc and apprenticeships) covering a range of topics to help equip learning and onward journey.
The Practice Educators pick these topics from the HEI's placement handbooks, and their experience of the difficulties students have with examinations or competencies signing in their clinical portfolios. These topics are varied due to the course contents over the three years and are gaged to the academic year the student sits in. It's important understanding the academic structure and managing expectations, encouraging the student.
This allows us to get to know each student, keep a check of progress offer support, mentoring and feedback concerns to the HEI to collaboratively produce action plans. This overall relives the pressure on the workforce and provides the student a positive placement.
We started off with basic topics and every year as the team grows and student numbers increase, we add to these topics. As a Team we look to see who has the experience to produce a particle session. This can sometimes mean using our networks outside of our own profession.
By showing the topics we have tried, the feedback that we have gained from the students. We hope that we can find collaboration with other departments, more capacity for placement and increase student attrition rates.

Table

Yearly	First years	Second years	Third Year	Apprenticeship	**CLO's**
Welcome – clinical	Site Induction and tours	Bullying and Harassment	Safeguarding	Positioning	Higher Education Institute (HEI) paperwork
Professional expectations	Introduction to Interventional and Cross-sectional imaging	Unconscious bias	Major Incidents	Abbreviations	Failing to fail

Duty of Candor	Room set up		Sustainability	Decoding medical words	Scenarios
Request cards	Who's who		Your first post	Anatomical projections	Coaching
Mobile & Theatre Imaging	Equipment care		Career journey	Presentation skills	Presentation skills and styles
Audits	Crash calls				Inclusivity
placement Wellbeing					

P084 Facilitation of a service user group

Prof Ruth Strudwick[1]
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The importance of service user, carer and citizen involvement in health professional education is evident in national and regional policy and in the standards set by the Nursing and Midwifery Council (NMC) and the Health and Care Professions Council (HCPC). Service user and carer involvement is mandatory and required across all aspects and stages of qualifying programmes and subsequent evaluations of social work education have continued to support its significant contribution (Croisdale-Appleby, 2014). The author facilitates a group at their university, this group is made up of service users and carers who have lived experience of health services and contribute to the curriculum.

The purpose of this paper is to discuss the skills required to facilitate an inclusive service user and carer group from both the facilitator and group member perspective.

Service user and carer involvement ensures that lived experience is placed in a learning context, that this is valued and students have the opportunity to hear about personal experience. Members of the group have opportunities to co-produce teaching with academics. This provides insight into what life can be like for someone who is in receipt of services. They produce podcasts, conduct interviews, deliver lectures, workshops and webinars.

The author will use an autoethnographic approach (Ellis et al., 2011) to describe their experience of facilitating an inclusive group. They will outline the skills required to undertake this role and reflect on the skills needed.

The reflections of the author, service users and carers have been thematically analysed.

P085 Experiences of Black, Asian and ethnically diverse student therapeutic radiographers; microaggressions and racism in the dual learning environment – results from a UK online survey

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Background Racism and discrimination are unacceptable in therapeutic radiography education; however, incidents are reported to be experienced by students (Society of Radiographers, 2023). Therapeutic Radiography students negotiate a challenging dual learning environment within the academic and clinical setting, however, for students from ethnically diverse groups, this may bring additional challenges which may not exist for white students (Council of Deans & HEE 2023, Codd, Ramlaul, Trivedi 2023).

As part of a wider mixed methods study, the incidence and nature of racist occurrences and microaggressions in the academic and placement environments were explored.

Method An online survey was promoted through Higher Education Institutions (HEI), to students who self-identified as coming from a Black, Asian, or ethnically diverse background studying radiotherapy as an undergraduate in the UK. Questions were developed from a collaborative student workshop exploring the learning experience, racism and microaggressions, career aspirations and perceived influencers of success.

Results Students from 7 HEIs, across 3 UK nations and representing a range of ethnic backgrounds participated. Racial microaggressions were reported in the academic and clinical placement environments with some unsure if they had

experienced a microaggression, indicating their potentially insidious nature. Overt racism was reported in a small number of cases in the clinical environment.
Conclusion Further research is needed to explore how the experiences of race and racism in the learning environments impact the student experience, well-being, and success. An antiracist agenda is critical in radiotherapy education to eliminate racist incidents, develop allyship and support inclusive clinical practice.

P086 Work-related musculoskeletal disorders in ultrasound practice, the contextual concerns of sonographers

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Background Work-related musculoskeletal disorder (WRMSD) are already widespread among sonographers, at least partly due to the additional physical stresses of working in understaffed environments (Harrison & Harris, 2015). While contemporary research has described the broad picture regarding WRMSD in ultrasound (Bolton & Cox, 2015), none has, to date, extensively explored its personal and professional impacts from a qualitative perspective.
Method Extended semi-structured interviews with N=9 experienced sonographers working in the UK were conducted and analysed using Interpretative Phenomenological Analysis (IPA; Miller, Booth and Spacey, 2019). Core thematic areas that emphasised personal and professional impacts of WRMSD were then further examined to highlight how participants specifically made sense of them.
Results Analysis revealed six pertinent themes: (a) Sonographers' attributions around WRSMD; (b) Resistance to sickness-labelling; (c) Making sense of vulnerability and risk; (d) Sickness, pain and impact on self; (e) Health, fitness and self-preservation.
Conclusion The research built upon and extended existing accounts which have offered broad insights into WRMSD (Simonsen and Gard, 2017, Bolton and Cox, 2015). By utilising IPA as a foundation for thematic analysis, the research has provided rich contextualised narratives of the experiences of the participants selected.

P087 Medical Ultrasound degree apprenticeships – a new route to sonography

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Background The BSc (Hons) medical ultrasound degree apprenticeship is an innovative approach to sonographer education which supports the development of the required Knowledge, Skills and Behaviours (KSB's) within the sonographer apprenticeship standard (Institute for Apprenticeships and Technical Education, 2019). The programme is aligned with CASE standards for ultrasound education (CASE, 2022), National Occupational Standards (sonographer) (Skills for Health, 2019) and the requirements of the Sonographer career framework (BMUS 2022). This was the first undergraduate sonography programme to gain CASE accreditation nationally in 2023, with the first graduates expected in spring 2026.
Purpose The purpose of this poster is to explore the journey of a sonography apprentice from recruitment to graduation. This will help stakeholders to gain a better understanding of the purpose and value of this programme as a new educational route for sonographers. Graduates will have 3 years of specific ultrasound education and clinical experience prior to qualification which should enable them to gain exceptional ultrasound skills. After graduation, the proposed new models of supervision and preceptorship will enable graduates who complete postgraduate training to advance along the sonographer career framework to become enhanced and advanced practitioners.
Summary of Content The practitioner sonographer roles are new, and not yet widely established or well understood in practice. This innovative apprenticeship programme has potential to make a positive impact on the sonography profession. To meet workforce needs, and to embrace the Sonographer Career Framework, all approaches to ultrasound training are essential to the future of the sonography profession.

P088 BSc (Hons) Medical Ultrasound: Education Innovation to transform a workforce.

Dr Pauline Mitchell[1], Jane Arezina[1], Mike Kirk[1]
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There has been a national shortage of qualified sonographers for several years, with vacancy rates of 12.6% in the UK (1). The challenges faced by the sonography workforce to meet service demand was pivotal to the emergence of the undergraduate provision. The development of undergraduate direct entry programmes to educate sonographers, in line

with the Health Education England (HEE) Career Progression Framework for Sonographers (2), proposed to secure the future of the sonographer workforce.
The BSc (Hons) Medical Ultrasound was developed to sit alongside the BSc (Hons) Diagnostic Radiography, Healthcare Science (Cardiac Physiology) and Audiology who already form the classified undergraduate programmes (CUPS) within the School of Medicine at the University of Leeds. All the programmes simultaneously went through revalidation, enabling the programme development teams to work closely. The development, writing and CASE approval of the undergraduate medical ultrasound programme was the easy part.
Clinical placement is the gatekeeper to training for healthcare professionals, with medical ultrasound being particularly challenging not just because of training capacity but also professional resistance to the graduate sonographer in the workforce. The programme heavily invested in high fidelity ultrasound simulation equipment to lessen the impact on the training departments. However, overcoming the resistance to the band 5 sonographer remains a challenge.
The graduate sonographer is becoming a reality and registration less of an issue with employers. The time has come to support graduate sonographer training through placement provision.
The next steps will be to transform postgraduate education to support and evidence our advanced practice.

P089 An exploratory qualitative investigation of course-fee funding for students on a full-time MSc pathway in Medical Ultrasound

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Background Students reading for a full-time MSc in Medical Imaging (Ultrasound) are graduates from a variety of demographic backgrounds, many with family commitments. Unlike other UK healthcare courses, students are not entitled to a bursary nor assistance with course-related costs. In previous years, a lack of financial support has been cited by prospective students as the chief reason for not accepting an offer of a place on the course.
Course fees for students in the cohort beginning January 2023 were fully-financed by a key external agency to improve recruitment and retention on this pathway. This study explored the financial challenges experienced, and whether such funding enabled students to accept their place on the programme.
Method Semi-structured online interviews were undertaken with full-time medical ultrasound students (n=7) prior to starting clinical placement. Reflexive thematic analysis identified three global themes which describe participants' experiences.
Results Three themes emerged from the data analysis. These were: (a) Enabling students to study: Full course-fee funding made it financially feasible for some participants to accept their place on the programme. Additionally, it reduced the necessity for students to undertake paid part-time work, allowing more time to focus on their learning; (b) Study-life balance: Reduced part-time working helped to support family-life and student mental health; (c) Ongoing financial challenges: Despite the positive outcomes of course-fee funding, students experienced continuing difficulties associated with increasing living costs.
Conclusion The intervention had positive outcomes on enabling students to study and supporting students in their family-life and mental health.

P090 Do CASE accredited MSc Ultrasound programmes meet the requirements for accreditation with the Centre for Advancing Practice?

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Aim To gain accreditation with the Centre for Advancing Practice, Advanced Practice MSc programmes must meet Heath Education England (now NHSE) Standards for Education and Training (SETs). These standards relate to the design, development, delivery, and review of programmes. This HEE sponsored project examines the extent to which these standards are met by existing CASE accredited UK ultrasound programmes.
Methods The Consortium for Accreditation of Sonographic Education (CASE) accreditation standards (2019), CASE Learning Outcomes (level 7) for existing accredited programmes, and Standards of Proficiency for a Sonographer and National Occupational Standards (NOS CI.C.2019) were mapped to each of the seven domains of the SETs.
Programme leads for accredited courses were surveyed to explore their perceptions of the extent to which these standards could be met by existing accredited MSc Ultrasound programmes.
Results Most standards are well covered within the CASE accreditation process. However, significant gaps were identified around Leadership and Management, Equality and Diversity policies, Governance, Risk management and working in partnership with patients, families and carers. Only one CASE accredited ultrasound programme lead felt their programme currently met all the requirements for HEE ACP accreditation.

Conclusions In order to gain accreditation with the Centre for Advancing Practice, CASE accredited programmes will need to adapt and consider how they will evidence the full range of Advanced Clinical Practice Multi-Professional Framework capabilities.

P091 Key learning opportunities from participating in radiomics research: the radiographer's perspective

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Background: Evidence–based practice is an important competency for allied health care professionals [1] with engagement with research suggested to be the gold standard for evolution of diagnostic imaging [2]. The Society and College of Radiographers [3]recognized few radiographers are involved with research and aim for wider research-based practice and to establish a research culture in radiographers .

Diagnostic imaging has rapid and continuous technical development, especially with the advent of artificial intelligence (AI) [4]. Specifically, radiographic practice across modalities and the roles and responsibilities of radiographers will be impacted by AI-driven systems [4].

Therefore, radiographers need to develop their attitude and behaviour towards research as it is necessary to follow and actively participate in these rapid technical developments and expand from a purely clinical radiographer to being a researcher as well [5]. As a radiographer, involvement in a research project investigating integration of radiomic analysis and machine learning methods for bone marrow alterations in MRI knee examinations into clinical practice [6] is exciting and provides learning opportunities for others.

Summary: This will analyse and illustrate the skills radiographers can develop if they are involved in a research project as part of a multi-disciplinary team and explore barriers to, and methods to improve, participation in research.

Learning outcomes:

- Awareness of the value of radiography research and its role in patient care and service delivery
- Discussion surrounding valuable research skills that a radiographer can develop
- Reporting of first-hand experience of being part of a research project as a radiographer

P093 How can we share research together? A co-creation project to make scientific research more accessible

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Academic research is traditionally produced in ways inaccessible to lay audiences. There is an unexplored potential in using patient voice to widen scientific dissemination.

This public and patient involvement and engagement (PPIE) project aimed to identify effective ways of using patient voice to make scientific papers accessible to wider audiences. It consisted of two activities: 1) an online focus group exploring where patients access research and how they would like to see research shared; and 2) a follow-up pilot project developed from the feedback received.

Seven patients with experience of radiotherapy were recruited via the CRUK Patient Involvement Network to work with two academic radiation researchers.

In the first activity, captured by a visual-notetaker, researchers presented how science is currently disseminated, patients reflected on their challenges in finding trustworthy information (particularly when going through the treatment pathway) and everyone brainstormed alternative formats to share research with lay audiences. We agreed that visual information sheets were an interesting way to make papers more accessible.

Following this we ran a pilot co-creation activity. The researchers, four of the patients, and a graphic designer collaborated in a series of online workshops over a six-month period. We co-produced an information sheet companion to a recently published paper using artificial intelligence to improve proton beam therapy delivery in children with cancer. This was then added as supplementary information to the paper and is being further developed for use clinically and for study recruitment.

Our project raises awareness and educates the oncology workforce of meaningful PPIE.

Table

P094 Evaluation of a Verification Imaging Passport (VIP) for newly qualified RTT's: a pilot study

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Background Currently IGRT training is designed and undertaken in house, repeated as RTT's move throughout their careers. The VIP training package has been developed to allow RTTs to gain IGRT competencies that are recognised and transferable within 12 London Radiotherapy departments.
This study assesses the effectiveness and feasibility of roll out of the passport.
Method Newly qualified RTT's from 5 London centres completed a pre-training questionnaire and rated their knowledge and understanding of IGRT using a Likert scale. They then completed training. Each module was assessed, with learning gains and feedback given in a post-training questionnaire.
Results were analysed using descriptive statistics.
Results 21 RTT's participated. In general terms, results showed that a positive learning gain was observed in all aspects of the training and assessment, particularly an increase in confidence in problem solving.
There was an overall positive response to the content and delivery of the training and assessment, and RTT's enjoyed the modules and found the format easy to follow. Assessors agreed that the training was appropriate for new RTT's but did not cover sufficient problem solving for senior, team leader RTT's. Feedback supported the need for more engaging materials and an easier format for use across multiple centres.
Conclusion The VIP provided RTT's with a learning gain. Therefore, the modules within the VIP are appropriate to support the learning of newly qualified Therapeutic Radiographers in achieving their IGRT competencies. Feedback will be used to further develop a newly acquired website for hosting, assessing and maintaining competency records.

References

T. Barnes, H. Jones, L. Fantham, C. O'Sullivan, R. Johnson, R. Rowse (2023) Evaluating the Verification Imaging Passport (VIP) in final year RTT students. Poster presented at ESTRO 2022: Vienna
Systemic Anti-Cancer Therapy (SACT) Competency Passport, 4th ed. United Kingdom Oncology Nursing Society

P095 Inspiring radiotherapy professionals to get involved or lead their own research - A national engagement event hosted by the National Institute of Health Research, Clinical Research Network North Thames

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Background Therapeutic radiographers play a pivotal role in delivering treatment to patients who participate in clinical trials. Despite the small number of specialist research radiographer roles, there is a growing body of evidence suggesting a rising interest in developing the radiography profession to actively engage in research[123].

Purpose Outline The National Institute for Health and Care Research (NIHR) Clinical Research Network North Thames hosted an engagement event aimed at radiotherapy professionals including, radiotherapeutic radiographers, physicists and dosimetrists to raise awareness of research and inspire this group of professionals to get involved or lead their own research.
Summary of Content A hybrid format was chosen to enable participation nationally. Topics covered included NIHR and academic funding opportunities, submitting a successful application and support with research design and methodology with networking activities provided. The event opened with an introduction to different types of radiography research. Training opportunities and research support services offered by NIHR were presented, including Good Clinical Practice and Associate Principal Investigator schemes, as well as tips for applying for funding through NIHR. Panel discussions were included throughout. The event concluded with breakout sessions in three streams (Physicists/Dosimetrists, Radiographers, Clinical Researchers).
Conclusion Overall, the event was very well-attended, drawing an audience of over 60 attendees online and 30 in person. Attendees evaluated the event well, appreciating its specific focus on radiotherapy professionals. Feedback demonstrated how there is a strong appetite to actively engage in research and highlighted the importance of such events to support professionals to take their first steps.

References
1. Taylor, A. and Shuttleworth, P. (2021) 'Supporting the development of the research and clinical trials therapeutic radiographers workforce: The RaCTTR survey', Radiography, 27(Suppl.1), pp.S20-S27
2. Strudwick, R., Harris, M., McAlinney, H. et al. (2021) 'The College of Radiographer Research Strategy for the next five years' Radiography, 27(Suppl.1), pp.S5-S8
3. Hancock, A., Hutton, D., Roberts, D. et al. (2023) 'Barriers and facilitators to conducting radiotherapy clinical trials: Findings from a UK survey' Radiography, 29(2), pp.369-378

P096 Educating and training undergraduate therapeutic radiographers: a collaborative approach to building research capability for NHS Wales

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Background: The Welsh Government is committed to creating a healthcare system that truly values research across NHS Wales (Welsh Government, 2019). NHS Wales Trusts therefore have responsibility for valuing, building and sharing research activity.
Addressing key patient focused research priorities is a fundamental principle of the therapeutic radiography profession (Strudwick et al., 2021). However, for therapeutic radiographers to conceive, develop and lead research which is clinically meaningful, education and training is essential to build capability within the workforce.
In 2021, the Velindre Cancer Centre Radiotherapy Research Team and the Radiotherapy Education Team at Cardiff University worked to develop an All-Wales collaborative research program for Radiotherapy & Oncology undergraduates.
Methods: The Plan-Do-Study-Act (PDSA) methodology was utilised as a tool to test and develop program content and method of delivery. Clinical trials research, service improvement and clinical audit delivery sessions were developed and refined through iterative cycles.
Results: The adoption of a hybrid delivery platform enabled an All-Wales approach. This permitted interaction and engagement of a wide range of research delivery teams to convey knowledge and experience to the undergraduates. Post-program self-assessments showed an increased knowledge base and understanding of program content compared to baseline. In addition, student evaluations highlighted the importance of consolidation of learning through tasks and reflective practice.
Conclusion: The programme continues to evolve and gets closer to the aim through each iterative cycle. However, to ensure sustainability, collaboration by both academic and clinical institutions is essential.

References
Strudwick, R., Harris, M., McAlinney, H., Plant, P., Shuttleworth, P., Woodley, J., Harris, R., & O'Regan, T. (2021). The college of radiographers research strategy for the next five years. Radiography, 27. https://doi.org/10.1016/j.radi.2021.06.010
NHS Wales Planning Framework 2020-23 (Welsh Government, 2019). Retrieved from https://www.gov.wales/sites/default/files/publications/2019-09/nhs-wales-planning-framework-2020-to-2023.pdf

P097 Pastoral Care Support of pre-registration MSc Radiation Therapy students throughout clinical experience

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Background: MSc Radiation Therapy students complete 1200 hours of clinical placement during the programme. Amid ongoing difficulties with retention of radiation therapists (RTTs), support and retention of students during training is imperative. Throughout the programme, group workshops with a specialist Clinical Pastoral Education Supervisor were integrated. The aim of this study was to assess students' perceptions of the support provided by these sessions.
Methods: The 2022 intake of students were the focus of this study. Workshops were held prior do, during, and following clinical placement blocks (Figure 1). The first two sessions; focused on communication in practice, impact of care, development of self-awareness and self-care. The remaining sessions were student led, focusing on areas of clinical practice that students found difficult to navigate. The theoretical and clinical approaches of professional clinical supervision were used in the group supervisory sessions where students had a safe facilitated space to share and process their experiences (Maplethorpe, 2014; Proctor, 2008; Schön, 1983; Shohet, 2011; Shohet, 2020).
Results Of the total cohort of seven students, five students completed feedback. The feedback was overwhelmingly positive (Table 1). All respondents agreed (n=1) or strongly agreed (n=4) with the statement that "the sessions provided support during and following placement". Students found the sessions worthwhile (n=5) and reassuring (n=5).
Conclusion The provision of clinical pastoral supervision for this cohort of students has been demonstrated to support students. These results affirm data in the published literature on the value of clinical supervision as a restorative and sustaining practice.

Table

Figure 1: Integration of Clinical Pastoral Education sessions throughout the MSc Radiation Therapy

Table 1: Likert scale

	Statement	Likert Response	Count
1	The sessions were worthwhile	Strongly agree	5
		Somewhat agree	0
2	The sessions were reassuring	Strongly agree	5
		Somewhat agree	0
3	The sessions provided me with ways of coping with my placement experiences	Strongly agree	4
		Somewhat agree	1
4	The sessions helped to improve my communication skills	Strongly agree	4
		Somewhat agree	1
5	The sessions provided support during and following placement	Strongly agree	4
		Somewhat agree	1
6	The sessions helped me to cope with difficult situations on placement	Strongly agree	4
		Somewhat agree	1

References
1. IIRRT (2023). Statement on staffing crisis within Radiation Therapist profession in Ireland. [online] Available at: https://www.iirrt.ie/statement-on-staffing-crisis-within-radiation-therapist-profession-in-ireland/.
2. Maplethorpe, F., Dixon, J. and Rush, B. (2014). Participation in clinical supervision (PACS): An evaluation of student nurse clinical supervision facilitated by mental health service users. Nurse Education in Practice, 14(2), pp.183–187. DOI: https://doi.org/10.1016/j.nepr.2013.07.010.

P098 Developing and evaluating an online tool designed to improve the ability of therapeutic radiography students to calculate isomoves

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Background: The availability of clinical placements limits the expansion of therapeutic radiography courses (Evans, 2016). To compensate, increased use of simulation is suggested (Tuckey and Hutton, 2021). A clinical skill that can be practised by simulation is using mental mathematics to calculate isomoves. Digital learning tools to improve mathematical skills have been evaluated in nursing, but not in therapeutic radiography (McMullan, 2018).

Purpose: A website ("Isomover") that allows users to practise calculating randomly generated isomoves was developed. The efficacy of Isomover as a learning tool was investigated among therapeutic radiography students at a single HEI. Surveys and tests at intake and exit from the study measured confidence and skill in calculating isomoves. Feedback on the usability and utility of the website was gathered. Further analysis will be undertaken to reveal categories of isomoves that cause the most difficulty. Such data can be used by HEIs and practice education teams to support the development of this specific clinical competency.
Summary of Content: The poster will provide an overview of Isomover. It will summarise the analysis of intake and exit surveys and tests used to evaluate the efficacy of the intervention. Categories and examples of isomoves which were consistently calculated incorrectly will be shown. Initial analysis indicates that participants particularly struggled with lateral moves that cross the midline and when borrowing or carrying over of the tenths decimal place was required. Actionable advice will be provided for HEIs and practice educators developing tools and materials to support learning this clinical skill.

Table

References
Evans, R. (2016). Response to Department of Health consultation on Reforming healthcare education funding: Creating a sustainable future workforce. Available at: https://www.sor.org/getmedia/ffcf7538-cbe3-4822-a450-b64dcf43c0b1/scor_response_to_reforming_healthcare_education_funding_consultation_1.pdf (Accessed: 30 October 2022)
McMullan, M. (2018) 'Evaluation of a medication calculation mobile app using a cognitive load instructional design', International Journal of Medical Informatics, 118, 2018, pp. 72-77. Available at: https://doi.org/10.1016/j.ijmedinf.2018.07.005 (Accessed: 23 October 2022)
Tuckey, M. and Hutton, N. (2021) RePAIR: Reducing Pre-registration Attrition and Improving Retention in Radiotherapy. https://www.sor.org/download-file/?f=a5b2557a-6205-4800-8c6c-c0a90b45e26a&t=m

P099 Lived experience of the student therapeutic radiographer in clinical placement: 'they don't need to see how you see them'

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Background: Therapeutic Radiographers and Therapeutic Radiography students are exposed to emotionally demanding situations in their daily care of cancer patients and their family/carers (Society of Radiographers SOR, 2016). Emotional exhaustion is much reported in relation to other allied health professional groups and is a known contributor to professionals deciding to leave their chosen profession (French, 2004) and high rates of attrition from pre-registration educations programmes (McPake, 2021).
Aim: To explore the lived experience of the student therapeutic radiographer.
Methodology: Multiple semi-structured interviews with the same participants a time points throughout a 12-month period during pre-registration training allowed data collection from a sample representing all 3 years of the BSc (Hons) and 2 years of the Post Graduate (PG) Radiotherapy programmes. During the interview, dialogue was recorded and later transcribed by the researcher. Findings were interpreted using Interpretive Phenomenological Analysis (IPA) (Smith, 2011)
Themes identified:

1. Emotional Burden
2. The Professional Student
3. Impact of Covid-19 pandemic

4. Managing Demands
5. The Professional Carer
6. Progression and Transition
7. Radiation

The burden of managing treatment related toxicity, the balance of outcomes and the weight of responsibility associated with delivering high dose radiation and fear of switching on, was a recurring theme. All participants felt that building rapport and an effective relationship with patients was a highlight. Their overall commitment to seeing the patient's perspective and protecting at great personal cost, those in their care from the emotional impact experienced is truly surprising.

Findings will inform future pre-registration radiotherapy education programme design, delivery and models of student support.

References
French, H (2004). Occupational stresses and coping mechanisms of therapy radiographers - a qualitative approach. Journal of Radiotherapy in practice. 4, 13-24.
McPake, M (2021) How the attitudes of therapeutic radiographers affect students' learning during practice placement. Radiography 27 (1) 37-42
Smith, J.A. (2011). "Evaluating the contribution of interpretative phenomenological analysis". Health Psychology Review, 5(1), 9-27

P100 The effectiveness of clinical simulation for Level 4 therapeutic radiography students: an analysis of skill development.

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Background: The technique for delivering simulation is to replicate experiences comparable to "real-life" (Lateef, 2010). The shift from academic to the clinical environment can be overwhelming for students, simulation can provide an environment to support students through this transition (NHS England, 2018). Research suggests that simulation is a "safe" environment for students to practise their skills without clinical pressures, better equipping them for practice (Bridge et al, 2022).

Method: The simulated placement took place prior to the students first clinical placement, as per Reducing Pre-registration Attrition and Improving Retention (RePAIR) recommendations (Society of Radiographers, 2021). The simulated sessions consisted of four main treatment site set up's (head & neck, prostate, breast and palliative), tattooing, communication, holistic care, patient considerations (EDI), palliative, IGRT, prostate IGRT, planning considerations. Actors were employed to play the role of patients to enhance the validity and fidelity of the simulation. Debriefing was built into the simulation allowing participants to reflect on their practice.

All students were provided with a questionnaire pre and post simulation to assess confidence levels.

Results: 51 level 4 students, 45 attended simulation and 31 consented to participate.

Preliminary results have shown an increase in confidence across three areas; immobilisation equipment selection, tattoo alignment and communication with patients.

"...this has made me feel a lot more relaxed and prepared for placement."

"I enjoyed practising with real patients/actors because it allows me to learn..."

Conclusion: The preliminary findings show an increase in confidence, suggesting a benefit to students preparedness for clinical placement.

Table

	Pre simulation	Post simulation
Immobilisation equipment selection	10.9%	89.7%
Tattoo alignment	19.3%	89%
Communication with patients	22.1%	92.7%

Table 1 - The table below shows the percentage of students that rated themselves as either confident or very confident.

References
1. Lateef, F (2010). Simulation-based learning: Just like the real thing. Journal of Emergency Trauma Shock, (4), 348 – 352. Simulation-based learning: Just like the real thing - PMC.
2. NHS England (2018). Reducing Pre-Registration Attrition and Improving Retention Report.

3. Bridge, P et al., (2016). A virtual radiotherapy workflow training simulation. Radiography, 22, 1, 59 – 63.
4. Society of Radiographers (2021). Reducing Pre-registration Attrition and Improving Retention in Radiotherapy.

P102 Benign Multicystic Peritoneal Mesothelioma: defining MRI appearances of a rare condition

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Background: Benign Multicystic Peritoneal Mesothelioma (BMPM) is an uncommon entity with an unclear pathogenesis. Its reported incidence is 0.15 per 100,000 (1), more commonly affecting women of reproductive age (2). It is reportedly associated with endometriosis, pelvic inflammatory disease or previous abdo-pelvic surgery but has a typically non-specific clinical presentation (3).This slowly progressive tumour arises from parietal peritoneum, epithelial and mesenchymal cells (4). It does not metastasise, but tends to recur after cytoreductive surgery (3).
The initial imaging, usually ultrasound, may demonstrate cystic lesions in the pelvis or abdomen. Definitive diagnosis is typically made on laparoscopy and biopsy (4). The differential radiological diagnosis varies between an ovarian cystic tumour with peritoneal metastases, pseudomyxoma peritonei or cystic lymphangioma.
Purpose: We present a series of 4 cases diagnosed with BMPM at Whiston Hospital since 2019. Given the rarity of this condition, we feel that this cluster of cases may reflect an increasing incidence and we aim to highlight specific MRI features in order to aid prospective diagnoses.
Summary of Contents: All 4 patients presented with non-specific symptoms. 3 patients were of reproductive age between 16- 23, one postmenopausal aged 60. The initial imaging by Ultrasound revealed cystic pelvic lesions which were further investigated with MRI and CT. In this pictorial review we describe the MRI features of BMPM characterised by multiple cystic lesions of various sizes arising from the parietal peritoneum in the pelvis and abdomen. On review, we feel MRI can suggest diagnosis of BMPM with a high degree of confidence.

References

1. Muhammad Khurram, Shaikh, H., Khan, U., Edens, J., Warda Ibrar, Hamza, A., Zaka, A., Bano, R. and Hadid, T. (2017). Benign Multicystic Peritoneal Mesothelioma: A Rare Condition in an Uncommon Gender. DOAJ (DOAJ: Directory of Open Access Journals), 2017, pp.1–4. doi:https://doi.org/10.1155/2017/9752908.
2. Lee, C.E. and Agrawal, A. (2017). Remote Recurrence of Benign Multicystic Peritoneal Mesothelioma. Journal of Obstetrics and Gynaecology Canada, 39(11), pp.1042–1045. doi:https://doi.org/10.1016/j.jogc.2017.04.038.

P103 A comparison in the efficacy of Magnetic Resonance Imaging and Transvaginal Ultrasound in detecting endometriosis

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Background: Endometriosis predominantly affects women of reproductive age (World Health Organisation, 2023), influencing quality of life physically and mentally, hence prompt diagnosis is required on clinical suspicion (Alimi et al., 2018). This review aimed to compare the effectiveness of Transvaginal ultrasound (TVS) and Magnetic Resonance Imaging (MRI) in detecting and managing endometriosis with consideration of Laparoscopy (gold standard).
Method: Databases searched were PubMed/Medline, Scopus, Web of Science, and CINAHL. Sources were filtered against inclusion and exclusion criteria, and papers were quality appraised using the Critical Appraisal Skills Programme (CASP). 14 studies were included. Sensitivity and specificity values from primary studies were pooled to compare TVS and MRI.
Results: Diagnostic accuracy of TVS and MRI is influenced by the anatomical location of endometriosis, lesion depth, and nodule size. TVS excels in the posterior compartment, while MRI demonstrates higher accuracy in the anterior compartment and is capable of assessing extra-pelvic structures. TVS offers speed and cost-effectiveness, providing real-time dynamic imaging for differentiating lesions based on nodule appearance, but is invasive and operator-dependent. MRI has drawbacks including potential need for gadolinium contrast and patient claustrophobia. Laparoscopy remains the gold standard for definitive diagnosis but is time consuming and less accessible.
Conclusion: The choice between TVS and MRI should consider factors such as suspected anatomical location, lesion depth, and nodule size, alongside patient. Further research is required to explore their roles as alternatives to laparoscopy. The integration of advanced technologies, including AI algorithms and enhanced laparoscopic imaging techniques, have potential for improving diagnostic accuracy.

References

World Health Organisation (2023) Endometriosis. Available at: https://www.who.int/news-room/fact-sheets/detail/endometriosis/gclid=CjwKCAjw7c2pBhAZEiwA88pOF1EsoFCyPo64xOm2f1fqNfWub3kTj33DGVRLbBt976HxZdaB8lk06BoC05UQAvD_BwE [Accessed 7 February 2024].
Alimi, Y., Iwanaga, J., Loukas, M. and Tubbs, R.S. (2018) 'The clinical anatomy of endometriosis: a review.' Cureus. 10(9). e3361. Available at: https://doi.org/10.7759/cureus.3361

P104 Conservative management of postmenopausal. simple ovarian cysts is too conservative.

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Introduction RCOG guidance[1] advises that ovarian cysts in postmenopausal women should be assessed by measuring serum CA125 levels and performing a TV ultrasound scan. It states that asymptomatic simple ovarian cysts between 1-5 cm be managed conservatively, with a minimum of 2 follow up scans, but that consideration should be given to surgical evaluation of all other postmenopausal ovarian cysts.
The SRU guidelines[2] suggest that follow-up is recommended only for simple cysts greater than 3cm, or 5cm where there is excellent imaging characterisation/documentation.
Methods An audit of postmenopausal simple ovarian cysts identified on ultrasound scans between 2018-2023.
Results 49 patients were identified as meeting the RCOG criteria for conservative management. 2 had laparoscopic management due to an increase in size to >5cm or symptoms, histology results in both were benign.
10 patients were having surveillance for 1-5cm simple ovarian cysts outside of RCOG guidance – two with bilateral ovarian cysts, two with a raised CA125 but no evidence of malignancy on cross sectional imaging, and 6 without any CA125 measurement.
No patients developed ovarian cancer during their surveillance.
Conclusion The surveillance of postmenopausal cysts in our audit population did not alter management in 48/49 women but did result in an additional 104 ultrasound scans being performed. These would not have been necessary if the SRU guidance had been followed. More research is required to evaluate whether there is a role for conservative management for bilateral simple ovarian cysts, or simple ovarian cysts with a raised CA125 due to other causes.

References
1. The Management of Ovarian Cysts in Postmenopausal Women Green-top Guideline No. 34. (2016).
2. Simple Adnexal Cysts: SRU Consensus Conference Update on Follow-up and Reporting. Radiology.

P107 Audit of O-RADS MRI stratification

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Background: An NHS trust implemented Ovarian-Adnexal Reporting and Data System (O-RADS) MRI stratification in 2020 to improve radiological differentiation between low and high-risk ovarian and adnexal masses. This tool helps to determine whether treatment for such masses is more suitable in a local gynaecology unit or a cancer centre. The aim of this audit was to review the experience of O-RADS MRI Risk Stratification. The standards are the positive predictive values (PPV) of malignancy outlined in the O-RADS MRI tool.
Method: Data was collated by the radiology department of the trust retrospectively and each ovarian and adnexal pathology was stratified with O-RADS MRI risk score. The first audit cycle encompassed from March 2020 to March 2022 and consisted of 44 masses. The second audit cycle encompassed from April 2022 to May 2023 consisting of 58 masses.
Results: All the lesions which were stratified as O-RADS MRI scores 4 or 5 in each cycle were histologically proven as malignancies. PPV for malignancy is 100% in both cycles as per risk stratification guidelines. There were two ovarian pathologies in the first cycle and one in the second that were stratified as O-RADS MRI score 3 (considered low-risk), that turned out to be malignant. However, the overall PPV for malignancy for O-RADS MRI score 3 was 0.1%, which is still within the recommended parameters set out in the stratification tool which is 5%.
Conclusion: O-RADS MRI Risk Stratification is good at distinguishing benign versus malignant ovarian lesions.

References
1. Sadowski, E.A., Thomassin-Naggara, I., Rockall, A., Maturen, K.E., Forstner, R., Jha, P., Nougaret, S., Siegelman, E.S. and Reinhold, C. (2022). O-RADS MRI Risk Stratification System: Guide for Assessing Adnexal Lesions from the ACR O-RADS Committee. Radiology. doi:https://doi.org/10.1148/radiol.204371.

P108 Magnetization transfer imaging of the cervical spinal cord in control participants and patients with relapsing-remitting multiple sclerosis: A cross-sectional comparison

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Background Magnetization transfer imaging is a quantitative MRI technique that assesses tissue water exchange, producing a variable known as the magnetisation transfer ratio (MTR). In multiple sclerosis (MS), MTR is valuable for assessing microstructure changes and monitoring disease. This study aimed to detect microstructural changes in relapsing-remitting MS (RRMS) patients relative to healthy controls using MTR and its correlation with clinical disability.

Methods 13 RRMS patients (5 male, 8 female, mean±sd age: 45.9 ± 12.9 years; median Expanded Disability Status Scale (EDSS) score = 2; range: 0.5 to 6.5) and 20 healthy controls (HC) (10 male, 10 females, mean±sd age: 40.7 ± 12.4 years) underwent 3T MRI scans using standard MTI sequences. Spinal Cord Toolbox (v5.3.0) was used for image post-processing. Data were segmented and registered to a template. Then MTR was computed over the volume between the 2nd and 5th cervical vertebrae for the total WM and WM sub-regions: dorsal (DC), ventral (VC) and lateral columns (LC). Independent sample t-tests were used to compare the means of the healthy and RRMS groups. The association between MTR and EDSS was investigated using the Pearson correlation coefficient (r).
Results: A significant difference between HC and RRMS MTR values (P<0.05) was found with values of 49.46/44.84, 48.80/45.92, 50.45/42.34, and 49.36/48.07 in WM, DC, VC, and LC, respectively. There was no significant correlation between MTR and EDSS.
Conclusion: This study demonstrates that clinical trials using the MTI technique are feasible and that quantitative MTI can monitor tissue changes in MS patients.

P109 Diffusion Tensor Imaging in Multiple Sclerosis: Evaluation of Radial Diffusivity of different regions in the cervical spinal cord

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Background: Diffusion tensor imaging (DTI) has the potential to assess disorders that affect the cervical spinal cord (CSC). Radial diffusivity (RD) represents the diffusivity properties of water molecules in the perpendicular direction of WM structures [1].
Aim : To investigate RD microstructural changes in relapsing-remitting MS (RRMS) patients compared to healthy controls (HC), and to correlate RD values with clinical disability.
Method: 20 (HC) (10/10 males/females, mean±sd age: 40.7 ± 12.4 years) and 13 RRMS patients (5/8 males/females, mean±sd age: 45.9 ± 12.9 years; median Expanded Disability Status Scale (EDSS) score = 2; range: 0.5 to 6.5 years) were scanned with 3T MRI utilising standard DTI sequence. Spinal Cord Toolbox was used for post-processing. After segmenting, motion-correcting, and template-registering the data, RD was computed over the volume spanning the second to fifth cervical vertebrae for the total white matter (WM) the dorsal (DC), ventral (VC), and lateral columns (LC). Using t-tests, HC and RRMS groups were compared. To examine the relationship between RD measures and EDSS, the Pearson correlation coefficient was applied.
Results: A statistically significant difference (P<0.05) was observed between the HC and RRMS RD values for WM, DC, and LC, with values of 0.42/0.53, 0.42/0.52, and 0.39/0.46, respectively. However, VC did not reach statistical significance (P=0.862). In all ROI, no correlation between RD and EDSS was statistically significant.
Conclusion: RD is a parameter that can be utilised to evaluate changes in individuals diagnosed with RRMS. It provides valuable information regarding microstructural modifications and overall deterioration of the CSC.
References
1. MUKHERJEE, P., BERMAN, J., CHUNG, S., HESS, C. & HENRY, R. (2008). Diffusion tensor MR imaging and fiber tractography: theoretic underpinnings. American journal of neuroradiology, 29, 632-641.

P111 Measurement reliability and reproducibility of Magnetization Transfer Imaging between observers in the healthy cervical spinal cord

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Background Magnetization Transfer Imaging (MTI) is a quantitative approach that evaluates the exchange of bound and free water in tissue and creates a variable known as the magnetization transfer ratio (MTR), a common assessment parameter for examining tissues such as white matter (WM) in the central nervous system.
Aim The aim was to assess reliability and reproducibility of MTR between observers in the healthy cervical spinal cord (CSC).
Methods A total of 20 control participants was examined (Female/male:10/10 mean age SD= 40 12.4years. Inclusion were participants with no history of neurological disorders or contraindications. All participants were scanned twice at 3T with conventional MTI sequences. The MTI data was corrected for motion artefacts, then segmented, and registered to a template. MTR was then calculated using Spinal Cord Toolbox (SCT). ROIs were chosen between the 2nd and 5th vertebral levels of CSC: WM (White Matter), VC (Ventral Columns), LC (Lateral Column), and DC (Dorsal Columns). Analysis was done independently by two observers to examine methodology robustness. Single and average intra-class correlation coefficients (ICC) and coefficients of variation (CV%) for between observers was assessed.

Results The single/average ICC between-observers indicated excellent reliability with values of 0.992/0.996, 0.953/0.976, 0.984/0.992, and 0.992/0.996, for WM, VC, LC, and DC, respectively. CV% reported high reliability with values of 0.003%, 0.009%, 0.003% and 0.003% for WM, VC, LC, and DC, respectively.
Conclusion Determining MTR using SCT results in excellent reliability, potentially providing valuable information about tissue microstructure which can be applied to various medical trials.

P112 A pictorial review of the five cardinal signs of SIH - SEEPS!

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Spontaneous intracranial hypotension (SIH) is an often underdiagnosed condition with a wide variety of clinical presentations, resulting in a postural headache due to a cerebrospinal fluid (CSF) leak within the neuroaxis. The radiological features of SIH can be easily recognised on routine CT and MRI scans.
We describe the five cardinal signs of SIH - SEEPS!
References
Schievink WI, Maya MM, Jean-Pierre S, et al. A classification system of spontaneous spinal CSF leaks. Neurology 2016;87(7): 673e9.
D'Antona L, Jaime Merchan MA, Vassiliou A, et al. Clinical presentation, investigation findings, and treatment outcomes of spontaneous intracranial hypotension syndrome: a systematic review and meta- analysis. JAMA Neurol 2021;78:329e37.
Mokri B. The MonroeKellie hypothesis: applications in CSF volume depletion. Neurology 2001;56(12):1746e8.
Kranz PG, Gray L, Mallinzak MD, et al. CSFevenous fistulas: anatomy and diagnostic imaging. AJR Am J Roentgenol 2021;217:1418e29.
Beck J, Gralla J, Fung C, et al. Spinal cerebrospinal fluid leak as the cause of chronic subdural hematomas in nongeriatric patients. J Neurosurg 2014;121(6):1380e7
Kim SC, Ryoo I, Sun HY, et al. MRI findings of spontaneous intracranial hypotension: usefulness of straight sinus distention. AJR Am J Roentgenol 2019:1e7.
L. Carlton Jones et al. / Clinical Radiology 77 (2022) e181ee194

P113 Determination of efficacy patient set-up with the use of different headrests with Encompass mask for SRS treatments with HyperArc.

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Background The Encompass Fibreplast® system is a thermoplastic device that cradles the head used for HyperArc based SRS treatment. It has been noted the posterior mask has been insufficient as immobilisation due to the patient's ability to lie flat or due to their anatomy shape, proving in a difficult set up and on treatment and larger rotational deviations are observed.
A second option of headrest is available. The aim to determine if the Moldcare ®U headrest is a suitable head rest for the delivery of SRS. There is a present gap in the evidence base regarding the differing headrests. previous literature investigates the efficacy of the mask system (Shah et al, 2020).
Method 30 patients received the new Moldcare ®U headrest . Comparison was made with 30 patients who had received SRS with the Encompass Fibreplast® system. The aim is to provide a direct comparison of headrests for patients treated with SRS and to determine if both headrests provide comparable efficacy for immobilisation.
Results A statistical T-Test analysis will be performed to analyse if there is significance of motion in the use of each mask. Average deviations determined that the Moldcare ®U headrest produced a more accurate initial set up for SRS.
Conclusion The fixation achieved using the Moldcare® headrest is equivalent to that using the Fibreplast headrest and is adequate for the treatment of SRS patients. Furthermore it is the preferred headrest option for both pre-treatment and treatment radiographers due to ease of production and use for set up.
References
Shah, A.P Meeks DT, Willoughby TR, Ramakrishna N, Warner CJ, Swanick CW Kelly P, Meeks SL (2020). Intrafraction motion during frameless radiosurgery using Varian HyperArc and Brainlab Elements immobilisation systems. Journal of Radiosurgery and SBRT. 7(21), 149-156

P114 Quantifying intrafraction motion of Linac based SRS treatments, using HyperArc and the Encompass thermoplastic device

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Background HyperArc (Varian, Palo Alto, CA) was implemented at our institution in 2020 for the treatment of SRS. HyperArc is a novel treatment but there is minimal literature quantifying intrafraction motion.

Method 100 patients were treated using HyperArc on Edge Linacs with 6Dof couch; patients were immobilised using the Q-fix Encompass™ thermoplastic device. All patients received pre-CBCT and post-CBCT. Using a two-tailed t-test, CBCT shift values in 6DoF were assessed to investigate the significance of intra-fraction motion.
Results were monitored prospectively, from patient 47 the decision to introduce a confirmatory CBCT prior to treatment delivery was made.
Results The results show that intra-fraction motion was not significant in the translations, as long as pitch and roll were <1.5°. The introduction of the confirmatory CBCT reduced the mean displacement values from 0.08cm to 0.06cm and in the number of patients displaying a displacement >0.1cm.
Conclusion The study concluded that intra-fraction motion in the longitudinal and lateral translations was introduced when pitch and roll rotational deviations >1.5°. This could be contributed to by the use of open faced immobilisation devices and patient slippage when applying shifts. If pitch and roll are greater than 1.5° after the pre-CBCT a confirmatory CBCT was introduced to mitigate intra-fraction motion.
At present the organisation does not use surface guided radiotherapy (SGRT). Systems such as SGRT may mitigate intra-fraction motion without the use of ionising radiation, allowing the removal of the confirmatory CBCT and this is something we would like to explore in the future.

P115 Diffusion tensor imaging in degenerative cervical myelopathy: a review

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Background: Degenerative cervical myelopathy (DCM) is difficult to diagnose in its early stages with current imaging methods. Diffusion tensor imaging (DTI) can identify myelopathic changes earlier than conventional magnetic resonance imaging (cMRI). This review aimed to determine to what extent DTI is more effective than cMRI in the detection of myelopathic changes in patients with DCM.
Method: A comprehensive literature search was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Studies published from 2012 to 2023 that reported sensitivity and specificity estimates comparing DTI and cMRI in a population of DCM patients were selected. Data extracted from studies included cohort characteristics, disease severity of participants, DTI and cMRI metrics, image acquisition methods, and image evaluation methods. Risk of bias was analysed using the Critical Appraisal Skills Programme (CASP) checklist for diagnostic studies.
Results: 7 studies were identified, reporting utility of DTI in three areas: early detection of DCM (n=4), surgical planning in multi-level DCM (n=2) and prognosis following surgery (n=1). Diagnostic utility showed the strongest promise for future research. Significant differences in study design and DTI metric calculation were present in identified studies, limiting their applicability to current practice.
Conclusion: DTI has higher sensitivity and specificity overall in detecting disease compared to cMRI, however, further research is recommended on the utility of DTI in imaging multi-level DCM. Standardisation of clinical scoring systems and metric calculation methods needs to be applied to future research.

P116 Tele cytology Rapid On-Site Evaluation for ultrasound guided head and neck fine needle aspirations, utilising clinical imaging assistants with extended practice roles.

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Introduction Rapid On-Site Evaluation (ROSE) of fine needle aspirations (FNA) is widely accepted as best practice resulting in better outcomes and standards of care for patients (Khurana et al., 2015). However, it is not always practical for cytology laboratories to release staff. To increase availability of ROSE this study aimed to robustly test the effectiveness of Tele Cytology ROSE (TCROSE) utilising a clinical imaging assistant (CIA) to prepare the samples and operate the microscope.
Methods The study was divided into 3 phases. Equipment testing, validation and in house training for the CIA and the Consultant Biomedical Scientist (CBMS) performing TCROSE. Phase 2; Verifying TCROSE on the same site as the cytology laboratory and phase 3, TCROSE utilising a clinic at a peripheral site away from the cytology laboratory.
Results 78/80 (98% sensitivity, 95% accuracy) of TCROSE cases matched the final report for assessment of adequacy and sufficient sampling with 94% reliability and a 95% confidence value. An appropriately trained CIA effectively prepared the samples and operated the microscope for remote interpretation. The samples were triaged effectively, and biopsy requests were appropriate to reduce the need for repeat procedures and delays to treatment. This approach received positive feedback from patients (Lin et al., 2019).

Conclusion TCROSE utilising a CIA provides a highly effective alternative to conventional ROSE. Minimising the resource required from cytopathology services, improving patient care and accessibility to best practice. This study supports the validity of trained CIAs for a more involved role in the ultrasound guided FNA service.

References
1. Khurana, K.K., Xu, W., Wang, D., Swarnkar, A., 2015. Rapid on-site evaluation with dynamic telecytopathology for ultrasound-guided fine-needle aspiration of head and neck nonthyroid lesions. J Pathol Inform 6, 19. https://doi.org/10.4103/2153-3539.157781
2. Lin, D.M., Tracht, J., Rosenblum, F., Kouba, E., Bahl, D., Patel, A., Eltoum, I.-E., 2019. Rapid On-Site Evaluation With Telecytology Significantly Reduced Unsatisfactory Rates of Thyroid Fine-Needle Aspiration. Am J Clin Pathol. https://doi.org/10.1093/ajcp/aqz164

P117 MRI for suspected cauda equina syndrome: an audit

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Background CES can cause severe and permanent disability. As CES is difficult to exclude on examination alone, MRI is paramount to this patient pathway. New guidance has been recently published by 'Getting it right first time' (2023) and RCR (2023). This audit was undertaken in a large tertiary centre that also provides the trust wide out-of-hours emergency MRI service.

Method 50 consecutive cases of patients who had MRI for suspected CES were examined retrospectively from 27/05/23 to 04/07/23. Results were audited against standards from recent guidance: request to scan time <4h and scan to report time <1h. A derived key performance indicator (KPI) of scan to report <5h was also used.

Results Of the 50 cases collected, 3 showed 'impending cauda equina compression (CEC)', 3 had confirmed CEC. Compliance with our KPI of 'scan request to scan report <5h' was 50%. 74% patients were scanned within 4h of the request. Only 36% of scans were reported within 1h of scanning. Arrival to report times for patients presenting initially to the tertiary centre was 6h 44m but much longer for patients presenting from district generals (13h 23m).

Conclusion The majority of the workload falls out-of-hours although significant delays to scanning and reporting exist throughout the day. Patients presenting to district generals experience significant delays. Improvements include opening up of emergency MRI time slots in the evening and provision of emergency MRI in the all hospitals as suggested in the guidance.

References
Getting it right first time (2023) Spinal Surgery: National Suspected Cauda Equina Syndrome (CES) Pathway. Available at: https://gettingitrightfirsttime.co.uk/wp-content/uploads/2023/10/National-Suspected-Cauda-Equina-Pathway-UPDATED-V2-October-2023.pdf (Accessed: January 2024)
Royal College of Radiologists (2023). Provision for cauda equina syndrome. Available at: https://www.rcr.ac.uk/system/files/publication/field_publication_files/mri_provision_for_cauda_equina_syndrome.pdf (Accessed: January 2024)

P118 Advancing Iron Overload Diagnosis: A Python-based MR Imaging Software for Enhanced T2* Quantification and Liver Iron Concentration Reporting

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Background: Iron overload, a systemic disorder from genetic factors or exogenous iron intake, poses significant health risks, including liver cirrhosis and hepatocellular carcinoma. Although liver biopsy was the diagnostic standard, Magnetic Resonance (MR) imaging now offers a non-invasive alternative for liver iron quantification and monitoring. This advancement utilises various MR techniques to assess iron distribution, essential for early treatment.

Method: We developed a Python-based software application, using multiple libraries, to calculate T2* values and iron concentrations employing four established calibration formulas (1,2,3,4). This involves acquiring breath-hold gradient-echo (GRE) images at increasing echo times (TEs) following the Siemens Magnetom protocol. An exponential model analyses signal intensity from selected regions of interest (ROIs) in the liver and ventricular septum. The software produces a Secondary Capture (SC) DICOM image with a header from the original scans for seamless study series integration, and a PDF report for clinicians.

Results: The software enables direct T2* and iron concentration report exports to Picture Archiving and Communication Systems (PACS) via DICOM services or secure sharing. These reports, with DICOM headers from the original images, merge seamlessly with patient studies, eliminating the need for PACS administrator intervention.

Conclusion: This software application simplifies T2* value measurements in the liver and ventricular septum, offering detailed reporting. It generates a colour-coded SC DICOM image displaying decay curves and calculated T2* values and iron concentrations, improving diagnostic precision and streamlining clinician communication.

References
1. Wood, J.C., Enriquez, C., Ghugre, N., et al., 2005. MRI R2 and R2* mapping accurately estimates hepatic iron concentration in transfusion-dependent thalassemia and sickle cell disease patients. Blood, 106, pp.1460–1465.

2. Garbowski, M.W., Carpenter, J.P., Smith, G., et al., 2014. Biopsy-based calibration of T2* magnetic resonance for estimation of liver iron concentration and comparison with R2 Ferriscan. Journal of Cardiovascular Magnetic Resonance, 16, p.40.
3. Henninger, B., Zoller, H., Rauch, S., et al., 2015. R2* relaxometry for the quantification of hepatic iron overload: biopsy-based calibration and comparison with the literature. Rofo, 187, pp.472–479.
4. Hankins, J.S., McCarville, M.B., Loeffler, R.B., et al., 2009. R2* magnetic resonance imaging of the liver in patients with iron overload. Blood, 113, pp.4853–4855.

P119 FDG PET-CT in Pyrexia of Unknown Origin and Vasculitis: Does a negative scan still have value?

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150 patients referred for FDG PET-CT scans performed for pyrexia of unknown origin (PUO) and vasculitis in a large teaching hospital between November 2020 and December 2022 were retrospectively reviewed for clinical usefulness (Age range 24 – 91).

A consensus based proforma was devised to highlight the clinical utility of FDG PET-CT studies based on further investigations and outcomes. Three categories were defined: High - Scan was definitively helpful in localizing or excluding pathology; Moderate- Scan aided in leading clinicians to direction of investigation for other tests; or excluded key differentials however was not considered definitively useful; Low - No definite localization or scan confirms existing pathology.

Of the 150 patients, 102 were considered high (31+ve, 71-ve), 31 moderate (22+ve, 9-ve) and 17 low value (1+ve, 16-ve). This classification was agreed by three Nuclear Medicine physicians.

Scan positivity was noted in some cases despite antibiotic and steroids use. Positive scans considered to have high value localized foci in a number of tissue including brain, lung, pelvis, aorta, and related large branches. In a significant number of patients (71/102), the scan was considered of high clinical value, even though it did not identify an abnormal source. Studies considered to have moderate value (31/150) required further clinical exploration.

In **conclusion**, our outcome-based perspective has reassuringly encouraged us regarding the clinical value of FDG PET-CT scans in the evaluation of patients with PUO and vasculitis and we invite other departments to embrace this approach in the assessment of such patients.

P120 Utilizing an MRI Simulator for Training: Enhancing Skills and Improving Clinical Outcomes

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Background: The availability of real MRI scanners is often limited, making it challenging to conduct comprehensive studies and train healthcare professionals. Therefore, the development of an MRI Simulator capable of generating a variety of MR images can greatly enhance medical education and research.

Method: An MRI Simulator was developed to mimic the functionality of a real MRI scanner including a real clinical interface. The simulator was designed to produce a wide range of MR images by modelling the physical properties and processes involved in MRI. Various imaging parameters such as relaxation times, radiofrequency pulses and gradients were incorporated into the simulator to generate realistic MR images as well as gradient sounds.

Results: The results demonstrated that the MRI Simulator successfully replicated the imaging capabilities of a real MRI scanner. It was able to generate a diverse range of T1-weighted, T2-weighted and Proton Density weighted MR images from a variety of anatomies. The simulator accurately mimicked the signal intensity, contrast, and image quality observed in real MRI scans.

Conclusion: The MRI Simulator developed in this study proved to be an effective tool for generating a wide range of MR images, comparable to those obtained from a real MRI scanner. Its ability to replicate the imaging process accurately and rapidly provides a valuable resource for medical education and research, supplementing the limitations imposed by limited access to MRI scanners. This simulator has the potential to revolutionise medical imaging training programs and enable comprehensive studies on MRI techniques without an actual MRI scanner.

References
1. H.Benoit-Cattin, G.Collewet, B.Belaroussi, H.St-Jalmes, C.Odet. (2005) The SIMRI project: a versatile and interactive MRI simulator. JMR Volume 173, Issue 1, March 2005, Pages 97-115.
2. RB Lufkin, R. Keen, M. Rhodes, J. Quinn, W. Glenn, and W. Hanafee. MRI simulator for instruction in pulse-sequence selection. American Journal of Roentgenology 147, no. 1 (1986): 199–202. http://dx.doi.org/10.2214/ajr.147.1.199.
3. D. Treceño-Fernández, J. Calabia-del-Campo, F. Matute-Teresa,M. L. Bote-Lorenzo, E. Gómez-Sánchez, R. de Luis-García, C. Alberola-López1. (2021) Magnetic Resonance Simulation in Education: Quantitative Evaluation of an Actual Classroom Experience. Sensors 2021, 21(18), 6011; https://doi.org/10.3390/s21186011

P121 Investigating the effects of metal artifact reduction and CT kernel on the accuracy of metal object reconstruction

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Background: Medical images can be distorted by metal implants or foreign objects. The resulting streaks and bands across the images, as well as increased noise, can obscure pathologies or anatomy, making it difficult to measure lesions (1–3). To overcome this, metal artefact reduction (MAR) techniques were developed (3–5) which correct the distortions and should allow for improved accuracy and interpretation. There is some debate as to whether this is always the case (6–9); does MAR improve only visualisation, or does it improve the accuracy of reconstructions? How does kernel affect accuracy? In this study, we attempt to answer these questions; we investigate the effects of CT kernel and MAR on the accuracy of reconstruction of metal objects.

Methods: Images of metal spheres were acquired using computerised tomography (CT) (Revolution platform, GE, US). Raw data was processed with two commonly used GE kernels, 'bone' and 'soft tissue', both with and without MAR. Post processing to estimate reconstructed sphere dimensions was carried out using a connected neighbour approach in MATLAB. The root mean squared error was used to compare reconstructed and real dimensions, which is used as a measure of accuracy.

Results: The 'bone' kernel had the highest accuracy whilst the 'soft tissue' with MAR algorithm was the least accurate. The reconstruction kernel had a significant effect on accuracy, however, the inclusion of MAR in the algorithm did not.

Conclusion: Whilst CT kernel affects the accuracy of reconstruction of metal spheres, MAR does not have a significant effect in this study.

References
1.Katsura, M., Sato, J., Akahane, M., Kunimatsu, A. & Abe, O. (2018) Current and novel techniques for metal artifact reduction at CT: Practical guide for radiologists. Radiographics 38, 450–461.
2.Rousselle, A. et al. (2020) Metallic implants and CT artefacts in the CTV area: Where are we in 2020? Cancer/Radiotherapie vol. 24 658–666 .
3.Wellenberg, R. H. H. et al. (2018) Metal artifact reduction techniques in musculoskeletal CT-imaging. European Journal of Radiology vol.107 60–69
4.Wellenberg, R. H. H. et al. (2018) Exploring metal artifact reduction using dual-energy CT with pre-metal and post-metal implant cadaver comparison: are implant specific protocols needed? Skeletal Radiol 47, 839–845.
5.Kalender, W. A., Hebel, R. & Ebersberger, J. (1987) Reduction of CT artifacts caused by metallic implants. Radiology 164, 576–577 .
6.Lee, Y. H., Park, K. K., Song, H. T., Kim, S. & Suh, J. S. (2012) Metal artefact reduction in gemstone spectral imaging dual-energy CT with and without metal artefact reduction software. Eur Radiol 22, 1331–1340.
7.Huang, J. Y. et al. (2015) An evaluation of three commercially available metal artifact reduction methods for CT imaging. Phys Med Biol 60, 1047–1067.
8.Han, S. C. et al. (2014) Metal artifact reduction software used with abdominopelvic dual-energy CT of patients with metal hip prostheses: Assessment of image quality and clinical feasibility. American Journal of Roentgenology 203, 788–795.
9.Chou, R. et al. (2020) Comparison of quantitative measurements of four manufacturer's metal artifact reduction techniques for CT imaging with a self-made acrylic phantom. Technology and Health Care 28, S273–S287.

P122 Navigating radiological frontiers: a literature review of exposure index in modern imaging

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Background: Radiography plays a pivotal role in diagnostic imaging, with technological advances continuously shaping the landscape of this essential imaging modality. One key parameter in radiography is the Exposure Index (EI), a metric quantifying the estimated exposure of the detector during x-ray procedures and determining image quality.

Method: A literature search of studies published in the last 8 years was conducted in PubMed and Science Direct, using the search string "Exposure Index in radiography". A critical review of the evidence was carried out to provide insights into studies and developments related to EI in radiography, their significance, challenges, and future directions.

Results: A total of 494 journal articles were identified, and following the application of exclusion criteria, 24 articles were eligible for inclusion in the review. The significance of EI in achieving a delicate balance between image quality and patient radiation dose is discussed. Various EIs for different imaging modalities, including computed and digital radiography and fluoroscopy are analyzed. The literature emphasizes the role of EI in optimising image acquisition parameters to meet diagnostic requirements while adhering to radiation safety principles. Patient BMI anatomy and pathology, detector sensitivity and calibration, equipment performance, mAs, Kv are some key factors that commonly affect EI in radiography.

Conclusion: Understanding and managing those parameters is essential for radiographers to optimise EI, maintain image quality, and ensure patient safety in radiographic imaging. Regular training and adherence to established protocols contribute to the effective utilization of EI in clinical practice.

P123 Epithelioid angiosarcoma in arteriovenous grafts in kidney transplant patients: important imaging features

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Background: Angiosarcoma is an aggressive malignant neoplasm, characterised by rapidly proliferating and extensively infiltrating anaplastic cells derived from endothelial cells of vessels or lymphatics. It accounts for <2% of all sarcomas with a predilection to soft tissues and is a rare complication of arteriovenous fistulas (AVFs). Renal transplant recipients may rarely develop angiosarcoma at the site of AVFs and the survival of these patients is usually poor.

Purpose: We present a 58-year-old second time renal transplant patient with metastatic angiosarcoma from his dialysis access site. He presented with a non-healing wound on his left lower extremity after developing thrombosis along the length of his left brachiocephalic AVF with aneurysmal segments. An ultrasound and MR study confirmed a thrombosed AVF however, the MR also demonstrated an infiltrating mass adjacent to the anterior compartment musculature, concerning for malignant transformation. After MDT discussion, a biopsy was performed showing epithelioid angiosarcoma. A staging CT-TAP demonstrated left axillary lymphadenopathy and consequent ultrasound-guided biopsy proved this to be metastatic angiosarcoma. We utilise this case to explain the imaging features of angiosarcoma on different imaging modalities.

Summary of content: While tissue biopsy is ultimately needed for a definitive diagnosis, certain imaging features can aid diagnosis. Imaging features that are suspicious for malignancy include high T2/fat-sat signal, internal variable-flow serpiginous vessels, heterogenous/nodular areas of enhancement, and invasion of surrounding bone, muscles and nerves. They can be associated with pseudoaneurysms, aneurysms and haematomas. Heterogeneity in signal may be due to intratumoural haemorrhage, necrosis and calcification.

References

1. Qureshi, Y.A. et al. (2010) 'Angiosarcoma developing in a non-functioning arteriovenous fistula post-renal transplant', Journal of surgical oncology, 101(6) 520-3. doi:10.1002/jso.21516
2. Aldaabil, R.A. et al. (2016) 'Angiosarcoma at the site of nonfunctioning arteriovenous fistula in a kidney transplant recipient', Journal of Vascular Surgery Cases and Innovative Techniques, 2(2), pp.53–55. doi:https://doi.org/10.1016/j.jvsc.2016.03.004.
3. Gaballah, A.H. et al. (2017) 'Angiosarcoma: clinical and imaging features from head to toe', The British Journal of Radiology, 90(1075), p.20170039. doi:https://doi.org/10.1259/bjr.20170039.

P124 Med-term precision errors of density index measurements at the proximal tibia using the Bindex scanner

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Med-term precision errors of density index measurements at the proximal tibia using the Bindex scanner.

Introduction The Bindex system utilises a novel ultrasound method that calculates a bone density index by measuring the thickness of cortical bone at peripheral skeletal sites with a handheld device. This study aimed to assess the short-term intra-operator precision of the Bindex on the measurements of the proximal tibia.

Methods Ten participants (8 male & 2 female), mean age 35.86 (SD ±7.61) years, were included in this study. All participants underwent 12 scans with the Bindex® device (Scan a month for a year). In all scans, the thickness of cortical bone at the proximal tibia was measured in order to analyze intra-operator precision. The measurements were performed according to manufacturer's instructions and by the same investigator. The data were analysed using the root mean square standard deviation (RMSSD) and the room mean square coefficient of variation (RMSCV%), as is recommended by international society for clinical densitometry (ISCD) [1].

Results For the bone density index score, based on scans at proximal tibia, RMSSD was 0.021g/cm² and RMSCV% was 1.77 %.

Conclusion The precision error rates in this study were higher but in line with the Behrens et al, 2016 study [2]. Further studies are required to investigate the medium and long-term precision errors of Bindex, as well as inter-operator precision results.

References

1. Baim, S., Wilson, C. R., Lewiecki, E. M., Luckey, M. M., Downs Jr, R. W., & Lentle, B. C. (2005). Precision assessment and radiation safety for dual-energy X-ray absorptiometry: position paper of the International Society for Clinical Densitometry. Journal of Clinical Densitometry, 8(4), 371-378.
2. Behrens, M., Felser, S., Mau-Moeller, A., Weippert, M., Pollex, J., Skripitz, R., ... & Mittlmeier, T. (2016). The Bindex® ultrasound device: reliability of cortical bone thickness measures and their relationship to regional bone mineral density. Physiological measurement, 37(9), 1528.

P125 Imaging Features of Terminal Phalanx Lesions

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Lesions of the distal phalanges of the hands and feet are rare but pose a significant challenge for clinicians and radiologists alike. This is due to the diversity of pathologies that affect these areas, all of which present very similarly. These include infections, benign and malignant lesions, connective tissue disorders, post-traumatic lesions, and foreign bodies. Plain radiography remains the initial investigation of choice, however, it is inadequate for characterising soft tissue lesions, and so cross-sectional imaging is often required to provide detailed visualisation of bone, soft tissue and vascular structures. Imaging is important for early diagnosis, differentiation of malignant lesions, and to guide management. In this poster, we present the main imaging features of these conditions and the key features differentiating them.

P126 The use of Radiofrequency Echographic Multi-spectrometry (REMS) for the assessment of bone health status at the lumbar spine and hip in males and females with Type 2 diabetes mellitus

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Background: Patients with type 2 diabetes mellitus (T2DM) have unexpectedly high fracture rates despite high bone mineral density (BMD) (1), as measured by dual-energy X-ray absorptiometry (DXA). This indicates that BMD doesn't fully capture bone health, considering bone quality and material properties also contribute to bone fragility (2). This study evaluates Radiofrequency Echographic Multispectrometry (REMS) for assessing bone health in T2DM patients.
Methods: 25 females and 15 males with T2DM and an equal number of controls underwent lumbar spine and femur DXA and REMS scans at the University of Exeter to measure BMD and identify osteopenia and osteoporosis percentages based on WHO guidelines (3).
Results: The percentage of T2DM females classified as 'osteoporotic and osteopenic' using WHO criteria with regards to spine BMD by REMS was noticeably higher compared to those classified by DXA (68% and 16%,respectively). Conversely, for femur in T2DM females, DXA indicated 52% as 'osteoporotic and osteopenic' compared to 40% identified by REMS. Furthermore, among the control group of females, REMS identified a higher percentage of individuals with osteoporosis and osteopenia in Spine BMD(80%) compared to DXA(40%). On the contrary, for femur BMD, REMS and DXA showed nearly similar percentages of individuals with osteoporosis and osteopenia (72% and 68%,respectively). There was no significant difference between males with and without T2DM.
Conclusion: REMS technology shows potential in osteoporosis diagnosis for T2DM patients, as it assesses both bone density and microarchitecture.
Limitations: Further research across various ages and genders is needed to validate these findings' generalizability.
Ethics approval: IRAS(277369)
References
1. Chatterjee, S., Khunti, K., and Davies, M. J. (2017) Type 2 diabetes. The Lancet 389(10085): 2239–2251.
2. Nishiyama, K. K., and Shane, E. (2013) Clinical Imaging of Bone Microarchitecture with HR-pQCT. Current Osteoporosis Reports 11(2): 147–155.
3. WHO (2007) ASSESSMENT OF OSTEOPOROSIS AT THE PRIMARY HEALTH CARE LEVEL, Report of a WHO Scientific Group.

P127 Exploring the acceptability of the new technique Radiofrequency Echographic Multi-spectrometry (REMS) compared to the currently used approach Dual-energy X-ray Absorptiometry (DXA) for assessing bone health in patients

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Background: Bone health assessment plays a crucial role in preventive healthcare. Dual X-ray absorptiometry(DXA) scanning is the conventional imaging technique used for bone density assessment. Nevertheless, difficulties in accessing DXA scanners have prompted the exploration of alternative methods (1). Radiofrequency Echographic Multi-spectrometry (REMS) is an emerging technology for evaluating bone health status (2). This study aims to investigate patients' acceptability of REMS as a novel method for assessing bone health.
Methods: A survey was conducted with 168 patients (120 females and 48 males) post-DXA and REMS scans to compare perceptions of REMS with DXA, focusing on comfort, scan time, pain, and preference. Demographic data was also collected to analyze response variations

Results: Patients accepted REMS similarly to DXA, with REMS slightly more favored. Both scanners were seen as highly comfortable, with REMS at 79.2% and DXA at 77.4% in comfort ratings. Pain during REMS scans was negligible (98.8% reported no pain), and the majority found the scan-time acceptable (97%). Preferences revealed a notable portion favouring both scanners(56.6%), while DXA had a slightly higher preference (23.4% compared to REMS's 20%),attributed to factors like the sticky and cold gel used in REMS scans. The study shows high acceptability and comfort with REMS, with little gender difference in pain and scan time (females:99.2%, 95.8%; males:97.9%, 100%).
Conclusion Most respondents find both REMS and DXA comfortable, with REMS preferred for its shorter scan time, though DXA is slightly more favored overall.
Limitations Further research on other factors influencing acceptability is recommended
Ethics committee IRAS(277369)
References
1. Blake, G. M., and Fogelman, I. (2007) The role of DXA bone density scans in the diagnosis and treatment of osteoporosis. Postgraduate Medical Journal 83(982): 509–517.
2. Di Paola, M., Gatti, D., Viapiana, O., Cianferotti, L., Cavalli, L., Caffarelli, C., et al. (2019) Radiofrequency echographic multispectrometry compared with dual X-ray absorptiometry for osteoporosis diagnosis on lumbar spine and femoral neck. Osteoporosis International 30(2): 391–402.

P128 Osteomyelitis: a pictorial review

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Background: To illustrate how the bony changes of osteomyelitis manifest on plain radiographs and their significance to the patient pathway.
Purpose: Radiography is the first line imaging investigation for diagnosis of osteomyelitis. Increased awareness of the subtle initial changes can facilitate early diagnosis and hence improve patient outcomes. Radiographic technique must be optimised to enable these subtle changes to be appreciated in the context of positioning, exposure and impact of artefacts. Understanding of the limitations of radiography as a diagnostic tool dependent on the phase of disease will also inform ongoing management.
Summary of content: A pictorial review of the scope of plain radiographic appearances of osteomyelitis in all stages of the disease with reference to the contributory pathological processes. This will include risk factors, routes of infection and treatment options and their radiographic appearances.
References
Bury, D.C and Rogers, T.S. (2021) Osteomyelitis: Diagnosis and Treatment. Am Fam Physician. 104 (4), 395-402
Gandi, J. (Updated 11 Jul 2022). Osteomyelitis. Available at https://emedicine.medscape.com/article/1348767-overview?form=fpf (Accessed 29/1/24)
Rasuli, B. (Last revised 22 Oct 2023).Osteomyelitis. Available at https://radiopaedia.org/articles/osteomyelitis?lang=gb (Accessed 29/1/24)

P129 Do blood glucose levels matter for FDG scans conducted for possible osteomyelitis?

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Blood glucose levels generally must be maintained within a normal range for interpretation of FDG PET-CT scans in cancer. We performed a retrospective study to assess the impact of blood glucose levels on scan positivity for the detection/characterisation of possible osteomyelitis.
We retrospectively reviewed 108 consecutive FDG scans with possible infected hip and spinal prostheses done in a teaching university hospital from January 2023 to January 2024. Blood glucose levels, scan positivity or negativity; SUV max values at the most avid abnormal site were tabulated and analysed.
Out of the 108 reviewed cases (M:F 42:66, age 17 - 86 years), 34 positives and 74 negatives. Pattern of abnormal uptake included focality, increased uptake in soft tissue, bone and bone-metalwork interface were recorded. Blood glucose levels ranges 3.4 – 19.6 mmol/L, SUV max ranges 3.0 – 13.6.
The results of statistical analysis between normal/abnormal scans versus normal/abnormal blood sugar levels show t value was 2.25 E-07 (student's t-test). The correlation coefficient for relationship between blood sugar levels and SUV max values in abnormal patient studies was p = 0.47 (n = 34).
To conclude, we confirm that the mechanism of uptake of FDG in inflammatory/infective tissue is different from the uptake in cancerous tissue, and blood glucose levels and diabetic status are not critically needed to be maintained within normal ranges for the FDG PET-CT for osteomyelitis. We would invite other centres to consider these findings as well.

P130 Extremely Unusual case of disabling soft tissue ossification in Pediatric Patient

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Background: Debilitating ossifications in soft tissue is extremely rare phenomenon in literature. Fibrodysplasia Ossificans Progressiva is very unusual genetic disorder of Extra-Skeletal Bone formation mostly within muscle, tendons and fascia. Clinically it presents with extensive heterotopic ossifications in soft tissue and malformations in greater Toe and Thumb. During the earlier stages, clinical presentations may mimic Myositis Ossificans, Scleroderma, Juvenile Fibromatosis, soft tissue sarcoma. But during the late phase the differential Diagnosis is limited. Minor trauma and interventions will exacerbate the disease process and is not recommended.

Case presentation: This is 10 years old female patient who presented with a complaint of progressive anterior and posterior chest wall swelling and deformity and of more than a year duration. She has no past medical illness or Trauma. Her symptoms were waxing and waning initially but become progressive six months before here presentation. she has hard swelling on her back and anterior chest which has markedly affected the movement of her both arms. She has also short Thumb and Toe with deformity.

CT scan was done, and she had extensive dystrophic ossifications in paraspinal area which have formed a pseudoarticulation with ossifications arising from both humerus along the postero-lateral aspect. There are also branching soft tissue ossifications from both sides of the anterior chest within the substance of the Pectoralis Muscles.

Conclusion and Limitation: Diagnosis of extremely rare genetic disorders is a challenge in developing countries where there is limitation of genetic studies, laboratory services and poverty.

References
1. Kaplan, F.S., Shen, Q., Lounev, V., Seemann, P., Groppe, J., Katagiri, T., Pignolo, R.J. and Shore, E.M., 2008. Skeletal metamorphosis in fibrodysplasia ossificans progressiva (FOP). Journal of bone and mineral metabolism, 26(6), pp.521-530.
2. Kaplan, F.S., Al Mukaddam, M., Stanley, A., Towler, O.W. and Shore, E.M., 2020. Fibrodysplasia ossificans progressiva (FOP): A disorder of osteochondrogenesis. Bone, 140, p.115539.
3. Kaplan, F.S., Xu, M., Seemann, P., Connor, J.M., Glaser, D.L., Carroll, L., Delai, P., Fastnacht-Urban, E., Forman, S.J., 4. Gillessen-Kaesbach, G. and Hoover-Fong, J., 2009. Classic and atypical fibrodysplasia ossificans progressiva (FOP) phenotypes are caused by mutations in the bone morphogenetic protein (BMP) type I receptor ACVR1. Human mutation, 30(3), pp.379-390.
5. https://www.uptodate.com/contents/fibrodysplasia-ossificans-progressiva?source=history_widget

P131 Assessment of the accuracy of radiographer Cobb angle calculations using the low dose EOS X-ray system: UK cohort audit

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Introduction EOS is a new but scarce imaging modality within the NHS, able to provide low dose 2D and 3D weightbearing images of the whole spine (NICE,2011). This study will assess the accuracy of radiographer generated postural assessment patient report (PSPR). It is necessary that radiographers are providing accurate, high-quality reports that can be utilised in treatment planning (Brage, K. et al).

Method Accuracy was assessed by retrospectively comparing cobb angle measurements produced by radiographers to those in radiologist reports, which were considered the gold standard. Measurements were considered correct if cobb angles were within a 4-degree spread of the radiologist's report (Asher,2023).

1053 EOS PSPR's were completed between September 2021 - March 2023; 100 pre-surgical patients were randomly selected for review.

Additionally, a spinal consultant and fellow also measured cobb angles on 50 of the 100 patients, these were then compared to the values calculated by radiographers, for further comparison.

Results 65% of radiographer cobb angle calculations were deemed correct when compared to a radiologist. Discrepancies were found between the consultant; fellow; radiologist and radiographer within the group of 50 patients.

Largely, radiographer angles were measured correctly when compared to the spinal consultant's values, but the number of curves identified varied between all reviewers.

Conclusion Results showed four reasons why the radiographer measured cobb angle was deemed incorrect:

- Choosing radiologist measurements as the gold standard.
- Incorrect vertebral levels being identified and measured.
- Single curve measured when secondary existed.
- Secondary curve measured when only one present.

References
4 the diagnostic tests: The EOS 2D/3D imaging system: Guidance (2011) NICE. Available at: https://www.nice.org.uk/guidance/dg1/chapter/4-the-diagnostic-tests (Accessed: 20 October 2023).

Asher, A. (2022) How Scoliosis Is Measured by the Cobb Angle. very well health, 16 April. Available at: https://www.verywellhealth.com/cobbs-angle-and-scoliosis-296583 (Accessed: 28 October 2023).
Brage, K. et al. (2023) 'Clinical application of EOS imaging system: A scoping review protocol', JBI Evidence Synthesis, 21(5), pp. 1009–1015. doi:10.11124/jbies-22-00213.

P132 ACL injury in women in sports and the role of MRI in the patient pathway

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Background Many athletes suffer from Anterior Cruciate Ligament (ACL) injuries primarily caused by impact sports and almost half of the total cases arise from football in both men and women. It has been identified that women suffer the injury more frequently but are less likely to regain their pre-injury level of performance and return to sports. MRI plays a central role throughout the patient pathway from confirming the diagnosis to post-operative evaluation of the knee. Research lacks gender-specific data which limits the evaluation and understanding of these differences. However, there are differences in the frequency of the injury between men and women, rehabilitation, and likelihood of returning to sports.

Purpose To promote gender specific research on the intricacies of ACL injury in women. To evaluate the efficiency of the patient pathway and the role of medical imaging throughout. To promote specialised healthcare for the subgroup of women athletes, which could further extend in other demographics.

Summary of Content MRI is very useful in the evaluation of ligaments and scans of possible ACL injuries segregated by gender could help provide more information on the mechanism of the injury and the workings of rehabilitation in women.

P133 Measurement of the acromiohumeral interval (AHI) on non-standardised AP radiographs by reporting radiographers; a retrospective service evaluation of intra and inter observer reliability and correspondence to the ultrasound report for identifying rotator cuff tears

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Background: An acromiohumeral interval (AHI) of ≤6mm is considered pathologic and strongly indicative for rotator cuff tears. Studies suggest the AHI may not be consistently measured in a clinical setting due to limited quality of radiographs. Abduction of the arm affects the appearance of the AHI.

Method: A retrospective review of radiographs and Ultrasound images obtained within 6 months of each other. Three reporting radiographers independently viewed 73 blinded radiographs measuring the AHI and assigning a Hamada classification. Measurements were repeated after two weeks with results compared with intra and inter reliability and correspondence to the ultrasound report.

Result: Intra and inter reliability had a true Intraclass Correlation Co-efficient of good-to-excellent. Sensitivity was 42% and specificity was 94% for detection of rotator cuff tears. When AHI was measured as ≤6mm this strongly correlated with findings of a full rotator cuff tear.

Intra-reliability - Greatest measurement error range was 5.36mm. Demonstrating measurement error of misinterpreting anatomy when os acromiale is present.

Inter-reliability - Greatest measurement error of 6.17mm and 6.83mm. Demonstrating a training error, observers measured from different anatomy when the arm is abducted.

Low to moderate sensitivity when measuring the AH interval ≤6mm when utilised with the Hamada classification for diagnosing full rotator cuff tears. High specificity indicated accuracy with minimal FP (≤8%).

Conclusion: Mentorship of radiographic and measurement technique is required to ensure accurate AHI assessment. The findings of this study require consideration of radiographic imaging and AHI measurements in the context the management of patients with shoulder pain.

References

1. Bernhardt, G. et al., 2013. Observer variability in the assessment of the acromiohumeral interval using anteroposterior shoulder radiographs. European Journal of Orthopaedic Surgery & Traumatology, Volume 23, p. 185–190.
2. Fehringer, E. et al., 2008. The radiographic acromiohumeral interval is affected by arm and radiographic beam position. Skeletal Radiology, pp. 535-9.
3. Gruber, G. et al., 2010. Measurement of the acromiohumeral interval on standardized anteroposterior radiographs: A prospective study of observer variability. Journal of Shoulder and Elbow Surgery, Volume 19, pp. 10-3.
4. Kolk, A. et al., 2020. Reliability and discriminative accuracy of 5 measures for craniocaudal humeral position: an assessment on conventional radiographs. Journal of Shoulder and Elbow Surgery International, 4(1), pp. 189-196.

P134 Simplifying landmark placement for statistical modelling of the lumbar spine. How low can we go?

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Background Statistical shape models (SSMs) can be used to efficiently describe variations in bone morphology (1-7). SSMs are obtained from a set of landmark points that vary in number across the literature (3, 4). In this study, we compare SSMs of the lumbar spine derived from three different protocols.

Method Three sets of landmarks were manually placed around the edges of the vertebral bodies including placement of 4, 8, and 28 points.

SSMs were generated separately for each protocol using principal component analysis. The shape models' outputs were compared qualitatively by 3 observers and quantitively, looking at variance and correlations.

Results The three SSMs showed similar variability in the lumbar spine shape, with the first five principal components explaining approximately 80% of the total variance in shape. The Z-scores across the first 5 modes correlated strongly ($Rr>0.9$) and significantly ($p<0.001$) suggesting a high similarity. The qualitative analysis did not identify any major differences in the main descriptors across the 3 protocols, apart from the concavity of the vertebral bodies that could not be assessed when using the 4-points methodology.

Conclusion Our results suggest that SSMs obtained from the 3 different protocols are highly correlated. The 28 landmarks per vertebral body method may provide slightly better accuracy in representing the variability of the lumbar spine shape across a population. However, this is only clinically significant for a small number of pathologies where concavity is important. Therefore, the choice of the number of landmarks to use may depend on the specific application.

References

1. Hollenbeck, J.F.M., Cain, C.M., Fattor, J.A., Rullkoetter, P.J., & Laz, P.J. (2018). Statistical shape modeling characterizes three-dimensional shape and alignment variability in the lumbar spine. Journal of Biomechanics, 69,146-155.
2. Pavlova, A.V., Saunders, F.R., Muthuri, S.G., Gregory, J.S., Barr, R.J., Martin, K.R., et al. (2017). Statistical shape modelling of hip and lumbar spine morphology and their relationship in the MRC National Survey of Health and Development. Journal of Anatomy, 231(2),248-259.
3. Deane, J.A., Pavlova, A.V., Lim, A.K.P., Gregory, J.S., Aspden, R.M., & McGregor, A.H. (2020). Is intrinsic lumbar spine shape associated with lumbar disc degeneration? An exploratory study. BMC Musculoskeletal Disorders, 21(1),433.
4. Pavlova, A.V., Meakin, J.R., Cooper, K., Barr, R.J., & Aspden, R.M. (2018). Variation in lifting kinematics related to individual intrinsic lumbar curvature: an investigation in healthy adults. BMJ Open Sport & Exercise Medicine, 4(1), e000374.
5.Pavlova, A.V., Meakin, J.R., Cooper, K., Barr, R.J., & Aspden, R.M. (2014). The lumbar spine has an intrinsic shape specific to each individual that remains a characteristic throughout flexion and extension. European Spine Journal, 23(Suppl 1), S26-S32.
6. Meakin, J.R., Gregory, J.S., Smith, F.W., Gilbert, F.J., & Aspden, R.M. (2008). Characterizing the shape of the lumbar spine using an active shape model: reliability and precision of the method. Spine (Philadelphia, Pa. 1976), 33(7), 807-813.
7. Hsieh, C.I., Zheng, K., Lin, C., Mei, L., Lu, L., Li, W., ... Kuo, C.F. (2021). Automated bone mineral density prediction and fracture risk assessment using plain radiographs via deep learning. Nature Communications, 12(1), 5472.

P138 Investigating the effect of positional variation on measurement of the Sulcus Angle on Computed Tomography

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Introduction: The Sulcus Angle (SA) is a useful measurement for quantifying trochlear dysplasia on radiography, Computed Tomography (CT), and Magnetic Resonance Imaging. Existing literature shows good interobserver variability but there is little research into the impact of patient positioning on the SA.

Aims: We tested the null hypothesis that changing the position of a knee does not induce intra-observer or inter-observer variability in the SA measurement on CT.

Methodology: A knee phantom was manipulated into different anatomical positions. Axial CT images were acquired in eight different positions (neutral, flexion, hip adduction, hip abduction, genu valgum, genu varum, external tibial rotation, and internal tibial rotation). Seven radiologists measured the SA in each position following their normal practice.

Results: The mean SA measurement in the neutral position was 128º. This was underestimated by up to 6º (4.7%) in flexion and genu varum. Conversely, it was overestimated by up to 6º in valgus, hip adduction, and hip abduction. Wide interobserver variability in the SA was seen across all positions, particularly pronounced in genu valgus where the mean measurement by Consultants was 20º greater than the mean measurement by Registrars.

Discussion: Positional change results in intra-observer and inter-observer variability in the SA measurement. The greatest impact was seen in flexion and hip adduction/abduction, most likely due to the loss of perpendicularity between the axial images of the CT and the femur in the anteroposterior and transverse planes respectively. We discuss solutions to compensate for this include standardised multiplanar reformatting and standardised image acquisition.

References

1. Diederichs, G., Issever, A. and Scheffler, S. (2010) 'MR imaging of patellar instability: Injury patterns and assessment of risk factors', RadioGraphics, 30(4), pp. 961–981. doi:10.1148/rg.304095755.
2. Rémy, F. et al. (1998) 'Inter- and intraobserver reproducibility in radiographic diagnosis and classification of femoral trochlear dysplasia', Surgical and Radiologic Anatomy, 20(4), pp. 285–289. doi:10.1007/bf01628492.
3. Skelley, N. et al. (2015) 'Inter- and Intraobserver reliability in the MRI measurement of the tibial tubercle–trochlear groove distance and Trochlea dysplasia', The American Journal of Sports Medicine, 43(4), pp. 873–878. doi:10.1177/0363546514565768.
4. Ye, Q. et al. (2019) 'Patellar instability: The reliability of Magnetic Resonance Imaging Measurement Parameters', BMC Musculoskeletal Disorders, 20(1). doi:10.1186/s12891-019-2697-7.

P140 Am I X-ray Ready? Neonatal Intensive Care Unit Quality Improvement project

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Background: Radiological examinations are a key diagnostic tool in the investigation into the acutely unwell neonate1. A high standard of image quality (IQ) is imperative to ensure an accurate diagnosis2. Neonatal weight and their high miotic activity, means they're highly sensitive to radiation making optimisation critical3.

Aim: To evaluate the x-rays taken on the Neonatal Intensive Care Unit (NICU) against an agreed standard.

Objectives:
1. Improve overall IQ.
2. Reduce the number of repeated x-rays.
3. Provide a baseline standard for IQ.

Method: A retrospective, convenience sample of 100 images, were collected over a 2-week period by an Advanced Clinical Practitioner (ACP) Radiographer, not involved in the reviewing process, with no exclusion criteria.

An interprofessional team agreed IQ standards. Which included correct collimation, (ensuring area of interest was fully included), that there were no avoidable image artefacts and the neonate wasn't rotated.

The images were then independently categorised by a Neonatologist and an ACP. Images lacking consensus were reviewed by a Radiologist.

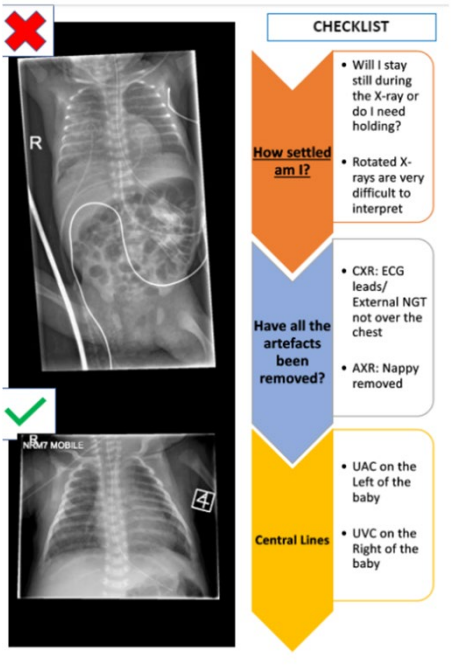
Quality improvement (QI) interventions were implemented which included staff training, reminder posters (figure 1) and ACP Radiographer attendance at the weekly NICU meetings, to provide multi-professional feedback and promote collaborative working.

A re-audit of a further 100 images was completed, 4-weeks post QI interventions.

Results: The images that met the agreed IQ standards increased from 32% at the initial audit to 73% post QI interventions.

Conclusion: The project demonstrates that through collaborative cross speciality team working, strategies can be developed to improve IQ and reduce neonatal radiation doses.

Table



Infants on the neonatal unit often have multiple images....lets try and keep radiation exposure to a minimum by checking all the above before an x-ray is taken

References
1. Gislason-Lee A.J. (2021) Patient X-ray exposure and ALARA in the neonatal intensive care unit: global patterns, Paediatric Neonatology; 62; 3-10.
2. DeMauro S,B, Mernagh JR, Epelman,M and MKirpalani H, in Kirpalani H, Epelman,M and Mernagh JR (2011) Imaging of the Newborn, 2nd Edition, Cambridge University press.
3. Hinojos-Armendáriz V.I. Mejía-Rosales S.J. Franco-Cabrera M.C. (2018) Optimisation of radiation dose and image quality in mobile neonatal chest radiography. Radiography, 24; 104-109

P141 Suitability of plain radiographs in paediatric facial trauma

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Background First line imaging of paediatric facial trauma at our institution currently involves plain radiographs. In our experience, these studies have a low diagnostic yield. This study aims to assess the suitability of the current imaging strategy and look at potential alternatives with the aim of reducing radiation dose and improving patient flow.
Methods This single centre retrospective study examined all facial bone radiographs of patients aged 0 – 16 with trauma as the main indication, performed over a period of 5 years. Data was collected from PACS and the EPR. This included the radiological diagnosis within the final report, any subsequent imaging performed and the clinical outcome for the patient.
Results In total, 241 radiographs were performed on 239 patients. A clinically significant abnormality was reported in 7 studies (3%). Out of these, 3 patients were further examined with CT and 4 patients did not have any further imaging. A single patient with no abnormality reported on plain radiograph went on to have a CT which subsequently demonstrated a fracture. All patients were managed conservatively.
Conclusion Facial bone radiographs performed for trauma in a paediatric population have a very low diagnostic yield, and in our cohort did not alter management. On this basis we are currently developing an imaging pathway in collaboration with the maxillofacial, ophthalmology and ED teams in which facial radiographs are omitted but with CT utilised judiciously, based on a robust set of clinical criteria. We anticipate this pathway will be complete by June 2024.

P142 SPA skeletal survey follow ups - how we achieved 100%

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Following multiple old audits it was found that as a trust we were not hitting national guidance for follow up imaging of skeletal survey for SPA which meant that we were not completing our SPA study. Following this multiple processes were put in place to achieve the 100% compliance required nationally. These include booking on day 10 not day 14, working with imaging secretaries, good links with safeguarding and child protection team, letters in ward notes and to the patient. Implementing all these has taken our compliance to 100%. This hits the national recommendation and means that all of our skeletal surveys are complete studies for the patient.

References
RCR (2018) The radiological investigation of suspected physical abuse in children. Available at: https://www.rcr.ac.uk/media/nznl1mv4/rcr-publications_the-radiological-investigation-of-suspected-physical-abuse-in-children-revised-first-edition_november-2018.pdf

P143 Audit of NNU Chest X-rays

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Background: Paediatric patients are more susceptible to ionizing radiation. Neonates often receive many x-rays whilst in hospital. It is therefore paramount to keep radiation dose as low as reasonable achievable and ensure the correct technique is used.
Aim: Review image quality and compliance with technique of neonatal chest x-rays.
Identify any differences in image quality between paediatric and rotational Radiographers.
Highlight areas for improvement and feedback to all Radiographers.
Method: Randomised sample study of neonatal chest x-rays performed over a 6 month period at Site A and Site B categorised into 3 areas:

- Site A 'in-hours' – performed by paediatric radiographers
- Site A 'out-of-hours' – performed by rotational radiographers
- Site B – all x-rays over 24/7 period performed by rotational radiographers

Inclusion criteria

- Chest x-rays performed on NNU

Exclusion criteria

- X-rays not performed on NNU
- NNU abdomen x-rays
- NNU chest & abdomen x-ray

Images will be reviewed and image quality marked out of 7 using the following specific criteria based on Trust protocol – NNU Chest Technique:

0- Good quality

1 point for each of the following

- Incorrect projection/protocol followed
- Poor positioning
- Incorrect area of interest
- Poor collimation
- Inadequate exposure
- Artefacts
- No/ incorrect markers & annotations

Results The audit aims to review overall image quality on neonatal chest x-rays and identify any commonly occurring themes. If there are occurring issues, feedback and recommendations will be given to all Radiographers along with any necessary teaching and re-audited.

P144 The use of the EOS Imaging System in a paediatric setting. Tips and Tricks.

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The EOS imaging system (also known as a slot-scanning device or slit-beam digital radiography system) is an x-ray technique using high resolution photon-counting detectors. By placing two pairs of tubes and detectors orthogonally, the imaging system can capture a full-length single image in a calibrated environment, allowing 3D reconstruction. EOS systems are now installed in over 40 countries, with lower doses, reduced radiation scatter and quicker imaging than conventional radiographs.

We have 6 years' experience of EOS imaging at our dedicated paediatric institution. We routinely image children with complex needs, spinal and lower limb deformities, and those who are non-ambulant. Learning outcomes from this presentation include sharing our experience of the challenges encountered, positioning ambulant and non-ambulant children safely for imaging, optimisation of exposure factors for use in children - particularly those below 10kg bodyweight, enhancement of image quality and dose optimisation. Paediatric distraction techniques will also be shared to avoid use of sedation.

Most importantly, we aim to highlight how the correct use of EOS, traditionally built for the use in adult settings, can help diagnose and manage children with complex needs.

P145 A rare case of Visceral Type Neiman Pick Disease: Diagnostic challenge in resource limited setting

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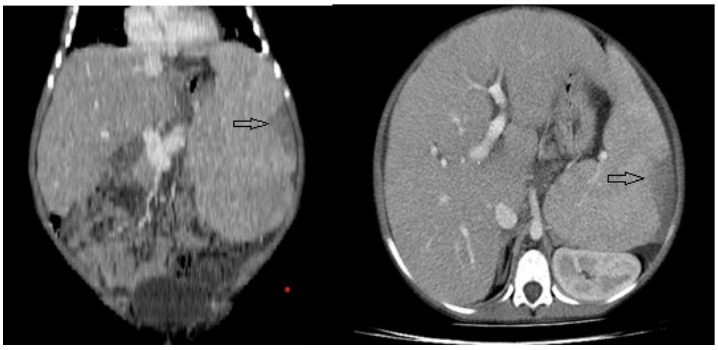
Background Niemann-Pick disease (NPD) refers to autosomal recessive disorders caused by deficient lysosomal enzyme or defective cholesterol transport. It causes variable clinical presentations with multiple system involvement.

Purpose Here we present the case of a 9-year-old male patient presented with abdominal swelling for the past 6 years. He has hepatosplenomegaly, delayed growth and pancytopenia. He has a history of treatment for tuberculosis for the same problem, based clinical presentation. Hepatosplenomegaly and focal splenic infarct were seen on the CT scan and abdominal ultrasound(Figure 1). Chest CT showed diffuse interstitial septal thickening and ground glass opacities in the lungs(Figure 2). Based on these imaging and clinical findings Gaucher's disease was put top radiological differential diagnosis. Image guided biopsy of the liver and the bone marrow showed sheets of foam cells with abundant multi vacuolated cytoplasm and central round nuclei were seen in both samples with final pathologic conclusion of lysosomal storage disease likely Niemann-Pick disease(Figure 3 and 4).

Deficient sphingomyelinase activity or presence of specific gene mutation is diagnostic of type A and B NPD, acid sphingomyelinase deficiency (ASMD)[1]. Most of the developing countries struggle to provide facilities needed for such tests to be accessible to the public. Hence the diagnosis of NPD was made based on liver and bone marrow biopsy.
Summary of content This case highlights the challenges of making a diagnosis of a rare disease and the need for a high index of suspicion when presented with signs and symptoms of common diseases in a resource limited setting.

Table



References
1. Geberhiwot, T., Wasserstein, M., Wanninayake, S., Bolton, S. C., Dardis, A., Lehman, A., Lidove, O., Dawson, C., Giugliani, R., Imrie, J., Hopkin, J., Green, J., de Vicente Corbeira, D., Madathil, S., Mengel, E., Ezgü, F., Pettazzoni, M., Sjouke, B., Hollak, C., Vanier, M. T., … Schuchman, E. (2023). Consensus clinical management guidelines for acid sphingomyelinase deficiency (Niemann-Pick disease types A, B and A/B). Orphanet journal of rare diseases, 18(1), 85. https://doi.org/10.1186/s13023-023-02686-6

P146 An audit of fracture identification when utilising the revised RCR/SCoR skeletal survey follow-up imaging guidelines for the investigation of suspected physical abuse in children

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Background: Child abuse is a significant global concern resulting in serious injury and mortality of infants (Meshaka et al., 2022). The RCR/SCoR document 'The radiological investigation of suspected physical abuse in children', revised in 2018, established guidelines for best practice in children presenting with a suspicion of non-accidental injuries (RCR, 2018), including a two part skeletal survey, consisting of multiple x-rays, to identify fractures and prevent further injury (Popelova et al., 2023). The revised guidance led to an increase in x-rays performed during the follow-up, from a single AP chest x-ray to a minimum of 7 x-rays, including a three-view chest, and bilateral limb x-rays.
Method: A retrospective audit of fracture identification of 196 skeletal surveys carried out for suspected non-accidental injury, on children under 2 years old, at a local NHS Trust, between 2018-2023, with a focus on the follow-up surveys.
Results: 28% of the cases reviewed were reported as positive for skeletal injuries at either the initial or follow-up examination. 6 of the positive cases identified fractures at both the initial and follow-up survey. 5 surveys were reported as negative on the initial skeletal survey examination but identified bony injuries during the follow-up examination.
Conclusion: Less than 3% of the skeletal surveys reviewed at the Trust resulted in the identification of bony injuries at the follow-up stage alone. Follow-up skeletal surveys continue to have diagnostic and forensic value in terms of patient management, identifying equivocal fractures, fracture dating and for legal proceedings (Lawson et al., 2022).

References
1. Lawson, M., Tully, J., Ditchfield, M., Metcalfe, P., Qi, Y., Kuganesan, A. and Badawy, M.K. (2022) 'A review of current imaging techniques used for the detection of occult bony fractures in young children suspected of sustaining non-accidental injury', Journal of Medical Imaging and Radiation Oncology, 66, 68-78.
2. Meshaka, R., Garbera, D.M., Arthurs, O.J. and Shelmerdine, S.C. (2022) 'Value of additional lateral radiographs in paediatric skeletal surveys for suspected physical abuse', Clinical Radiology, 77, e40-e47.
3. Popelova, E., Holubova, Z., Dvorakova, M. and Kyncl, M. (2023) 'Occult fractures detected on radiographs in young children with a concern for abusive head trauma', Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub, 167.
4. The Royal College of Radiologists (2018) The radiological investigation of suspected physical abuse in children. Available at: The radiological investigation of suspected physical abuse in children | The Royal College of Radiologists (rcr.ac.uk) (Accesses: 04/02/2024).

P150 Person-centred care and 'scanxiety' in oncology imaging: a scoping review

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Background: Person-centred, compassionate care is crucial within medical imaging (Bleiker et al., 2020; Hyde & Hardy, 2021). Imaging procedures can induce anxiety, with experiences remembered long afterward (Rosenkrantz & Pysarenko, 2015). This intensifies in cancer diagnoses (Seibel et al., 2023), with the term 'scanxiety' originating from patient experience of cancer surveillance imaging (Feiler, 2011). This scoping review mapped the literature regarding imaging-related anxiety and 'scanxiety', and person-centred care, to establish any knowledge gaps, as a precursor to doctoral research.
Method: Databases included were Cinahl Plus; Proquest; PubMed; Scopus; Web of Science; PsycINFO, and Cochrane. Broad search terms were utilised to maximise results, with specific inclusion and exclusion criteria. Limiters were English language articles within the last 10 years. Following a process of systematic filtering and critical appraisal, 56 studies were included.
Results: Overall themes were 'The nature of imaging procedures'; 'Quantification of anxiety'; 'Interpersonal and environmental influences'; 'Service factors and radiographer perceptions'. MRI and PET/CT provoke the highest procedural stress. Fear of results causes greater anxiety in cancer patients than other groups, creating complex emotional needs. Physiological effects of anxiety can also affect image quality. Human interaction is central to managing anxiety, but service pressures and organisational culture greatly influence person-centred care. Most existing research relates to general radiology settings.
Conclusion: There is limited evidence relating to person-centred diagnostic imaging within a specialist oncology setting. Research into the differences in care provision between specialist oncology and general radiography departments, would support understanding the influence of person-centred care in oncology imaging.

References
1. Bleiker, J., Knapp, K., Morgan-Trimmer, S., and Hopkins, S. (2020) 'What medical imaging professionals talk about when they talk about compassion.' Journal of medical imaging and radiation sciences, 51(4), S44-S52. https://doi.org/10.1016/j.jmir.2020.08.009
2. Feiler, B. (2011) 'Scanxiety. Fear of a postcancer ritual.' Time, 177(24), 56.
3. Hyde, E. and Hardy, M. (2021) 'Patient centred care in diagnostic radiography (Part 2): A qualitative study of the perceptions of service users and service deliverers.' Radiography, 27(2), 322-331. https://doi.org/10.1016/j.radi.2020.09.008
4. Rosenkrantz, A. B., and Pysarenko, K. (2015) 'The service encounter in radiology: acing the 'moments of truth' to achieve patient-centered care.' Academic Radiology, 22(2), 259-264. https://doi.org/10.1016/j.acra.2014.09.009
5. Seibel, K., Sauer, B., Wagner, B., and Becker, G. (2023) '"Scanxiety" and a sense of control: the perspective of lung cancer survivors and their caregivers on follow-up-a qualitative study.' Bmc Psychology, 11(1), Article 119. https://doi.org/10.1186/s40359-023-01151-0

P151 Mummy's Star; Cancer and Pregnancy Awareness Campaign

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Introduction: Mummy's Star was founded in 2013, 6 months after the death of Mair Wallroth, initially to provide emotional/peer support to other families in the same situation where the mother/birthing parent receives a cancer diagnosis of any kind during any stage of pregnancy or within 12 months of giving birth (1).
At Mummy's Star, 48% of the families supported were diagnosed post-natally. Of these, over 50% complained of having presented multiple times in pregnancy with symptoms that were not investigated in a timely manner and dismissed as pregnancy related body changes (1,2,3),
Method: In 2023 the charity ran a Cancer and Pregnancy Awareness Week Campaign; Highlight that cancer is not precluded during pregnancy/postpartum. Increase awareness that common cancer red flag symptoms can be mistaken for pregnancy body changes and investigations should be thorough to seek an answer. Broaden knowledge around pathways to cancer diagnosis amongst all Health Care Professional's (HCP's).
Results: The social media campaign received a large number of impressions across social media channels (LinkedIn - 2.5k, Instagram - 13.5k,Facebook - 15k, Twitter - 15k).
The comments in social media further highlighted the need for education "I was 36, so I wasn't too young for young. I also know a number of ladies misdiagnosed in pregnancy who were told it was mastitis."
Conclusion: Cancer in, or around Pregnancy remains an area which many HCPs have never experienced, often ill equipped.
All HCPs, who come into contact with someone while pregnant, must see themselves as that potential gateway to diagnosis.

References
1. Mummy' Star. Accessed 24.10.23. https://www.mummysstar.org/
2. Schwab R, Anic K, Hasenburg A. Cancer and Pregnancy: A Comprehensive Review. Cancers (Basel). 2021 Jun 18;13(12):3048. doi: 10.3390/cancers13123048. PMID: 34207252; PMCID: PMC8234287.
3. Maggen C, van Gerwen M, Van Calsteren K, Vandenbroucke T, Amant F. Management of cancer during pregnancy and current evidence of obstetric, neonatal and pediatric outcome: a review article. Int J Gynecol Cancer. 2019 Jan 18:ijgc-2018-000061. doi: 10.1136/ijgc-2018-000061. Epub ahead of print. PMID: 30659032.

P152 Learning from children and relatives feedback forms

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Background: Patient feedback is an essential component of monitoring service quality; however this is often lacking for both children and their relatives accessing MRI. Therefore the main goal of this quality improvement project was to learn more about how our paediatric MRI procedures are experienced, based on the perceptions of both children and their relatives.

Methodology: Children's feedback forms were developed and distributed between April 2019 and February 2020, while joint feedback forms for both children and their relatives were distributed between April 2023 and December 2023. These forms contained questions aimed at gathering insights on their scan experience from children aged five to 16. Relatives also evaluated the procedure and their child's ability to undergo the scan, including some cases where children under five were sedated.

Results: Feedback from 86 children was obtained as well as from 52 accompanying relatives. 67.4% of children expressed satisfaction with their MRI scan and provided positive feedback. Conversely, 9.3% reported dissatisfaction, with areas of concern being the noise, needing to keep still for so long, and anxiety related to the procedure. Over half of the relatives found the MRI procedure straightforward, with only a few commenting on its length, despite most children undergoing the scan without issues.

Conclusion: Capturing targeted feedback for this specific user group helps obtained their perspectives, contributing to an overall positive MRI experience. Effective communication with children and their relatives on what to expect prior to the MRI procedure was raised as crucial for its success.

P153 The role of a learning disability and autism champion in Radiotherapy – A Service Evaluation

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Background: A learning disability, difficulty and or autism (LDDA) affects around 1.5 million people in the UK (1). Failings have been identified within healthcare settings through confidential inquiry (2) and later the Learning Disability Mortality Review (LeDeR) Programme was introduced (3). Although generalised to all healthcare, failings included a lack of communication amongst services, a lack of understanding of individual healthcare needs, negative attitudes from staff members and failures to make reasonable adjustments. There are key lessons that can be learned and transferrable skills across all healthcare services including radiotherapy. The researcher was unable to identify any literature and evidence of radiotherapy attendance in LDDA patients; nevertheless, radiotherapy is given to approximately 27% of all patients diagnosed with cancer each year (4). To gain further information the author used focus groups to gain further insight to the subject area.

Purpose: This poster will demonstrate 1) the key findings of the service evaluation 2) practice recommendations 3) discussion around successful implementation of staff champions in the NHS.

Summary of Contents: Key topics will be discussed within the poster including limited amount of literature around LDDA and Radiotherapy, barriers to effective treatment, the role of a staff champion, reasonable adjustments and general awareness. The author will also include practice recommendations for enhanced patient care and overall service improvement. The aim from sharing this information is to open discussion amongst other centres to develop best practice, breakdown a subject area which has previously had little research and support students and our future workforce.

References
1. NHS England. (2019). People with a learning disability, autism or both. Retrieved from https://www.england.nhs.uk/wp-content/uploads/2020/01/Learning-disability-and-autism.pdf
2. Heslop P, Blair PS, Fleming P, Hoghton M, Marriott A, Russ L. The Confidential Inquiry into premature deaths of people with intellectual disabilities in the UK: a population-based study. Lancet. 2014 Mar 8;383(9920):889-95. doi: 10.1016/S0140-6736(13)62026-7. Epub 2013 Dec 11. PMID: 24332307.
3. NHS England (2019). Learning disability mortality review (LeDeR) programme: Action from learning. Retrieved form https://www.england.nhs.uk/wp-content/uploads/2019/05/action-from-learning.pdf
4. Cancer Research UK. (2017). Cancer treatment statistics. Retrieved from https://www.cancerresearchuk.org/health-professional/cancer-statistics/treatment#heading-Three

P154 A Sense of Space: Enhancing the MRI Experience Through Use of Spatial Audio

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Background: MRI continues to be an imaging technique that causes anxiety and concern for many patients. For some this may result in the experience of claustrophobia due to the physical nature of the equipment used. Whilst the numbers of incomplete scans due to this have lowered, even those suffering from claustrophobia and who manage to complete a scan can do so under severe distress. One longstanding approach that helps many patients is listening to music as a distraction technique during a scan. However, despite improvements in scanner technology itself, the means of providing music in this way has not changed, and so there may be opportunity to utilise emerging approaches in audio technology to further enhance the positive effect beyond simple distraction alone.
Purpose: The purpose of this review is to introduce spatial audio and its potential application in the MRI settings to create a sense of space within the confined environment of a scanner. By delivering music through spatial audio during scans, there is potential for patients to experience reduced feelings of claustrophobia and anxiety.
Summary of Content: In addition to explaining spatial audio, this review presents feedback from three patients who experienced MRI scans with spatial audio. Initial responses indicate that spatial audio music can indeed enhance the perception of space within the MRI scanner, potentially mitigating or lowering feelings of claustrophobia. Therefore, this review sets the stage for further exploration of spatial audio technology within the setting of MRI.

P155 Inclusive Care for Autistic Individuals in X-ray Services: Where is the Voice of Autistic People?

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Background: Research has established that autistic people face barriers to accessing healthcare services, resulting in poorer health outcomes and significantly lower life expectancy than non-autistic people (Hirvikoski et al., 2016; Weir et al., 2022). As X-ray remains the most commonly used radiographic modality, it is vital to ensure autistic people are appropriately cared for in these services. This review aimed to build an understanding of the experiences of autistic patients when using X-ray services. A second aim was to use the resultant articles to synthesise recommendations for radiographers.
Method: A literature search on a combination of terms relating to radiography (diagnostic imaging, radiologic technologists, etc), patient care (person-centred care, etc) and autism (autistic disorder, etc) was conducted using MEDLINE, CINAHL and Google Scholar. The search was limited to peer-reviewed articles in the English language. Articles were then screened for the criteria of primary research conducted with autistic individuals or their caregivers.
Results: The 10 publications found spanned modalities: MRI (4), paediatrics (3), dental (1) and multi-modality (2). Only 3 studies conducted primary research with patients, parents or carers. Furthermore, only 1 of these articles involved X-ray practice, which was paediatric. Therefore, there is currently no research giving voice to autistic adults. Due to this, it was decided a recommendations synthesis would not be possible.
Conclusion: This review highlights the pressing need for research initiatives that develop an understanding of the challenges autistic patients (especially adults) face and effective strategies to support and care for them in X-ray services.

Table

AUTHOR	TITLE	YEAR	JOURNAL	MODALITY	PRIMARY RESEARCH	...WITH AUTISTIC PEOPLE
Abdelrahman, Alhebsi, Almulla, et al.	Exploration of radiographers' knowledge, attitudes, and practices in delivering healthcare to children with autism spectrum disorder	2024	Radiography	Paediatric X-ray	✓	✗
Harvey-Lloyd, Clements, Sims, et al	Exploring the experiences of parents of Autistic children when attending the diagnostic imaging department for an X-ray examination	2024	Radiography	Paediatric X-ray	✓	✓
Stogiannos, Harvey-Lloyd, Brammer, Cleaver, McNulty, et al	Toward Autism-Friendly Magnetic Resonance Imaging: Exploring Autistic Individuals' Experiences of Magnetic Resonance Imaging Scans in the United Kingdom, a Cross-Sectional Survey	2023	Autism in Adulthood	MRI	✓	✓
Stogiannos, Pavlopoulou, Papadopoulos, et al.	Strategies to improve the magnetic resonance imaging experience for autistic individuals: a cross-sectional study exploring parents and carers' experiences	2023	BMC Health Services Research	MRI	✓	✓
Marterosyan and Gooch	Neurodivergence and radiology: How medical professionals can optimise the standard of care provided to autistic paediatric patients	2023	Radiography	Paediatric X-ray	✗	✗
Stogiannos, Carlier, Harvey-Lloyd, et al	A systematic review of person-centred adjustments to facilitate magnetic resonance imaging for autistic patients without the use of sedation or anaesthesia	2022	Autism	MRI	✗	✗
Stogiannos, Harvey-Lloyd, Nugent, et al	Autism-friendly MRI: Improving radiography practice in the UK, a survey of radiographer practitioners	2022	Radiography	MRI	✓	✗
Carlier, Vorlet, Sá dos Reis, et al	Strategies, challenges and enabling factors when imaging autistic individuals in Swiss medical imaging departments	2022	Journal of Medical Imaging and Radiation Sciences	Multi-modality	✓	✗
Dailey and Brooks	Autism Spectrum Disorder: Techniques for dental radiographic examinations	2019	American Dental Hygienists' Association	Dental	✗	✗
Hayes	Autism Spectrum Disorder: Patient Care Strategies for Medical Imaging	2018	Radiologic Technology	Multi-modality	✗	✗

References
1. Hirvikoski, T., Mittendorfer-Rutz, E., Boman, M., Larsson, H., Lichtenstein, P., Bölte, S., 2016. Premature mortality in autism spectrum disorder. The British Journal of Psychiatry 208, 232–238. https://doi.org/10.1192/bjp.bp.114.160192
2. Weir, E., Allison, C., Baron-Cohen, S., 2022. Autistic adults have poorer quality healthcare and worse health based on self-report data. Molecular Autism 13, 23. https://doi.org/10.1186/s13229-022-00501-w

P156 The barriers affecting the transgender community's experience of breast screening/imaging; a review of the literature

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Background: The transgender community does not conform to traditional gender roles in which healthcare services are often founded. Consequently, transgender service users are subjected to barriers in healthcare including stigma and discrimination. The NHS Breast Screening programme (NHSBSP) is considered a gendered service and so, the barriers impacting the transgender community remain an ongoing challenge for all. The incidence of those living in a transgender community is increasing therefore, the need to provide a supportive and fully inclusive NHSBSP is needed within today's diverse society.
Purpose of poster: This poster will present the results of a literature search conducted in 2024. It will highlight the experiences of the transgender community when attending and receiving care under the NHSBSP. It will identify the challenges and specific needs of both radiographers and the transgender community, suggest ways to modernise and implement an inclusive NHSBSP that puts all people first. The poster will generate discussion and thought amongst UKIO attendees, increasing awareness and education of the challenges for radiographers and this community.
Summary of Content: The poster will present the results of a literature search surrounding transgender service users and the NHSBSP. It will provide an overview of the current NHSBSP policies for screening the transgender community. Outline the main barriers that transgender patients and radiographers may experience in breast screening services and identify potential interventions to overcome these and modernise the NHSBSP. It will highlight the importance of putting people first.

P157 Using flags in electronic health records to estimate the success of Magnetic Resonance Imaging in patients with dementia and improve person-centred care in radiology

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Introduction The Radiology Information System (RIS) is a core part of imaging pathways for diagnostic studies in hospitals. It is an effective method to highlight concerns over claustrophobia, and a way to flag up dementia. Utilising RIS flags in order to smooth the pathway of patients, optimise person-centred care and prevent delays is vital.
Methods A retrospective analysis of 431 inpatients from one National Health Service (NHS) Trust RIS, 201 with a dementia flag and 230 without, having a Magnetic Resonance Imaging (MRI) scan, were examined for four outcomes.
Results Patients with a dementia flag were significantly more likely to move during an examination and therefore risk an undiagnostic MRI scan.
Conclusion There is a need to examine methods to improving the experience for patients with dementia undergoing an MRI scan. For patients with claustrophobia supportive instruction and sedation are available, for paediatric patients a play therapist, there are little or no methods in place for patients with dementia and consideration should be given to what could put in place. Where clinically indicated, MRI scans are vital, patients should have the best experience and person-centred care that considers their cognitive capacity.

References
Carrarini, C., Russo, M., Dono, F., Barbone, F., Rispoli, M. et al. (2021) Agitation and dementia: prevention and treatment startegies in acute and chronic conditions.. Front Neurol 12, Available at: doi: 10.3389/fneur.2021.644317 [Accessed 05 01 2024]
Challen, R., Low, F-L. and McEntee, M. (2018) Dementia patient care in the diagnostic medical imaging department.. Radiography, 24(S1), 33-42. Available at: DOI: 10.1016/j.radi.2018.05.012 [Access 01 12 2024]
Chang, A., Singh, N., Boyd, L. and Lawson C. (2016) Strategies to improve radiographic practices for patients with Alzheimer's Disease: A systematic review. J Med Imaging Radiat Sci, 47(4)362-366. Available at: DOI: 10.1016/j.jmir.2016.09.005 [Accessed 01 01 2024]
Dixon, S. (2023) Diagnostic Imaging Dataset Annual Statistical Release 2022/23. [Online]
Available at: https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2023/11/Annual-Statistical-Release-2022-23-PDF-1.3MB-1.pdf [Accessed 01 01 2024].
Mohammed, S.and Rosenkrantz, A. (2020) Providing compassionate care for the elderly patients in radiology. Curr Probl Diagn Radiol, 49(2), 67-69. Available at: DOI: 10.1067/j.cpradiol.2019.02.001 [Accessed 01 01 2024]
Moreno-Morales, C., Calero, R., Moreno-Morales, P. and Pintado, C. (2020) Music therapy in the treatment of dementia: A systematic review and meta-analysis. Front Med 7. Available at: DOI: 10.3389/fmed.2020.00160 [Accessed 01 01 2024]
NICE (2020) NICEimpact dementia. [Online]

Available at: https://www.nice.org.uk/about/what-we-do/into-practice/measuring-the-use-of-nice-guidance/impact-of-our-guidance/niceimpact-dementia/ch3-hospital-care [Accessed 01 11 2023].
Rockall, A., Justich, C., Helbich, T. and Vilgrain, V. (2022) Patient communication in radiology: Moving up the agenda. Europ J Radiol 155.
RCR, 2020. Clinical-radiology-uk-workforce-census-2020-report. [Online]
Available at: https://www.rcr.ac.uk/system/files/publication/field_publication_files/clinical-radiology-uk-workforce-census-2020-report.pdf [Accessed 01 12 2023].

P158 Portable chest x-rays for hospital patients: justification, image quality and implications

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Aim: Currently, there are no guidelines to justify the Portable Chest x-ray (PCXR) requests in the UK. Therefore, it was aimed to examine the applicability of guidelines published by Kobes et al., (2020) with addition of the National Early Warning Score (NEWS) for justifying PCXR requests of in-patients and to determine the image quality and scatter radiation dose of the PCXRs for different patient positionings.
Methods: Guidelines and NEWS ≥ 5 were used as a trial for 3 months (July to September 2023) in an acute care hospital in the Southeast of England. Scatter radiation dose of each patient was calculated. ANOVA test was used to find the relation between patient positionings (AP erect, AP semi-erect and supine) and scatter radiation dose. The DAP of the patients was collected from CRIS and images were assessed using PACS. All the portables were done on Samsung GM85 and Agfa DX-D 100 DR machines.
Results: The guidelines were successful in justifying the portable CXR requests for 96 patients out of a total N = 102. The 24 of PCXR images (23%) were rotated and of sub-optimal exposure. AP semi-erect position (mean scatter radiation = 1.21) was found to be related with high scatter radiation dose Q= 3.86 (p=.02032) in relation to AP erect position.
Conclusion: The published guidelines and NEWS ≥ 5 can be used to justify PCXR requests to avoid unnecessary dose to other patients and staff. The radiographers should always try to do a PCXR in AP erect which gives less scatter dose.

Table

T1 = AP semi-erect, T2 = Supine, T3 = AP erect

	T1	T2	T3	Total
N	33	5	64	102
∑X	39.87	3.93	42.98	86.78
Mean	1.2082	0.786	0.6716	0.851
∑X2	63.467	73.6437	36.3412	103.45
Std.Dev	0.6914	0.3724	0.3445	0.5416

Pairwise Comparisons HSD.05 = 0.4677
HSD.01 = 0.5861 Q.05 = 3.3651 Q.01 = 4.2172

T1:T2	M1 = 1.21 M2 = 0.79	0.42	Q = 3.04 (p = .08553)
T1:T3	**M1= 1.21** **M3= 0.67**	**0.54**	**Q= 3.86 (p=.02032)**
T2:T3	M2 = 0.79 M3 = 0.67	0.11	Q = 0.82 (p = .83005)

Above table shows relationship between patient positioning and scatter radiation. AP erect position (mean scatter radiation = 0.67); Q=3.86 (p=.02032) with using AP semi-erect positioning being connected to higher scatter radiation with Standard deviation of 0.69.

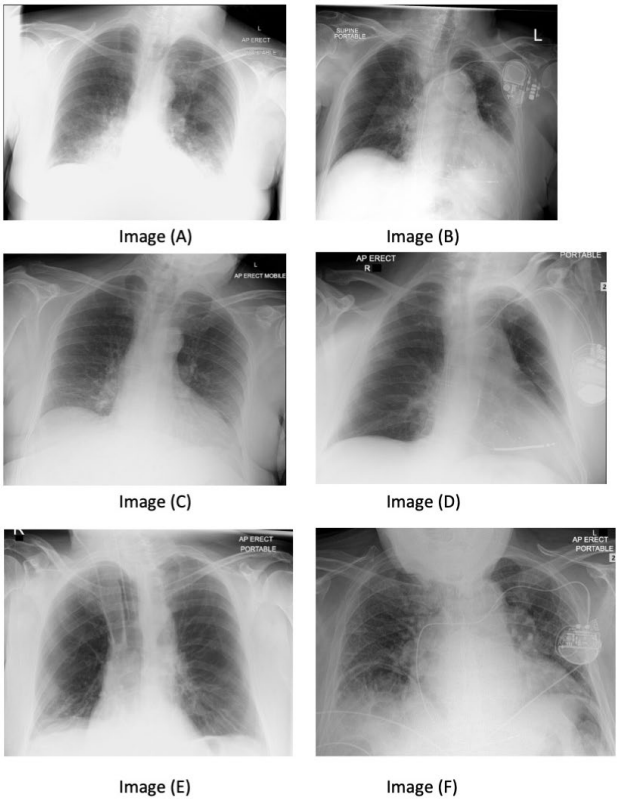

Image (A) Image (B)

Image (C) Image (D)

Image (E) Image (F)

The above are some examples of rotated (B, C, D and E) and sub-optimal exposure images (A and F)

References
Kobes, K., Budau-Bymoen, A. and Yong-Hing, C. (2020) 'Multidisciplinary Development of Mobile Radiography Guidelines Reduced the Number of Inappropriate Mobile Exams in Patients Receiving Chest Radiographs in British Columbia', Canadian association of Radiologist, 71(1), pp. 110-116.

P159 Can psychological distress be reduced, and bladder filling compliance improved for patients receiving radiotherapy for prostate cancer, by attending a pre-treatment, group education session? A retrospective service evaluation

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Background Bladder and bowel preparation is utilised to improve the accuracy of prostate radiotherapy. Inconsistencies with daily bladder volume's (BV's), results in delays to appointments.
Cancer diagnosis and treatment causes mental, physical and emotional stress, leading to psychological distress. Distress thermometers, are recognised and utilised in oncology as screening tools.
Pre-treatment, group education sessions are offered to prostate radiotherapy patients. The two aims of this project will be to evaluate whether attendance at education sessions improves bladder filling compliance and reduces distress for these patients.
Method 24 patients attended education sessions and have since completed a course of radiotherapy. 24 patients who did not attend sessions were included as a control group. Data was analysed from patients "daily log", and statistical analysis undertaken to determine compliance in achieving required BV's.
Distress thermometers are completed by attendees before and after education sessions to compare levels of distress. This data was also analysed.
Results There was a significant difference in the number of attempts to achieve acceptable BV between the two groups with a p value of <0.001. Patients who attended sessions had better compliance with bladder filling than those who did not. Wilcoxon signed rank tests were also carried out to compare distress thermometer scores. This provided a significant result, showing that distress, anxiety and the need for help all reduced after education sessions.
Conclusion Data analysis for this project provided significant results and proved distress was reduced and bladder compliance improved for those who attended education sessions.

P160 Addressing the communication needs of cancer patients for Magnetic Resonance Imaging (MRI) investigations–A phenomenological study on the experiences of MRI radiographers

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Introduction: A higher demand in MRI services could increase the pressure on MRI departments to increase scanning efficiency. This presents the risk of downplaying person-centred care especially for cancer patients with increased communication needs that result from anxiety associated with the nature of their disease. This study explored the experiences of MRI radiographers in addressing the communication needs of cancer patients attending for MRI examinations.

Methods: The study adopted a descriptive phenomenological methodology. Single contact interviews were conducted on eight MRI specialist radiographers, and these were recorded and transcribed using Microsoft Teams conferencing platform. Thematic analysis of the transcribed data was done through an inductive approach, breaking down the data into meaningful codes and thereafter, into themes and sub-themes.

Results: Common themes from the study included: identified communication needs, approach to communication needs, support for radiographers and factors affecting communication. Experiences of MRI radiographers indicated increased communication needs in anxious cancer patients and approaches adopted in addressing these were mainly through listening and use of empathetic gestures. Some radiographers admitted to using "blocking" strategies to avoid being drawn into emotionally exhausting conversations. Intrinsic factors such as radiographers' personality and experience; and extrinsic factors such as time constraints, demanding workload, inadequate staffing, and skill mix were noted to influence MRI radiographers in addressing these communication needs.

Conclusion: Cancer patients can present with communication needs due to anxieties related to their disease. For the radiographer to deal with these, adequate support is needed, and necessary steps taken to address influencing factors.

Table

Themes	Sub-themes
Identified communication needs	• Stage in the pathway • Duty of care
Approach to communication needs	• Listening • Avoiding the conversation • Small gestures
Support for radiographers	• Training required • Staff wellbeing
Factors affecting communication	• Intrinsic • Extrinsic

Summary of themes and Sub-themes

P161 Developing a decision aid for patients with stage I non-small cell lung cancer eligible for both surgery and radiotherapy: A critical literature review.

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Aim: Eligible stage I non small cell lung cancer (NSCLC) patients are faced with active treatment options of stereotactic ablative radiotherapy (SABR) or surgery. In the researcher's clinical setting, no support tool is used to aid in shared decision making. This review aimed to explore the existing literature and guidance supporting the use and development of patient decision aids (PDAs), with a focus on stage I non-small cell lung cancer, where evidence was available for this specific patient group.

Method: Using PRISMA guidelines, identical searches of MEDLINE, CINAHL and Scopus databases were performed, using Boolean operators and search filters. Publications were screened and filtered in accordance with defined inclusion and exclusion criteria. The search yielded 12 eligible studies which were analysed and appraised. Narrative synthesis was used to inform key findings and conclusions.
Results: From the included papers, six key themes were identified related to the use and development of a high-quality decision aid: development and validity, person centred approach, format and conveying risk, information needs, patient outcomes and barriers to decision aids.
Conclusions: Evidence supports the use of a decision aid within a clinical setting when patients are faced with treatment equilibrium. While many PDAs exist, these tools should be evaluated for validity and usability to ensure a high quality tool is developed. This should facilitate patient choice and a clear understanding of the trade-offs of harm against benefit and personal values of stage I NCSCL patients eligible for both SABR and surgical treatment.

References
1. National Institute for Health and Care Excellence [NICE]. (2023). Lung cancer: diagnosis and management. (NICE guidance 122)

P162 A review to evaluate the impact of providing radiotherapy open events on pre-treatment related anxiety

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Introduction Radiotherapy Open Mornings (ROM) were held over a period of a 10 months. To assess whether attendance at these events influenced potential treatment related anxiety for patients, relatives, and carers. Feedback was received and analysed.
Method Five open mornings were held between February and October 2023. Structured, informative tours were provided, including all aspects of the radiotherapy treatment pathway. Participants completed a feedback questionnaire following the event.
Results 80 responses were received. A mixture of qualitative and quantitative data was received via open and closed questions. Participants reported a clear reduction in self-reported anxiety post-attendance at the tour. 98% attendees said they would recommend the open morning and 97% felt more prepared for radiotherapy. The overall rating score is five stars. Common descriptive 'free text' responses highlighted the predominantly informative aspects and staff characteristics, suggesting this is important to patients, relatives, and carers. Three common themes were identified: Technological Empowerment, Emotional Impacts and Sampling care.
Conclusion The results indicate that attendance at radiotherapy open events reduced treatment anxiety. This event provides opportunities to address fears not routinely covered in typical First Day Consultations, such as radiation protection and technical aspects such as imaging, focusing not solely on the procedure of radiotherapy but including holistic information in a relaxed environment.
Implications for Practice A future recommendation from this study is that radiotherapy departments should provide access to structured, informative tours of the department prior to commencement of treatment.

Table

Box 1: Structure of Radiotherapy Tour consisting of seven 'station'

Structure of Radiotherapy Tour
Introduction to patients and confidentiality statement.
Reception and Macmillan
- Location of Reception and Macmillan
- Booking in, car parking, transport

Waiting area
- Self-Scan
- Waiting time
- Seating
- Coffee Shop
- Toilets
- Water fountains

CT Scanner – Breast Board set on CT couch
- Location
- Immobilisation Device
- Purpose of CT scan
- Time of appointment
- Permanent Marks
- Clothing
- Pre-treatment preparation
- Steps following CT scan, treatment planning, data entry etc..

Linear Accelerator
- Patient position
- Machine demonstration
- CCTV
- Accuracy of the machine
- Nothing to see or feel.
- Common acute side effects

Control Area
- Anonymous CBCT image match demonstration
- Highlight CCTV screens.

Engineer Demonstration

Table 1:

Question	Average Response (out of 5)			
How anxious did you feel about your radiotherapy treatment prior to your visit today?	2.6			
How anxious did you feel about your radiotherapy treatment after your visit today?	1.4			
How would you rate your overall visit today?	4.9			
Do you feel more prepared for your radiotherapy treatment after attending today?		97%	0%	2%
Would you recommend the open day to other radiotherapy patients?		99%	0%	1%

Summary of quantitative question responses

Figure 1. Pie Chart to demonstrate change in anxiety levels following attendance at a ROM

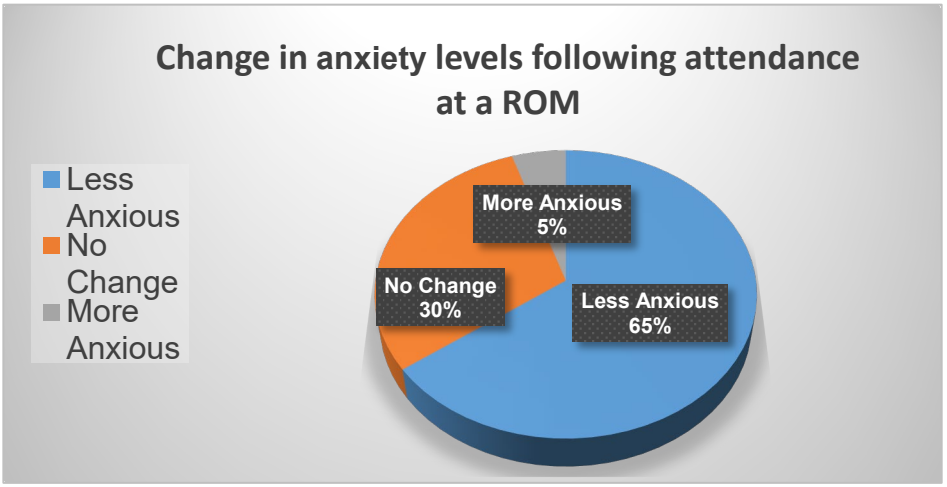

Figure 2 – Word Cloud to illustrate above question.

P163 Student radiographers' role ideal and role reality

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Background A Diagnostic Radiographer's role is recognised as dual in nature; to produce diagnostic images while meeting patients' holistic needs (Møller, 2016). Notwithstanding evidence suggesting both are of equal importance, the technical demands often take precedence in practical circumstances (Munn et al, 2104). The preference for a task-centred approach is attributed to role perception (role ideal) and the realities of the role experienced (role reality), and this begins prior to qualification (Hale and White, 2021). This study explores the role ideal and the role reality of student Radiographers.

Method With ethical approval, N=6 semi-structured focus groups, with a mean number of 4 participants, were undertaken, two for each of the three-year groups from a single Diagnostic Radiography BSc (Hons) programme. Reflexive thematic analysis facilitated the identification of 6 themes.

Results Evidence suggests the role ideal is formed early on in training; each academic year perceived the role to be a balance between technical and psychosocial duties. However, the role reality differed, as participants perceived their technical role to be more important. Analysis revealed six lower-order themes relating to matters that had impacted upon role ideal: departmental pressures and responsibilities, workplace dynamics, efficiency, student radiographers' and patients' characteristics. These informed three global themes describing the broader and intersecting domains of such impact: structural, cultural, and personal.

Conclusion This study suggests the role reality devalues the psychosocial role, with specific barriers being identified. The barriers highlighted need to be addressed through research, education, leadership, and recruitment in order achieve the role ideal.

References

1. Hale, T and Wright, C. (2021) Unprofessional practice and student professionalism dilemmas: What can Radiography learn from the other health professions? Radiography Vol 27 pp1211-1218
2. Møller, L (2016) Radiography with the patient in the centre Journal of Radiology nursing Vol 35 pp 306-314
3. Munn, Z. Jordan, Z. Pearson, A. Murphy, F. Pilkington, D. (2014) 'On their side': Focus group findings regarding the role of MRI radiographers and patient care. Radiography Vol 20 pp246-250

P164 Imaging safely in chiropractic clinics

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Ensuring the safe delivery of patient care, when conducting manual therapies of the spine or other regions, may require suitable diagnostic imaging prior to commencement of treatment or following a failure to improve. Imaging may be required to both diagnose pathologies and also plan suitable treatment techniques.

Understanding this type of patient care and the considerations involved in the wider framework of radiation protection and IRMER compliance is explored.

References

HMSO (2018) Ionising Radiations (Medical Exposure) Regulations 2017
HPA (2011) HPA-CRCE-028 Radiation Risks from Medical X-ray Examinations as a Function of the Age and Sex of the Patient
HPA (2012) HPA-CRCE-034 Radiographic, fluoroscopic and dental x-rays: patient dose audits
General Chiropractic Council (GCC) (2019) and The Code: Standards of conduct, performance and ethics for chiropractors
General Chiropractic Council (GCC) (2022) Diagnostic Imaging Guidance
The Royal College of Radiologists (2017) Making the best use of clinical radiology
John Lawler (2023) Prevention of future deaths report
Oakley PA, Harrison DE (2019) Selective usage of medical practice data, misrepresentations, and omission of conflicting data to support the 'red flag only' agenda for chiropractic radiography guidelines

Pryor M, McCoy M (2006) Radiographic findings that may alter treatment identified on radiographs of patient receiving chiropractic care in a teaching clinic
Saleem S, Aslam HM, Rehmani MA, Raees A, Alvi AA, Ashraf J (2013) Lumbar disc degenerative disease: disc degeneration symptoms and magnetic resonance image findings.
Smith JS, Shaffrey CI, Bess S, et al (2017) Recent and emerging advances in spinal deformity.
Spriggs M, Foulkes D (2022) How Frequently Do Lateral Cervical Spine Radiographs Alter Treatment Options In Chiropractic Practice?
Arnone PA, Krauss SJ, Farmen D, Lightstone DF, Jaeger J, Theodossis C (2023) Examining Clinical Opinion and Experience Regarding Utilization of Plain Radiography of the Spine
Beck RW, Holt KR, Fox MA, et al (2004) Radiographic anomalies that may alter chiropractic intervention strategies found in a New Zealand population.
And many, many others ...

P165 Investigating incidents of accidental and unintended exposures (IAUE) to ionising radiation by healthcare providers in the British Isles

Mr James Melia-Jones[1], Rhiannon Winwood[1], Ryan Jones[1], Michael Richardson[1], Jalendra Singh Dussaye[1], Jonny Mitchell[1], Jason Fazakerley[1]
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Background The England health authority publish annual IRMER reports (CQC, 2022) using only incidents of significance (SAUE). This study considers IAUE by healthcare providers in several UK nations and a crown-dependency, it will validate CQC reports and expand further. As most IAUE are non-reportable to the appropriate authority, analysis is limited to SAUE. This study considers all IAUE from reports made to an appointed MPE, including incidents non-reportable to authorities.

Method A database was created from 2888 reports of IAUE, provided by over 100 healthcare providers to their appointed MPE, during years 2020 – 2024. Each IAUE was coded using a UK coding taxonomy (RCR, 2019), and the data for each code field was analysed quantitatively.

Results Analysis of IAUE shows 4% were reportable and 96% were medical. The common modalities were Radiology, CT and Mammography (65%, 21%, 4%). Most (65%) were linked to the Operator and Radiology SpR. Overall, 74% were caused by individuals, 38% due to slips and lapses, compared to 9% due to equipment or IT network failure.

Conclusion This study overcomes limitations of CQC publications by analysing all IAUE not just SAUE incidents, with analysis of over 2700 incidents not reported to CQC. This study across 4 years, takes a longer-term view for trend analysis. It is hoped that the database can identify common themes within IAUE, and give better trend analysis for healthcare providers. This database can assist employers with their legal duty, under IRMER regulation 8, to establish a system of analysis (gov.uk, 2017).

References

1. CQC, 2022. IR(ME)R annual report. [Online] Available at: https://www.cqc.org.uk/publications/irmer-annual-report
2. IRMER, 2017. The Ionising Radiation (Medical Exposure) Regulations 2017. [Online] Available at: https://www.legislation.gov.uk/uksi/2017/1322/made [Accessed 9 February 2024].
3. RCR, 2019. Royal Colelge of Radiologists. [Online] Available at: https://www.rcr.ac.uk/media/zdhdlbpt/rc5491-1.pdf

P166 The introduction and compliance with Inclusive Pregnancy Disclaimer (IPD) in Plain Film Imaging

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Background "There are approximately 5–600,000 people who identify as transgender or non-binary in the UK" (Society of Radiographers, 2021). As Radiography professionals we have a duty to comply with the Ionising Radiation (Medical Exposure) Regulations 2017 to gather pregnancy information in order to Justify exposures (IRMER, 2017). For effective healthcare and to reduce any harm we should ensure patients feel included and valued by practicing in an inclusive way (SOR, 2021). In 2020 the Royal College of Radiologists explained the need to consider the possibility of transgender (trans) male or non-binary individuals being pregnant (Society of Radiographers, 2021).

Purpose The overall learning outcomes of this poster were to investigate the compliance of radiographers in a plain film department for successfully implementing inclusive pregnancy. To ensure that radiographer professionals are practicing in an inclusive way. To ensure that IPD is being completed correctly.

Summary of Content Content of this poster will demonstrate an audit that was carried out from December 2022 to December 2023 to investigate the compliance of IPD performance. This included seeing if radiographers were successfully completing IPD for ALL patients aged 12-55 years undergoing an exposure below the Diaphragm to Knees. There will be an example of an IPD form along with graphs to highlight the improvements of radiographer compliance since implementation of IPD. It will also show methods that were put in place to encourage the compliance of IPD.

References

1. SoR. (2021). Inclusive pregnancy status guidelines for ionising radiation: Diagnostic and therapeutic exposures. [online] Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/inclusive-pregnancy-status-guidelines-for-ionising.
2. The Ionising Radiation (Medical Exposure) Regulations (2017). The Ionising Radiation (Medical Exposure) Regulations 2017. [online] Available at: https://www.legislation.gov.uk/uksi/2017/1322/regulation/11/made.

P167 Quality assurance of home reporting workstations for breast screening

Tony Hartley[1], Oliver Morrish[1]
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Background: Clinical evaluation of radiological images in the home has increased in the NHS. Guidance from the National Breast Screening Programme (NHSBSP) [1] requires quality control checks to be carried out as per NHSBSP standards [2]. Performing physics tests in the home has practical challenges. A feasibility study was carried out to explore these challenges.

Method: Five workstations were tested in five image reporter's homes. The monitors tested were the same model with the same test images available. Their performance and calibration was evaluated following the NHSBSP protocol [2], including measurement of ambient light levels. In addition, system configuration and test logs were checked to see if the installations had been set up consistently.

Results: There were logistical challenges in making arrangements to test workstations in individual's homes. Compliance with NHSBSP technical requirements was achievable on all workstations, however all required remedial action in their setup to achieve this compliance. Variation in ambient light conditions compared to those expected by the workstation caused one display to be incorrectly calibrated. Manufacturer's on-board tests were found not to have been performed within the previous two years. One workstation required cleaning.

Conclusion: If reporting workstations are set up correctly and suitable quality assurance is carried out, reporting of screening mammograms can technically be carried out in the home. This study has highlighted the need for correct setup and a suitable QA programme to ensure compliance with NHSBSP standards. Practical challenges in delivery of physics testing in the home require consideration.

References

1. Public Health England. (2020) Guidance on reporting breast imaging from home. https://www.gov.uk/government/publications/breast-screening-reporting-breast-images-from-home/guidance-on-reporting-breast-images-from-home (Accessed: 9 February 2024)
2. Kulama, E et al. (2009) Commissioning and Routine Testing of Full Field Digital Mammography Systems Version 3.

P168 Atomic habits- a systematic approach to ionising radiation equipment quality assurance

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Background Quality Assurance (QA) of radiological equipment is governed by the Ionising Radiation (Medical Exposure) Regulations 2017[1].

The Employer is responsible for ensuring the equipment QA procedures are robustly complied with by suitably trained staff and associated governance arrangements are rigorously implemented ensuring the safety and wellbeing of patients. A regulatory inspection of the Imaging service identified gaps in compliance with the equipment QA procedures.

Method A governance framework and reporting structure for equipment QA from department to the Trust Assurance framework was formalised. Roles & responsibilities were clarified, published, and electronic confirmation of reading obtained from relevant staff.

A record of QA trained radiographers across all 28 departments and 6 sites was published centrally, and additional staff trained where required.

Monthly support meetings for departmental QA co-ordinators promoted collaboration and skill-sharing. Digital records with automated graphical trend analysis were developed through peer support and made centrally available.

A QA compliance tracker monitoring QA testing across all departments was added as an agenda item at weekly radiation governance meetings. Biannual QA status reports were shared via the Trust Assurance framework.

Results QA performance soared to 100% within 1 year.

Regular meetings and QA status reports enabled better communication and identification of barriers to completion of QA. Solutions included cross-site training and pooling of resources enabling establishment of digital QA records and trend analysis across the service.

Subsequent external inspections commended the service's QA procedures.

Conclusion A systematic approach to equipment QA facilitated astronomic improvements which have now become habitual practice.

References

1. The Ionising Radiation (Medical Exposure) Regulations 2017. Statutory Instrument 1322. Crown Publishing. https://www.legislation.gov.uk/uksi/2017/1322/contents/made

P169 Imaging of high activity radioactive fragments with mobile digital radiography equipment

Eleanor May[1], Mr Thomas Melley[1]
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Background: Defence Medical Services requested we consider the use of a crude radiological dispersal device in a mass casualty scenario, and the effect of a radioactive fragment embedded in a patient on a diagnostic medical radiograph, as well as the impact on the patient and surgical team. Initial work showed an unpredicted white 'bloom' artefact;
Method: Measurements were taken with DART equipment; a 600 GBq sealed iridium-192 source at varying heights to simulate different activities; and a caesium iodide flat panel detector. The width of the resulting artefact was plotted against source height, to determine a threshold dose rate at which the bloom was indistinguishable. Minimum detectable activities (MDAs) were calculated for several fragment depths.
Results: MDAs, without the scatter reduction grid, for radioactive fragments 0.5cm and 24.5cm from the detector are 0.79 ± 0.06 GBq and 1900 ± 140 GBq, respectively. Other effects are discussed such as shadows and an unaffected central region at high dose rates. Anatomically representative images were also taken with a test phantom for future clinical training use
Conclusion: Even for fragment activities below the MDA, surgical teams are likely to approach occupational dose limits within an hour, and in some cases, minutes. Images could appear normal, with the injury site still receiving several hundred Grays, severely impacting on patient outcomes and clinical decision making. This work has contributed to surgical and CBRN medical training, Emergency Preparedness procedures, and will support further work to develop clinical guidelines, refine dose thresholds, and investigate other imaging modalities.

P170 A radiography apprentice assistant practitioner's reflection on an MR safety incident involving an intrauterine device

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Background: A female of childbearing-age with an intrauterine device (IUD) underwent a lumbar spine MR scan at 3T. Susceptible implants can concentrate the radiofrequency heating effect in the surrounding body tissues above the whole body average SAR (Henry, 2001). Scans commenced without prior knowledge of the presence of an implant which subsequently becomes apparent should be discontinued (Ciet and Litmanovich, 2015). Some implants may go undeclared due to embarrassment (James, Karacozoff and Shellock, 2013) or falsely assumed safety (Yong et al, 2019). Most IUDs are MR safe at 1.5T (Shellock, 2023).
Purpose: There is no data published regarding the heating effect of radiofrequency locally on female reproductive organs, therefore caution should be exercised in the presence of IUDs and further research would be beneficial. Safety screening should be carried out repeatedly (MHRA, 2021) in various formats by different healthcare staff at each relevant stage of the diagnostic pathway with specific prompts given to minimise the potential for implants and other hazards to be overlooked. Insufficient data is available to confirm safety of IUDs at 3T, therefore MR scanning should be carried out at a maximum strength of 1.5T. Close supervision from experienced, qualified radiographers is of significant value to the practice and development of radiography apprentice assistant practitioners (Stewart-Lord, McLaren & Ballinger, 2009).
Summary of Content: A coloured circle split into segments containing headings. Corresponding detail surrounding in text relating to the central headings. Arrows and subheadings to indicate Gibbs' (1988) reflective cycle was used.

References

Ciet, P. & Litmanovich, D. (2015) MR Safety Issues Particular to Women. Magnetic Resonance Imaging Clinics of North America 23(1): p.59-67.
Gibbs, G. (1988) Learning by Doing. A Guide to Teaching and Learning Methods. London: Further Education Unit.
Henry, S (2001) Safety of metallic implants in magnetic resonance imaging. Journal of Magnetic Resonance Imaging. 14(4): p.472-477.
James, C., Karacozoff, A., Shellock, F., (2013) Undisclosed and undetected foreign bodies during MRI screening resulting in a potentially serious outcome. Magnetic Resonance Imaging, 31(4): p.630-633.
Medicines and Healthcare products Regulatory Agency (2021) Safety Guidelines for Magnetic Resonance Imaging Equipment in Clinical Use (version 4.3). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/958486/MRI_guidance_2021-4-03c.pdf (accessed 23 October 2023)
Shellock R & D Servies, Inc (2023) The List. Available at: www.mrisafety.com/TMDL_list.php (accessed 27 November 2023).
Stewart-Lord, A., McLaren, S., & Ballinger, C. (2011) Assistant Practitioners (APs) Perceptions Of Their Developing Role And Practice In Radiography: Results From A National Survey. Radiography 17(3): p.193-200.
Yong, A., Kanodia, A., Wendy, M., Pillai, S., Duncan, G., Serman, A., Main, G., Crowe, E., Lorimer, K., Heenan, L., Johnston, M., Villena, M., Macfarlane, J., Sudarshan, T. & Ramkumar, P. (2019) Developing patient-centred MRI safety culture: a quality improvement report. British Journal of Radiology (Open) - https://doi.org/10.1259/bjro.20180011

P171 Theatre imaging: The use of personal protective equipment amongst orthopaedic surgeons and the risk of thyroid carcinoma

Mrs Sarah Palmer[1], Miss Eleanor Monaghan
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Radiographers play a significant role during theatre cases, working with orthopaedic surgeons to guide during procedures. The radiographer is responsible for radiation safety and protection under IR(ME)R 17 and IRR 17. The International Commission on Radiological Protection (ICRP) set a 20 mSv annual limit for radiation workers, with the correct use of personal protective equipment (PPE), surgeons will not exceed 2mSv. However, orthopaedic surgeons are in close proximity of the image intensifier multiple times a week. It is not mandatory for surgeons to wear thyroid shields and there is a strong link between the thyroid gland being exposed to radiation and thyroid carcinoma, most occurring 5-10 years after exposure.

Orthopaedic surgeons are unable to follow the main principles of time, distance and shielding in theatre. Raza et al., (2023) found surgeons knowledge and training surrounding radiation safety and equipment emitting ionising radiation in theatre is limited. They do not consistently wear additional PPE such as thyroid shields. Gowda et al., (2018) found that radiation dose during dynamic hip screw surgery was almost 10 times higher than the dose required to induce thyroid carcinoma, making it critical for surgeons to know associated risks of not wearing thyroid shields. A large percentage of surgeons felt adequate PPE was not provided by their trust, putting them at additional, unnecessary exposure to radiation.

Although in the early stages, Chou et al., (2022) found a relationship between female orthopaedic surgeons and breast cancer, leading to suggestions of axillary supplements and long-sleeved lead aprons.

References
1. Albi, E., Cataldi, S., Lazzarini, A., Codini, M., Beccari, T., Ambesi-Impiombato, F.S. and Curcio, F., (2017) Radiation and thyroid cancer. International journal of molecular sciences, 18(5), p.911
2. British Orthopaedic Association (2023) Occupational radiation exposure risk in orthopaedics. Available at: https://www.boa.ac.uk/standards-guidance/radiation-exposure-in-theatre/t-and-o/occupational-radiation-exposure-risk.html#:~:text=Evidence%20from%20other%20healthcare%20workers,prevalence%20%5B8%2D10%5D. [Accessed: 2/11/2023].
3. Chou, L.B., Johnson, B., Shapiro, L.M., Pun, S., Cannada, L.K., Chen, A.F., Valone, L.C., Van Nortwick, S.S., Ladd, A.L. and Finlay, A.K., 2022. Increased prevalence of breast and all-cause cancer in female orthopaedic surgeons. JAAOS Global Research & Reviews, 6(5).
4. Gowda, S.R., Mitchell, C.J., Abouel-Enin, S. and Lewis, C., 2019. Radiation risk amongst orthopaedic surgeons–do we know the risk?. Journal of perioperative practice, 29(5), pp.115-121.
5. Health and Safety Executive (2017) Work with Ionising Radiation. Available at: https://www.hse.gov.uk/pubns/priced/l121.pdf [Accessed 1/11/2023].
6. ICRP (2007) 2007 Recommendations of the International Commission on Radiological Protection (Users Edition). Available at: https://www.icrp.org/publication.asp?id=ICRP%20Publication%20103%20(Users%20Edition) [Accessed: 5/11/2023].
7. International Atomic Energy Agency (2023) Radiation Protection of Medical Staff in Orthopedic Surgery. Available at: https://www.iaea.org/resources/rpop/health-professionals/other-specialities-and-imaging-modalities/orthopedic-surgery/staff [Accessed: 8/11/2023].
8. Legislation Gov UK (2017) The Ionising Radiation (Medical Exposure) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1322/regulation/11/made [Accessed: 1/11/2023].
9. Raza, M., Geleit, R., Houston, J., Williams, R. and Trompeter, A., 2021. Radiation in orthopaedics (RIO) study: a national survey of UK orthopaedic surgeons. The British Journal of Radiology, 94(1125), p.20210736.

P173 Bariatric imaging and radiation protection: the challenge of optimisation in digital radiography

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Background: Obese patients are more likely to suffer from musculoskeletal problems, cardiovascular and respiratory disease, and certain cancers, and are more likely to require diagnostic imaging.[1] The size, shape and limited mobility of these patients can constitute a major challenge to standard radiographic practice; excess adipose tissue degrades the quality of the image, and radiographers are required to implement substantial adaptive technique.

Purpose: This poster highlights that although higher doses of ionising radiation are necessary to penetrate excess adipose tissue, and physical limitations often demand multiple or repeat images, there is a significant gap in guidance on optimisation and dose reduction in bariatric imaging.[2] Furthermore, although an evidence-based approach is recommended when undertaking bariatric imaging, long-standing techniques have been found to have a limited evidence base.[3] A closer examination of bariatric imaging is therefore warranted from a radiation protection perspective.

Summary of Content: To help optimise radiographic practice, there has been a call for improved monitoring and audit, and separate obese DRLs[4], with significant differences found between NDRLs and doses received in bariatric abdomen and lumbar imaging in particular.[5] Limited research has also started to emerge in support of optimisation, including practical solutions via tissue displacement methods.[6] A stronger evidence base, and improved training and educational

material, have also been highlighted recently as a means to provide necessary support for radiographers when presented with the challenges of bariatric imaging.[7]

References
1. Society of Radiographers. (2013) Bariatric Patients: Guidance and Advice for the Radiography Workforce.
2. O'Brien, H. (2020) Adult obesity: could we all care more? Imaging and Therapy Practice (Nov), 5-8.
3. Le, N.T., Robinson, J., Lewis, S.J. (2015) Obese patients and radiography literature: what do we know about a big issue? J Med Radiat Sci. 62(2), 32-41.
4. Metaxas, V., Messaris, G.A., Lekatou, A.N., Petsas, T.G., Panayiotakis, G.S. (2019) Radiation Protection Dosimetry 184(2), 155–167.
5. Alqahtani, S.J. and Knapp, K.M. (2019) Increased radiation dose and projected radiation related lifetime cancer risk in patients with obesity due to projection radiography, J. Radiol. Prot. 39(38), 38-53.
6. Trozic, S., England, A., Mekis, N. (2023) Erect pelvic radiography with fat tissue displacement: Impact on radiation dose and image quality, Radiography 29(3), 546-541.
7. Seo, G., Robinson, J., Punch, A., Jimenez, Y., Lewis, S. (2022) Understanding radiographic decision-making when imaging obese patients: A Think-Aloud study. J Med Radiat Sci. 69(1), 13-23.

P174 Radiographers' knowledge regarding the use of patient lead shielding in Greece and Cyprus

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Background: The application of patient lead shielding for radiation protection in radiography clinical practice has been challenged. Recent guidelines from societies and related research studies have proposed ceasing application of lead contact shielding in certain circumstances. This study explored current knowledge and practice among radiographers in Greece and Cyprus.
Method: An online survey was built in Qualtrics and distributed through the researchers' social media. Participant recruitment was further achieved through the membership of the Greek Society of Radiographers (STAAE). All quantitative data were analysed using descriptive statistics, whilst important relationships between variables were explored with inferential statistics. Data derived from the open-ended questions were analysed using a conceptual content analysis approach.
Results: A total of 216 valid responses were received. Most radiographers were unaware of the guidance issued by the British Institute of Radiology (69%) or the American Association of Physicists in Medicine (67%). Similarly, most medical imaging departments did not provide related training (74%). Radiographers sought clear guidance on patient lead shielding practices (85%). They indicated that lead shielding should continue to be used outside the pelvic area when imaging pregnant patients (82%), and they were reluctant to adopt practice changes. Lead shielding was most commonly applied on paediatric patients.
Conclusion: This study noted significant gaps in knowledge and training regarding patient lead shielding in clinical practice in Greece and Cyprus. A great level of uncertainty was noted in conjunction with reluctance to change shielding practices. Medical imaging departments should adequately train radiographers and invest in modern equipment.

P175 Protecting Our People with Instadose®VUE Dosimetry

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Background: Historically within medical imaging, personal dosimetry has relied upon thermoluminscent detectors that require regular changeover for whole body dose monitoring. Leveraging cutting-edge technology and Direct Ion Storage (DIS) innovation, Instadose®VUE dosimeters are emerging as revolutionary. They offer precise and high-sensitivity measurements for radiation exposure; and the Instadose® platform redefines how occupationally exposed staff are monitored and safeguarded from radiation risks. Alliance Medical have a large cohort of staff that require monitoring including classified workers and issue 750+ Instadose® DIS Badges.
Purpose: Alliance Medical wanted a new, seamless, convenient, and effective means of radiation monitoring, to simplify dosimetry for all staff while ensuring compliance and timely accuracy in dose readings.
Summary of Content: We highlight the benefits and the challenges of this new solution within the following areas:
- Users can access instantaneous dose results and their dose history, accessible on a mobile phone using Bluetooth technology
- The Organisation can access on-going dose monitoring of radiation exposure over time, providing occupational dose summaries which includes live alert notifications
- Account / user management possible, including management of badge allocation and dose history management with different levels of access depending on role.

- Review of financial benefit, partly due to minimal risk of lost monitoring devices or late return charges.
In conclusion, Instadose®VUE dosimetry system not only meets but exceeds expectations of UK HAS radiation monitoring programme. With emphasis on convenience, compliance, and effectiveness, it aligns with Alliance Medical's ethos of "Protecting Our People."

P176 Bridging care and compassion: Developing Malaysian-focused psychosocial and cancer support care [PSOSC] module for radiation therapists

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The integration of psychosocial and supportive care is crucial for addressing the holistic needs of cancer patients undergoing radiotherapy in Malaysia. However, the absence of standardized training modules for radiation therapists poses a significant challenge in meeting these patients' requirements. This study pioneers the development of an evidence-based, comprehensive module for psychosocial and supportive cancer care tailored for Malaysian radiation therapists. Objectives include determining the module's content validity through expert evaluations and feedback, and assessing its reliability to meet patients' needs accurately.
The study comprises two phases. Phase I involves a systematic literature review of reputable sources, examining existing modules, guidelines, and recommendations relevant to psychosocial and supportive care in cancer treatment. Phase II is an ongoing endeavor involving engagement of a multidisciplinary panel of experts, comprising radiation therapists, oncologists, psychologists, and social workers. Their valuable input is solicited to refine the module's content and structure, ensuring its relevance and effectiveness.
The resultant psychosocial and supportive care module for radiation therapists is deemed valid and reliable for use within the Malaysian healthcare setting. Its development involved systematic implementation and collaboration with experts, addressing gaps in training and enhancing cancer care delivery.
In summary, this research fills crucial gaps in radiation therapist training, improving cancer care and enhancing patients' quality of life throughout treatment in Malaysia in alignment with the recommendations put forth by Nor A. et al. Through thorough literature review and expert collaboration, the module aims to effectively address the psychosocial and supportive needs of cancer patients undergoing radiotherapy.

References
1. A Nor, A Rozilawati, N Farah, K Khadijah, J Farihan, S Ahmad, (2022) The Knowledge and Perception of Radiation Therapists on Psychosocial and Supportive Care for Cancer Patients in Hospital Canselor Tuanku Mukhriz and National Cancer Institution Malaysia. Journal of Medical Imaging and Radiation Sciences,
Volume 53, Issue 4, Supplement 1,
2. Chan, C. M. H., Ng, C. G., Taib, N. A., Wee, L. H., Krupat, E. & Meyer, F. (2018) Course and Predictors of Post-Traumatic Stress Disorder in a Cohort of Psychologically Distressed Patients with Cancer: A 4-Year Follow-up Study. Cancer 124(2): 406-416.
3. Guo, Z., Tang, H. Y., Li, H., Tan, S. K., Feng, K. H., Huang, Y. C., Bu, Q. & Jiang, W. (2013) The Benefits of Psychosocial Interventions for Cancer Patients Undergoing Radiotherapy. Health Qual Life Outcomes 11(121).
4. Halkett, G., Connor, M.O., Jefford, M., Aranda, S., Merchant, S., Spry, N. & Kane, R. (2018) RT RT Prepare: A radiation therapist-delivered intervention reduces psychological distress in women with breast cancer referred for radiotherapy.
5. Ownby K. K. (2019). Use of the Distress Thermometer in Clinical Practice. Journal of the advanced practitioner in Oncology, 10(2), 175–179.
6 . Riedl, D., Gastl, R., Gamper, E., Arnold, C. R., Dejaco, D., Schoellmann, F. & Rumpold, G. 2018. Cancer Patients' Wish for Psychological Support During Outpatient Radiation Therapy: Findings from a Psychooncological Monitoring Program in Clinical Routine. Strahlenther Onkol 194(7): 655-663.

P177 A study on dose monitoring in carbon therapy using secondary particle

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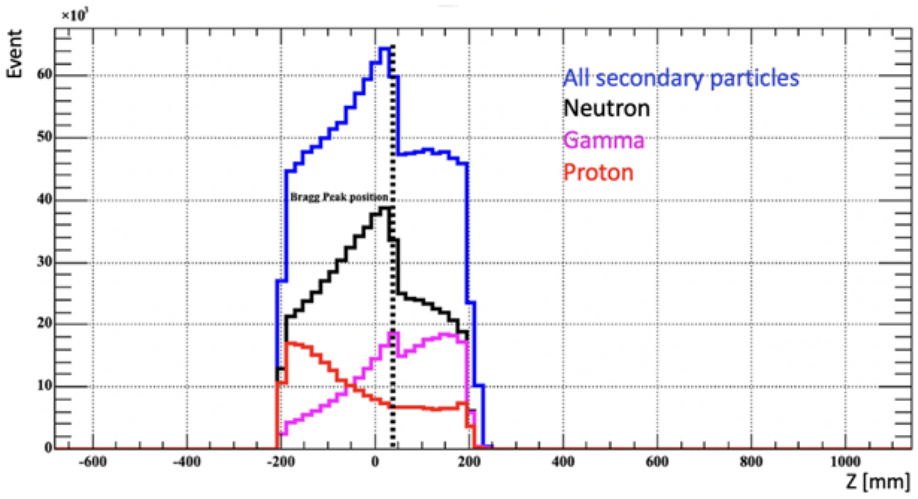
Obtaining precise radiotherapy through carbon therapy hinges on accurately monitoring the distribution of radiation doses within the patient's body, vital for targeted tumor treatment while safeguarding healthy tissues. Our investigation utilized Monte Carlo (MC) simulations to track secondary proton doses using a 4.48 GeV carbon ion beam. Initially, Geant4 simulations identified secondary particles (protons, gamma rays, alpha particles, neutrons, and tritons) produced during carbon ion interactions with water. We examined the relationship between the carbon ion beam and these particles. Interaction Vertex Imaging (IVI) proved useful in monitoring dose distribution, particularly with protons, by revealing secondary particle locations and quantities. IVI utilizes charged particles from ion fragmentation to reconstruct particle trajectories, providing range information from their origin, known as the vertex. Our simulations indicated a strong correlation between some secondary particles and carbon ion range. We observed an increase in generated

protons as the target depth increased due to the expanding inelastic cross-section with decreasing energy. However, our results revealed significant discrepancies between the reconstructed path of the proton and primary beam, especially noticeable at lower energy levels, due to scattering effects induced by multiple Coulomb interactions. Additionally, we investigated photons with different kinetic energy produced from various processes and found that photons with an energy of 4.4 MeV exhibited the strongest spatial correlation with the deposited dose. By analyzing trajectories as straight lines and employing Si detector positions, we devised a beam back-projection algorithm to reconstruct vertices, demonstrating a correlation between reconstructed and actual positions.

Table



P178 Impact on setup for patients treated with an “empty” bladder vs partially full bladder for prostate radiotherapy

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Aim: To investigate the consistency in bladder volume and quality of setup when comparing the use of an “empty” bladder vs partially full bladder for patients having radiotherapy.

Method: A sample of 16 patients were given 500ml of water and asked to wait 25 minutes during their planning CT appointment. This was done to try and achieve a partially full bladder which is not standard of care (SOC) at this institution.

The control group which was “empty” bladder patients were scanned as per SOC.

Retrospective review of the bladder volume on CBCT’s was performed and the bladder was re-outlined for each fractions to assess consistency in bladder volume between the two populations.

The setup shifts were recorded based on soft tissue match from bone to assess the quality of setup.

Results: 300 CBCT’s were reviewed for the “empty” bladder patients and 300 for the partial bladder population.

The mean bladder volume ranged during treatment when compared to day 0 (figure 1).

The volume for the empty bladder population showed a standard deviation range of 10.0-58.0ml (figure 2) for most patients except one who was excluded due to them having a significantly fuller bladder from day 1.

A one-sided ANOVA comparted bladder displacement. For partially full bladder patients the most significant relationship observed was for the lng p=.075. For the empty bladder population the most significant relationship observed was vrt p=0.044.

Conclusion: More inconsistencies were seen with partial bladder filling thus suggesting empty bladder is more consistent during treatment delivery.

Table

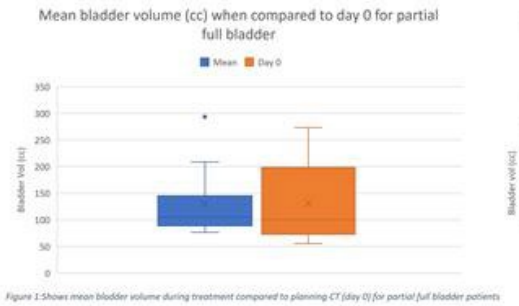

Figure 1:Shows mean bladder volume during treatment compared to planning CT (day 0) for partial full bladder patients

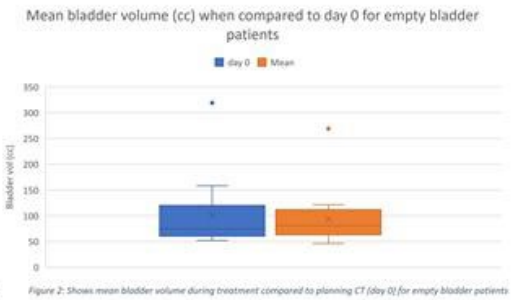

Figure 2: Shows mean bladder volume during treatment compared to planning CT (day 0) for empty bladder patients

P179 The effects of chest reference marks on the positional reproducibility of 5-point thermoplastic masks and vac-bag immobilisation for head and neck radiotherapy.

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Background: Positional variations within immobilisation of head and neck radiotherapy in a 5-point thermoplastic and T-shaped vac-bag, especially changes in neck flexion and shoulder displacement, can affect patient contour requiring avoidable medical physics intervention. This service evaluation aimed to assess if the addition of chest reference marks to set-up of head and neck radiotherapy patients could improve positional reproducibility throughout the radiotherapy treatment course.

Method: 18 patients underwent head and neck radiotherapy planning and treatment with the addition of 3 temporary PointGuards® chest reference marks to standard of practice immobilisation, aligning to a documented longitudinal alignment level for treatment set-up. The correctional shifts, in 6 degrees of freedom, applied from on-treatment CBCT images were recorded and changes in neck flexion and shoulder displacement were assessed between on-treatment CBCT and pre-treatment CT images. This data was compared with equivalent data from an equal patient sample from the current standard of practice.

Results: Overall, there was no significance between the correctional shifts for the intervention group or the standard of practice patient sample. There was no statistical significance in the overall differences in neck flexion or shoulder displacement between the two patient groups.

Conclusion: The addition of chest reference marks to the current gold standard of head and neck radiotherapy immobilisation has no additional benefit to positional reproducibility. The lack of improvement may well be associated with the highly effective positional corrective capabilities of on-treatment CBCT images with 6DoF correctional shifts. The use PointGuards® proved ineffective for long fractioned treatment regimes.

P180 Radiation-Induced Dermatitis Among Breast Cancer Patients Undergoing Adjuvant Radiotherapy in Ghana

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Adjuvant radiotherapy after mastectomy or breast conserving surgery (BCS) is the standard of care for majority of patients with breast cancer. This is however associated with mucosal and epidermal toxicity of organs at risk (OARs). There is paucity of literature on the incidence and severity of radiation-induced acute toxicities experienced by patients with breast cancer in Ghana. To assess the occurrence and severity of four main acute radiation-induced toxicities among female breast cancer patients treated with external beam radiotherapy at a major cancer treatment centre in Ghana. The Common Terminology Criteria for Adverse Events (CTCAE) grading scale (version 4.0) was used to grade the severity of these toxicities. Descriptive and inferential statistics using an independent two-sampled t-test (two-tailed), one-way analysis of variance (ANOVA), Pearson's Chi-square and Fisher's exact tests were performed.

Dermatitis, fatigue, pharyngitis, and breast (chest) pain were the radiation toxicities found among the breast cancer patients undergoing treatment. The mean predominant radiation doses associated with the onset of dermatitis, fatigue, pharyngitis, and chest pain in the breast cancer patients were 22.32Gy, 22.48Gy, 13.59Gy, and 19.27Gy respectively for treatment with a statistically significant (p =0.0173). Radiation dermatitis was the most dominant acute radiation toxicity

recorded, and its incidence and severity. The range of Fisher's p-values (0.689 – 0.999) between the acute radiation toxicities revealed no statistical significance.
Radiation dermatitis was the dominant acute toxicity, both in incidence and severity for patients treated. There was no statistical significance in the incidence and severity of acute radiation side effects.

Table

Variable	Cumulative dose (20 - 30 Gy)			RTOG Grading		
	Before [N(%)]	During RT [N(%)]	Total [N(%)]	Grade 1 [N(%)]	Grade 2 [N(%)]	Total [N(%)]
BMI classification (kg/cm^2)						
Normal	3 (7.9)	1 (2.6)	4 (10.5)	3 (7.9)	1 (2.6)	4 (10.5)
Overweight	9 (23.7)	6 (15.8)	15 (39.5)	13 (34.2)	2 (5.2)	15 (39.5)
Obese	9 (23.7)	10 (26.3)	19 (50.0)	17 (44.7	2 (5.2)	19 (50.0)
Types of surgery						
Mastectomy	12 (31.6	12 (31.6)	24 (63.2)	21(55.3)	3 (7.9)	24 (63.2)
BCS	9 (23.7)	5 (13.1)	14 (36.8)	12 (31.6)	2 (5.3)	14 (36.8)
Total	21(55.3)	17 (44.7)	38 (100.0)	33 (86	5 (13.2)	38 (100.0)
EBRT teletherapy machines						
Co-60	13 (34.3)	8 (21.0)	21 (55.3)	18 (47.4)	3 (7.9)	21 (55.3)
6 MV Linac	8 (21.0)	9 (23.7)	17 (44.7)	15 (39.5)	2 (5.3	17 (44.7)
Total	21 (55.3)	17 (44.7)	38 (100.0)	33 (86.8)	5 (13.2)	38 (100.0)
Fractionation regimen						
Conventional	13 (34.3)	8 (21.0)	21 (55.3)	19 (50.0)	3 (7.9)	22 (57.9)
Hypofractionation	8 (21.0)	9 (23.7)	17 (44.7)	14 (36.8)	2 (5.3)	16 (42.1)
Total	21 (55.3)	17 (44.7)	38 (100.0)	33(86.8)	5 (13.2)	38 (100.0)

References
1. Donkor, A., Lathlean, J., Wiafe, S., Vanderpuye, V., Fenlon, D., Yarney, J., & Kyei, K. A. (2015). Factors contributing to late presentation of breast cancer in Africa: A systematic literature review. Archives of Medicine, 8(2.2), 1–10.
2. Edge, S. B., & Compton, C. C. (2010). he American Joint Committee on Cancer: The 7th Edition of the AJCC Cancer Staging Manual and the Future of TNM. Annals of Surgical Oncology, 17(6), 1471–1474.
3. Siegel, R. L., Miller, K. D., & Jemal, A. (2020). Cancer statistics, 2020. CA: A Cancer Journal for Clinicians, 70(1), 7–30. https://doi.org/10.3322/caac.21590
4. WHO International Agency for Research on Cancer. (2020). GLOBOCAN Cancer Fact Sheets. Globocan 2020, 419, 1–2.

P182 Therapeutic radiographer experiences of research capacity, capability and culture in NHS Wales: An evaluation study.

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Background Radiotherapy services develop rapidly. An environment that values research informed practice should be a fundamental principle to the therapeutic radiography profession to ensure evidence-based practice from research findings and improve healthcare delivery. However, literature suggests there is a lack of research capacity, capability and culture within the therapeutic radiography workforce.
This study evaluated therapeutic radiographer experiences of research capacity, capability and culture in NHS Wales.
Methods: A mixed methods phenomenological approach was utilised following local approvals. An electronic survey collected quantitative data from therapeutic radiographers across NHS Wales to capture a broad range of research experiences. Responses were utilised to develop open-ended questions to elicit more detailed research experiences from six participants at a single centre focus group in South East Wales. Focus group transcripts were analysed using thematic analysis and key categories identified.
Results: Thematic analysis identified six key categories: research informed practice, research capacity, research capability, research culture, the impact of research red tape and supportive needs.
Conclusion: This research benchmarks therapeutic radiographer experiences of research capacity, capability and culture in NHS Wales. It identifies areas for improvement in South East Wales through short and long term initiatives, justifying the requirement for further research in this subject area in a bid to improve service provision across Wales. The findings

need to be addressed by Welsh Radiotherapy centres to ensure better outcomes for patients, improved NHS services and staff recruitment and retention.

P183 Rad Chat; Using social media as a tool to support people living with and beyond cancer.

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Introduction: Social media is an effective tool to help to raise awareness about cancer prevention, aid early diagnosis (1) and provide support for people living with and beyond cancer (2). Privacy is often a concern when utilising social media and misinformation (HCP's) (3,4).
Methodology: In this qualitative report, 2 registered HCP's hosting Rad Chat outlined their experiences of utilising Instagram in September.
Results: Of the 41 direct messages received on Instagram, 8 were from HCP's, 3 were from people supporting someone going through cancer, 4 were from cancer charities and 26 were from people living with or beyond cancer.
Of the 26 messages, 54% of them were enquiring about potential late effects, 23% were asking about how to prepare and 23% were sharing gratitude.
Results: Thematic analysis of comments highlighted themes; Radiotherapy side effects and the impact on quality of life. Consenting to treatment and the reality of side effects people hadn't felt prepared for.
Comments are visible on social media, so people who had poor patient experiences could cause distress. Patients may share misinformation. Rad Chat operates within scope of practice and often refer.
Conclusion: Social media allows people to interact with HCP's in a way that empowers them with accurate knowledge and information. What we perceive to be important to people going through cancer treatment is not always the case. Utilising social media appropriately, we may be able to engage with the patient voice and determine how we can better prepare and support people.

References
1. Kaushal A, Kassianos AP, Sheringham J, et alUse of social media for cancer prevention and early diagnosis: scoping review protocol. BMJ Open 2020;10:e033592. doi: 10.1136/bmjopen-2019-033592
2. Lazard AJ, Collins MKR, Hedrick A, Varma T, Love B, Valle CG, Brooks E, Benedict C. Using Social Media for Peer-to-Peer Cancer Support: Interviews With Young Adults With Cancer. JMIR Cancer. 2021 Sep 2;7(3):e28234. doi: 10.2196/28234. PMID: 34473063; PMCID: PMC8446843.
3. Bender JL, Hueniken K, Eng L, Brown MC, Kassirian S, Geist I, Balaratnam K, Liang M, Paulo CB, Geist A, Rao P, Magony A, Smith EC, Xu W, Liu G, Gupta AA. Internet and social media use in cancer patients: association with distress and perceived benefits and limitations. Support Care Cancer. 2021 Sep;29(9):5273-5281. doi: 10.1007/s00520-021-06077-0. Epub 2021 Mar 2. PMID: 33651181.
4. Tasha AK Gandamihardja, Sara Liyanage, Terri Coutee, Anne W Peled, Yazan A Masannat; The Role of Social Media and Breast Cancer: How Does It Impact Patients?. Breast Care 30 June 2023; 18 (3): 203–208. https://doi.org/10.1159/000530433

P184 Dose summation in EQD2 for reirradiations

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Purpose: Improved outcomes across radiotherapy and oncology means the number of re-irradiations is increasing. Re-irradiation treatment planning should take into account the original treatment's dose distribution. Raystation includes a functionality which converts physical dose distributions into Equivalent Dose in 2Gy fractions (EQD2). This project provides evidence that performing dose summations in EQD2 can improve re-irradiation treatment planning in comparison to the current method at the researcher's centre. For each OAR evaluated, the current method assumes the original and re-irradiation treatment plans' D0.1cc dose statistic coincide.
Methods: A group of reirradiation patients was retrospectively selected. The selection criterion was that the current method had been used clinically to evaluate spinal canal D0.1cc doses in EQD2. The original and re-irradiation doses were summed in EQD2. The D0.1cc dose statistic was analysed to investigate whether the current method results in over-estimates to the spinal canal and other evaluated OARs (e.g. Oesophagus). The effect of using rigid or deformable registrations on the D0.1cc statistic was also assessed.
Results: All instances of D0.1cc to the spinal canal and the vast majority of other OARs are over-estimated by the current method. These over-estimates range from 1Gy to 15Gy in EQD2.
Conclusions: When compared to dose summation in EQD2, the current method overestimated the total D0.1cc in EQD2 by up to 15Gy. This suggests that EQD2 dose summation, if used in clinical treatment planning, would provide information that could allow increased target coverage whilst continuing to meet dose constraints to the spinal canal and other OARs.

P185 Getting ready for adaptive radiotherapy: a retrospective review of 1 year of CBCT dose evaluation requests for service improvement

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Background During a radiotherapy treatment, response to radiation, anatomical changes, and positioning variations can result in differences between the planned and delivered dose to the patient. A dose evaluation (recalculating the plan on a CBCT) can provide information on whether to continue or modify the treatment to maintain optimal plan quality.
This time-consuming process is currently performed offline following a request from treatment radiographers. Understanding when and why requests are made can be used to improve the current workflow, and support use of adaptive radiotherapy in the future.
Method Dose evaluations requests logged in our Oncology Information System (OIS) during 2023 were retrospectively analysed. The free-text description of cause for evaluation and outcome were reviewed and categorised.
Results 378 dose evaluation requests were made, most were for Head & Neck and Lung, but proportionally Gynae prompted the most requests by radiographers (Table 1).
The most common reasons were external contour change (47%), internal anatomy change (33%) or a non-reproducible position (8%). Only 26 dose evaluations (7%) resulted in advice to modify treatment.
The free-text description made review of data challenging and we have subsequently introduced an electronic OIS questionnaire with standard responses to improve this for future audits.
Conclusion Only a small number of dose evaluations prompt a change in treatment. This can reassure staff that treatment is safe to continue. Work is ongoing to prioritise dose evaluation requests more effectively.
The **results** of this audit identified patient cohorts who may most benefit from adaptive radiotherapy in the future.

Table

Treatment Site Cohort	Total Treated Patients (2023)	Dose Evaluation Requests	Percentage of Cohort
Head and Neck	1008	128	13%
Lung	776	99	13%
Pelvic	796	41	5%
Gynae	172	31	18%
Abdomen	183	19	10%
Urology - Male	1050	16	2%
Breast	1888	16	1%
CNS	1355	13	1%
Limb	223	10	4%
Other	363	5	1%
Total	7814	378	5%

P186 Set-up Accuracy of Palliative Patients Using Surface Guided Radiotherapy: A Service Evaluation

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Introduction: SGRT has enabled the delivery of tattoo-less radiotherapy through optical tracking of the patient's skin surface. Multiple studies exist exploring set-up accuracy in radical radiotherapy treatments, however literature on palliative radiotherapy is deficient. As palliative care is improving and patients are living longer, accuracy of palliative radiotherapy is crucial to reduce dose to organs at risk. This service evaluation set out to determine if set-up using SGRT is more accurate than set-up using tattoos in patients receiving a single treatment of radiographer-planned palliative radiotherapy.
Methods: 65 patients were included within this retrospective evaluation; 34 set-up using SGRT and 31 set-up using shifts from a reference tattoo. Data from online and offline imaging shifts in the longitudinal and lateral direction - taken from an anteroposterior kilovoltage image - was collected in conjunction with the patient sex, age, treatment site and treatment technique. Descriptive statistics were calculated alongside the Mann-Whitney U test to determine any statistical significance.

Results: The p-value in the longitudinal direction is 0.5754 and 0.5486 in the lateral direction stipulating that there is no statistical significance between the two set-up methods. The root mean square alongside other descriptive statistics are shown in the Table attached for online and offline imaging values. Results are comparable between both set-up methods however improvements occur in the accuracy of lateral set-up using SGRT.
Conclusion: SGRT is as accurate as tattoo set-up in patients receiving radiographer-planned palliative radiotherapy and would enable the provision of a tattoo-less service.

Table

Group A- SGRT Set-up				
Raystation	Online Long (cm)	Online Lat (cm)	Offline Long (cm)	Offline Lat (cm)
Mean	-0.10	-0.07	-0.01	0.00
Median	-0.04	-0.035	0.0	0.0
Min	-2.04	-0.73	-0.14	-0.11
Max	1.17	0.51	0.09	0.09
RMSQ	0.46±0.61	0.28±0.34	0.03cm±0.04	0.03cm±0.04

Group B- Tattoo Set-up				
Prosoma	Online Long (cm)	Online Lat (cm)	Offline Long (cm)	Offline Lat (cm)
Mean	-0.02	0.12	0.00	0.02
Median	0.06	-0.09	0.0	0.0
Min	-1.34	-0.73	-0.18	-0.11
Max	1.03	2.22	0.15	0.18
RMSQ	0.41±0.51	0.44±0.62	0.04cm±0.06	0.04cm±0.06

References
1) Batista, V., Gober, M., Moura, F., Webster, A., Oellers, M., Ramtohul, M., Kügele, M., Freislederer, P., Buschmann, M., Anastasi, G., Steiner, E., Al-Hallaq, H., & Lehmann, J. (2022). Surface guided radiation therapy: An international survey on current clinical practice. Technical Innovations & Patient Support in Radiation Oncology, 22, 1–8. https://doi.org/10.1016/j.tipsro.2022.03.003
2) Cvetkova, J., Craig, A., O'Donovan, T., & Mullaney, L. (2020). Set-up variation in palliative radiotherapy: one versus three skin localisation marks. Journal of Radiotherapy in Practice, 19(3), 206–209. https://doi.org/10.1017/S1460396919000748
3) Dorney, J. (2020). Tattoo/Skin Mark-less Setups Using SGRT: A Radiation Therapist's Perspective. In Hoisak, J. D. P., Paxton, A. B., Waghorn, B., & Pawlicki, T. (Eds). Surface Guided Radiation Therapy. (pp. 391-396). CRC Press.

P190 Adequacy of clinical documentation in imaging referrals for traumatic ankle injury with reference to the Ottawa Ankle Rule - a closed loop Quality Improvement Project

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Background Traumatic foot and ankle (F&A) injuries represent a major proportion of musculoskeletal presentations seen in UK and worldwide emergency departments, with radiographic imaging the commonest modality used for diagnosis.(Gill et al., 2019) The Ottawa foot and ankle rules are clinical decision-making tools designed to assist clinicians through assessment & examination to identify the need for imaging.(Stiell, 1996)
Method A retrospective analysis was completed on a set number of traumatic F&A X-ray requests (n=49). The clinical documentation of each request was independently analysed with direct comparison to the Ottawa F&A rules to calculate compliance. Following the initial audit, 3 individual interventions were applied over a 3-month spread in a Plan-Do-Study-Act (PDSA) protocol to drive quality improvement. This included a presentation with initial findings and recommendations, relevant posters placed in the Urgent Care Centre and Emergency Department and digital briefings sent to relevant junior teams. This was followed by further re-analysis of patients following interventions 3 months later (n=49) to assess change in compliance.
Results After excluding missing data or patients not meeting the inclusion criteria, 98 patients were included in the overall analysis. Before the intervention, 38/49 referrals were compliant with the Ottawa F&A rules (77.55%). Post-intervention, 44/49 referrals were compliant (89.80%), representing an absolute increase of 12.25%.
Conclusion This closed loop QIP has demonstrated quantitative improvement in compliance to the Ottawa F&A rules for patients presenting with traumatic F&A injuries in a district general emergency department. There is further work ongoing to embed these interventions for ongoing sustainable quality improvement.

References:
1. Gill, J. R. et al. (2019) 'Weight-bearing in ankle fractures: An audit of UK practice', The Foot, 39, pp. 28–36. doi: 10.1016/j.foot.2019.02.005.
2. Stiell, I. (1996) 'Ottawa ankle rules.', Canadian family physician Medecin de famille canadien, 42, pp. 478–80. Available at: http://www.ncbi.nlm.nih.gov/pubmed/8616287.

P191 Emergency knee radiographs – are we doing more for less?

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Background: There is a perception within radiology that requests are increasing (CQC, 2018), but positivity rates declining. We look to quantify this by looking at how emergency department (ED) knee radiograph study numbers and their sensitivity has changed over a ten-year period.

Method: We have performed a retrospective study looking at all ED knee radiographs done in our hospital in January and March in both 2021 and 2022. The indications and findings were reviewed. The radiographs were divided into traumatic and non-traumatic requests and the positivity rate of each category was calculated and compared with the Chi- Square test used to assess significance.

Results: From 2012 to 2022 the total number of requests increased from 205 to 341 an increase of 60%. The average age in 2012 was 41 compared to 48 in 2022. Within the trauma cohort there was a small increase in positivity rate from 14.4 % (2012) to 16.1% (2022), however this was shown to be insignificant (p value 0.63). The non-trauma positivity rate also increased from 44.7% to 55.7% but this again was insignificant (p value 1.13).

Conclusion: Despite increasing requests, the positivity rate of emergency department knee radiographs has remained similar when looking at both traumatic and non-traumatic indications. This is contrary to the popular assumption of increasing radiology workload with declining positivity rate. Moving forward it would be interesting to review larger sample sizes and evaluate different imaging studies and modalities to see if these findings were replicated.

References
1. CQC, 2018. Radiology review. [Online] Available at: https://www.cqc.org.uk/publications/themed-work/radiology-review [Accessed 15 1 2024].

P192 Patient barriers to participation in Radiotherapy Clinical Trials: results from a single large radiotherapy network

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Background Increasing recruitment to radiotherapy clinical trials by 15% is a key requirement of the radiotherapy Operational Delivery Network service specification. To improve recruitment to radiotherapy clinical trials, we aimed to identify and address patient barriers to participation in research across two radiotherapy providers. This is a part of a larger Quality Improvement work programme to increase access to radiotherapy clinical trials.

Method To identify key patient barriers to recruitment, data from radiotherapy clinical trial screening logs from two radiotherapy providers were retrospectively analysed for 430 patients. Screening outcomes were compared between clinical trials and across radiotherapy centres.

Results Of the 430 screened patients, 136 (31.6%) were ineligible for a trial, and 139 (32.3%) declined to participate. The most common reasons for a patient being ineligible for trial was failing to meet the clinical criteria of the trial protocol. The most common reason for a patient declining to participate in a trial was a preference for standard of care over a clinical trial protocol. Interestingly, results were comparable across radiotherapy centres, so results may have broader relevance to other radiotherapy networks. These findings highlight multiple barriers to recruitment to clinical trials in radiotherapy.

Conclusion This novel work identified specific barriers to patient access to radiotherapy clinical trials across a large radiotherapy network. Specifically, a need to improve patient awareness and understanding of research in radiotherapy was identified. Subsequently, further targeted work to address patient barriers and increase recruitment to clinical trials throughout the radiotherapy network is ongoing.

P193 Enhancing Patient Experiences and Outcomes: Critical Review of Leadership and Collaboration in Community Diagnostic Centres

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Background: National Health Service (NHS) is implementing Community Diagnostic Centres (CDCs) to enhance diagnostic imaging services, aiming to increase diagnostic activity by 120% from pre-COVID levels. We reviewed existing literature to support shared provider services and address three key objectives related to CDCs.

Methods: Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) approach (ethically approved) guided the review. Multi-database searches (CINAHL, Medline, Science Direct) used specific criteria for each objective, only including peer-reviewed articles. Bias assessment and risk of bias evaluation used ROBIS tool.
Results: Objective 1: Impact for patients accessing collaborative services. This revealed limited research on radiology services within CDCs but common themes emerged, highlighting improved patient outcomes, reduced waiting times, increased service accessibility, and enhanced patient satisfaction. Objective 2: Shared governance. Few radiology-specific articles found, but wider searches revealed shared governance helped with empowering staff, effective communication, equity, and leadership. This emphasises the importance of creating trust, fostering shared decision-making, and maintaining accountability. Objective 3: Leadership skills for collaborative service provision. Again, very little literature found addressing CDCs. Leadership styles such as adaptive and compassionate leadership were highlighted, emphasising critical roles of visible leadership and impact of negative leadership on service outcomes.
Conclusion: Overlapping themes were identified, notably staff empowerment to challenge practices. Leaders in CDCs should be visible, maintain open communications, and foster shared governance culture to enhance patient experiences and outcomes. Given the gaps in imaging literature, this highlights the need for ongoing evaluation to inform improvements in CDC services.

References
Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

P194 Optimum enhancement of abdominal arterial vessels in CT dual-phase and triple-phase contrast examinations - A UHDB Cross site Audit.

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Background: Contrast enhancement in the arterial phase of abdomen and pelvis Computed Tomography (CT) scans can sometimes be sub-optimal due to several factors. Anecdotal evidence from local practice suggests that this is common with Dual-phase and Triple-phase contrast examinations of the abdomen and can result in possible misdiagnosis of incidental vascular pathologies.
Method: The retrospective study analyses 120 patient's CT scan images that underwent a contrast enhanced arterial phase abdominal examination at an NHS Trust between July 2023 and January 2024. These examinations were identified on the Radiology Information Systems and measurements of contrast opacification in the abdominal arterial vessels taken from respective images on PACS. Hounsfield units (HU) measurements were compared against a locally agreed baseline of 250HU.
Results: From the 120 patients identified 64% of overall examinations reached or exceeded the required 250HU, with 36% being 249HU or lower. Breaking the findings down further; the highest percentage of examinations exceeding 250HU fell in the dual-phase category, followed by renal staging and then triple-phase with figures of 75%, 67% and 47% respectively. Differences in results at the two trust sites were also noted, with one site accomplishing more favourable numbers for dual-phase scans, whilst the other achieved more optimal triple-phase scans.
Conclusion: Investigating to identify any obvious issues is necessary, particularly with the triple-phase examinations, as the lowest results are in this category. Action plans to change future practice, optimise protocols and improve scanning capabilities are required as well as a re-audit to clarify if improvements have been achieved.

P195 Review of diagnostic utility of CT studies based on microbiology advice and blood culture results

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Description In acute care centres, requests are often received for CT imaging in patients who have non-specific symptoms with positive blood cultures but no clinically attributable source. They are often discussed with the microbiology team who advise imaging to isolate this source. There is anecdotal evidence that these scans can be unhelpful; especially when not directed to specific clinical findings. Given the pressure on the department, the authors aimed to decipher how useful performing these requests were and whether they harboured fruitful results.
Method A retrospective inpatient data trawl over the past year of patients who had had acute CT imaging with the relevant clinical history at the BRI.
Results Our study showed that there was a high number of positive pick-up rates when microbiology requested imaging off blood cultures. However, the majority of scans were either negative or confirmed a previously known infection. Amongst the different pathogens, it was found that chest and soft tissue were the most common infective sources.
Conclusion Our recommendations include:

· raising awareness amongst vetting registrars to focus on more targeted scans and ensuring all previous imaging is reviewed, particularly recent chest radiographs, ensure a thorough examination has been performed and liaise closely with microbiology in troubleshoot cases.
· Disseminating the study results amongst the consultant body and wider hospitals in order to improve their experience with microbiology imaging requests

P196 Stroke CT angiogram turnover time – re-audit cycle

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Background: Efficient reporting of intracranial and neck Computed Tomography Angiography (CTA) is pivotal in identifying potential thrombectomy candidates within stroke care due to its time-critical nature. This re-audit assesses CTA reporting times as part of the stroke pathway.
The **aim** is to analyze CT angiogram reporting times for potential thrombectomy patients in the stroke pathway and formulate improvement plans.
Method: This was the 2nd re-audit cycle. Review of patients with CTA requests for suspected stroke between June and August 2023. Reporting turnover times were calculated and compared with prior data, with a target reporting time of 60 minutes.
Results: 39 cases were identified. The median time from CTA completion to image reporting was 54 minutes, an improvement from the previous median of 76 minutes.
5 cases exceeded 90 minutes and were reviewed: The reasons for the delay were staff shortages during the doctors' strike, a new locum radiologist with unfamiliarity with reporting workstation, delay from teleradiology out-of-hours reporting, delay during busy in-house on-call reporting, and misallocation to a radiologist, working remote to the hospital, who did not report CTA. The latter had to be re-allocated.
Conclusion: Although median time reporting has improved, there remains a significant minority of cases reported over 90 minutes. Strategies to improve this are doubling up for on-calls, continuing workshops for CTA reporting particularly for new radiologists, radiographers to check that the allocated radiologist reports CTA, and feedback to teleradiology providers.

P197 Comparing Local Emergency MRI on-call service for cauda equina syndrome (CES) with current guidelines

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Background: Cauda Equina Syndrome (CES) is caused by sudden narrowing of the lumbar spinal canal which can result in a life changing injury when not treated promptly. Recent guidelines published by Getting It Right First Time (GIRFT)[1] and the Royal College of Radiologists (RCR)[2] in February 2023 had recommended a new pathway for effective diagnosis and treatment of CES. This audit aimed to access how an NHS Foundation Trust's MRI on-call service aligns with the recommendations in these guidelines.
Target: 100% achievement in provision of 24/7 MRI spine service, Exam request to scan time of 4hours, exam scan to report time of 1hour.
Methods: Retrospective data was collected and analysed on MRI scans performed during on-call hours (20:00 - 08:00) between May-November 2023. Audit was registered with the Trust's clinical audit team.
Results: 245 MRI Lumbar and whole spines were requested during on-call hours. 194 scans were performed, 27 of which did not meet the criteria for CES pathway as per clinical history provided. On scan, 5.2% of patients had a positive diagnosis of CES. Average request to scan time was 116 minutes, with 8.7 % patients (17/194) waiting more than 4 hours. Average report time was 43 minutes, with 16% reports (31/194) issued >1 hour. There was also a disparity between the local MRI protocol and that recommended in the guidelines.
Conclusion: The Trust's MRI on-call service has demonstrated to be positively aligned with the GIRFT and RCR guidelines although there are areas requiring improvement.

References
1) Getting it Right First Time (GIRTF) 2023. Spinal Surgery: National Suspected Cauda Equina Syndrome (CES) Pathway. Accessed on 5th February, 2024. Available at: https://gettingitrightfirsttime.co.uk/wp-content/uploads/2023/10/National-Suspected-Cauda-Equina-Pathway-UPDATED-V2-October-2023.pdf
2) Royal College of Radiologist (RCR). 2023: MRI Provision for Cauda Equina Syndrome. Accessed: 5th February, 2024. Available at: https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/mri-provision-for-cauda-equina-syndrome/

P198 An audit of rectal cancer request clinical information for MRI scan

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Background: Rectal Cancer MRI staging requires multiplanar sequences aligned perpendicular to the tumour. Referring clinicians often omit tumour height in MRI requests, leaving radiographers to locate and align tumours. if the tumour is not aligned correctly, the distance to mesorectal fascia and circumferential resection margin (CRM) may be erroneous.
Methods: A retrospective audit analysed MRI requests over 12 months, commencing January 2021 for the first audit cycle and commencing January 2023 for the second audit cycle. 70 rectal cancer MRIs were analysed in the first audit cycle and 74 rectal cancer MRIs were analysed in the second cycle. Tumour height was categorised as "Exact given," "Approximately given," or "Not given," and image alignment was assessed.
Results: The first audit cycle revealed that 25% and 33% of requests provided exact and approximate tumour heights, respectively, with correct alignment in 74% of cases. After oral presentation at the colorectal and radiographer's departmental meeting, figures improved to 42% and 41% for exact and approximate tumour heights, respectively, with correct alignment rising to 94% by the MRI radiographers.
Conclusion: Inaccurate alignment can misrepresent distances to the CRM, impacting staging and CRM status. This audit demonstrates that the correct request information provided increases the correct alignment of rectal cancer.

P199 Retrospective audit to identify delays in MRI pathways due to implant queries

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Background Implanted medical devices can be categorised as Magnetic Resonance (MR) safe, conditional, or unsafe and can pose a safety risk to patients if not carefully managed prior to Magnetic Resonance Imaging (MRI). Patients with implanted medical devices can often face delays in imaging and treatment due to safety queries. This audit looked at the number of referrals affected by implant queries at one acute NHS Trust location, with an aim to investigate and evaluate the delays caused.
Method Retrospective data from a 12-month period of incidents, where appointments were cancelled due to implant queries, was collected. Data was analysed using descriptive statistics to determine the number of complete or incomplete scans and the subsequent delays to the patient pathway. The cause for delay due to uncertainty over implant management was also identified.
Results Out of 26603 appointments scheduled, 0.13% (n=32) were not completed due to metal or implant queries. From these, only 31% (n=10) had gone onto complete the scan whilst 69% (n=22) remained incomplete. None of the completed scans were performed within the time frame required, reinforcing the evidence that implant queries inflict delays on the patient pathway, or at worse can deny patients a scan that may be needed.
Conclusion The main cause of delay or inability to scan, resulted from the knowledge gap around implanted medical devices from referring clinicians. MRI safety themed educational events for referring clinicians is recommended to improve appropriate patient access to scanning, reduce delays and lower costs incurred from wasted appointments.

P200 Overcoming breath-hold difficulties with free-breathing GRASP VIBE for contrast-enhanced MRI Liver and Pancreas

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Background Patients undergoing dynamic contrast Volumetric Interpolated Breath-hold Exam (VIBE) sequence are required to breath-hold for 18-22 seconds. When patients are unable to comply with the breathing instructions, it leads to suboptimal image quality thus reducing the diagnostic value or conversion to a non-contrast scan, which limits the sensitivity of the scan. T1-weighted Golden-angle Radial Sparse Parallel (GRASP) VIBE sequence was introduced to reduce sensitivity to motion artefacts.
Methods A retrospective review of patients undergoing MRI Liver or Pancreas who have difficulties following breathing instructions was performed. Image quality was reviewed by a senior consultant radiologist and 2 senior radiographers before and after the implementation of GRASP VIBE sequence.
Results After the implementation of GRASP VIBE, the percentage of suboptimal images was reduced by 42%, the number of cancelled cases dropped by 75% and the number of cases that needed to be converted to non-contrast scanned dropped from 90%.

Conclusion GRASP VIBE has proven effective in improving image quality caused by breath-holding issues and, minimising the number of case cancellations and conversion to non-contrast scans.

P201 Impacts caused by unexpected implants in patients presenting for an MRI scan

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Background The hazards of MRI are well documented[(3)]. Implanted devices must be identified as they could be affected by the magnetic field, undergoing twisting or torque, potentially causing injury to the patient or damage to the device. Additionally, implanted devices could experience heating when exposed to the RF field, causing burns.
All patients are screened on arrival in MRI. However, issues can arise if complex or unexpected implants are disclosed at this point, including delaying/rescheduling an appointment while conducting an investigation, potentially affecting a patient's diagnosis or treatment pathway. While not responsible for identifying MRI contraindications, the MHRA states that referrers are responsible for highlighting any implanted devices when generating the referral to prevent inappropriate examinations being scheduled[(4)]. Yet, this often does not occur in clinical practice [(1,2,5)].
A local audit was conducted to determine the frequency of undisclosed implants at the time of referral and the consequences for patients.
Method The study ran across three sites at a large specialist oncology hospital in the UK for four weeks. Data was collected for all patients who presented for an MRI scan, and had an implant.
Results The majority of implants may not cause delays to an MRI service however a small number will have a significant impact to the service. Many patients only disclose the presence of an implant on the day of the scan.
Conclusion Undisclosed implants on MRI referrals can have a variety of impacts and cause delays in patient care. Greater awareness of the issues is required.

References
1. Goolsarran, N. Martinez, J. and Garcia, C. Using near-miss events to improve MRI safety in a large academic centre. (2019) BMJ. 8(2), 1-5.
2. Hudson, D. and Jones, A. A 3-year review of MRI safety incidents within a UK independent sector provider of diagnostic services. (2018) BJR. 1(1).
3. Keevil, S. (2016) Safety in magnetic resonance imaging. MPI. 4(1), 26-34.
4. Medicines and healthcare products regulatory agency. (2021) Safety Guidelines for Magnetic Resonance Equipment in Clinical Use. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/958486/MRI_guidance_2021-4-03c.pdf
5. Yong, A. Kanodia, A. Wendy, M. Pillai, S. Duncan, G. Serman, A. Main, G. Crowe, E. Lorimer, K. Heenan, L. Johnston, M. Villena, M. Macfarlane, J.A. Sudarshan, T. and Ramkumar, P.G. Developing patient-centred MRI safety culture: a quality improvement report. (2019) BMJ. 1(1).

P202 A student research placement: the impact on a diagnostic imaging department in major incident preparedness

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Background During major incidents hospitals are stretched beyond their normal treatment capabilities, resulting in significant alterations in the delivery of care (NHS 2022). In these situations, diagnostic imaging is essential for accurately triaging patients playing a crucial role in enhancing the patient care pathway (Berger et al. 2016). The implementation of a MAJAX policy in all hospitals became mandatory in 2004 and ensures a structured and organised response. Major incidents are increasing, (Hardy et al. 2018) with staff preparedness through training identified as a key factor in improving everyday emergency care, (NHS 2022).
Purpose BSc Diagnostic Radiography students, on a 4 week research placement, conducted a service improvement project to update a Diagnostic Imaging Department's Majax policy, aligning it with current literature and providing recommendations for future staff training.
Summary Students conducted a gap analysis, a literature review and examined Majax policies from other Trusts. Qualitative data was gathered through interviews with staff which revealed a lack of role clarity during major incidents. The existing Majax policy displayed some ambiguity and required updating. Resulting recommendations included staff training and a revision of the policy.
Conclusions:

- Diagnostic imaging is crucial for accurate diagnoses and improved patient care during major incidents.
- All staff must understand the Majax policy and their roles during major incidents.
- Regular staff training is essential for preparedness.
- This student research placement had a significant impact on service.
- Student research placements increase research activity and enhance students' research skills and capabilities.

References

1. Berger F, Korner M, Bernstein M, et al, (2016) Emergency imaging after a mass casualty incident: role of the radiology department during training for and activation of a disaster management plan. British Journal of Radiology Vol 89 No 1061
2. Hardy, S., Fattah, S., Wisborg, T. et al. (2018). Systematic reporting to improve the emergency medical response to major incidents: a pilot study. BMC Emergency Medicine 18, 4
3. NHS England (2022), NHS Emergency Preparedness, Resilience and Response Framework

P203 Time for Research: Supporting Allied Health Professionals (AHPs) research journeys

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Background: Funding was secured for two 0.2 WTE yearly research posts for AHPs at the author's NHS Trust. The posts were initially awarded to a band 7 Dietician and band 6 Therapeutic Radiographer with the aim to raise their research knowledge and capability so that they can support their teams with research projects. These posts are offered to two different AHPs in the Trust every 12 months.

Purpose: To describe what can be achieved when time for research is given and to highlight the importance of networking and support in AHP research career journeys.

Summary of content: The two AHPs worked together along with the Trust Research Lead Physiotherapist and carried out a survey benchmarking AHP knowledge, capability and capacity across the Trust. Following this they held focus groups with AHPs to find out more about individuals research journeys and the barriers and enablers to research. Reports on these were distributed across the Trust.

These projects enabled them to develop quantitative and qualitive research skills as well as develop valuable links with the Trust Research and Development Department, other AHPs with research experience and local universities. They also led to conference presentations and gave the two AHPs the knowledge and confidence to develop and lead research projects within their own departments and support other colleagues in their research journeys.

P204 Logistics of ethnographic work in the NHS: Experiences of a doctoral student.

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Background: Despite being widely regarded as a valuable methodology in healthcare research (1,2,3), ethnographic research is still under-represented in the diagnostic radiography (DR) literature and even more so in DR education. Understanding of why this is the case is limited, although some generic issues around gaining NHS ethical approval for ethnography have been identified (4). Professional discussions and personal experiences as a doctoral student have highlighted further logistical difficulties in setting up ethnographic studies more specific to DR researchers.

Purpose: To encourage the use of ethnographic methodology, highlight pitfalls, and indicate solutions for researchers, managers and practitioners. To share knowledge and personal experiences of setting up an ethnographic study in an NHS DR clinical learning environment.

Summary of Content: This submission will discuss why ethnography is a valuable methodology in DR and DR education research. How ethnography differs from other methodologies in the design and set-up of the study. The researcher's personal experiences during their doctoral work will be used to highlight issues around field site selection, ethics approval, and participant involvement.

References
1. Goodson, L. and Vassar, M. (2011) 'An overview of ethnography in healthcare and medical education research', Journal of Educational Evaluation for Health Professions J Educ Eval Health Prof, 8, p. 4. Available at: https://doi.org/10.3352/jeehp.2011.8.4.
2. Hackett, P. and Hayre, C.M. (2020) Handbook of ethnography in healthcare research. Edited by P. Hackett and C. Hayre. Oxon: Routledge. Available at: https://www.routledge.com/Handbook-of-Ethnography-in-Healthcare-Research/Hackett-Hayre/p/book/9780367336332 (Accessed: 13 July 2022).
3. Strudwick, R.M. (2021) The Ethnographic Radiographer. Singapore: Springer.
4. Lee, R.R. et al. (2021) 'Data protection, information governance and the potential erosion of ethnographic methods in health care?', Sociology of Health & Illness, 44(1), pp. 211–217. Available at: https://doi.org/10.1111/1467-9566.13408.

P205 Audit of ultrasound technique and structured reporting in the evaluation of soft tissue lumps

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Background: Ultrasound (US) is the preferred modality for soft tissue lump evaluation however, image acquisition and reporting are highly operator dependent. The European Society of Skeletal Radiology (Weber et al., 2015) and British Sarcoma Group (Bradley et al., 2019) have published recommendations on the evaluation and reporting of soft tissue lumps stating that all reports should mention: clinical history and examination, 3-dimensional size, morphology,

echotexture, location, vascularity and an appropriate management plan if applicable. In addition, all operators should use a linear high frequency probe (15-18 MHz) for assessment.
Methods: A retrospective PACS data collection was conducted in the first cycle which included all US soft tissue studies between November 2022 and January 2023 which was followed by local educational interventions and a second cycle between August 2023 and October 2023.
Results: Cycle 1 included 146 studies and cycle 2 included 144 studies in total. The most common reported soft tissue lesions were lipomas and epidermal cysts. Results from the second cycle demonstrated an overall percentage increase in accurate reporting across all parameters as per national guidelines following intervention. Morphology, echotexture and location were mentioned in more than 85% of reports in cycle 2. Three-dimensional size was reported in 44% of all cases in cycle 2 (35% in cycle 1). All indeterminate and malignant lesions in both cycles (n=36) had a documented management plan.
Conclusion: Structured US soft tissue reporting can ensure consistency and reproducibility between individual operators as well as serving as a framework for challenging, indeterminate cases.

References
1. Bradley, M. et al. (2019) British Sarcoma Group (BSG). Ultrasound screening of soft tissue masses in the trunk and extremity. Available at: https://www.britishsarcomagroup.org.uk/wp-content/uploads/2019/01/BSG-guidance-for-ultrasound-screening-of-soft-tissue-masses-in-the-trunk-and-extremity-FINAL-Jan-2019.pdf.
2. Weber, M. et al. (2015) 'Soft tissue tumors in adults: ESSR-approved guidelines for diagnostic imaging', Seminars in Musculoskeletal Radiology, 19(05), pp. 475–482. doi:10.1055/s-0035-1569251.

P206 The Republic of Ireland sonographer reporting pilot study

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Background: In the Republic of Ireland (ROI) speciality radiographers (sonographers) undertake ultrasound examinations however, outside of obstetrics they are limited to providing a provisional report which a radiologist will verify. Sonographers in ROI are usually educated to the same standard as their independently reporting UK counterparts having attended CASE-accredited post-graduate courses. This report investigates the comparability of sonographer and radiologist reporting throughout ROI.
Methodology: The report follows a clinical audit methodology. To ensure full population representation CEOs from all hospitals in the ROI were contacted to take part. Participants were all sonographers, covering 6 of the 7 hospital groups of ROI. Each sent data from 400 randomly chosen non-obstetric examinations over 6 months, provisionally sonographer reported then reviewed by the supporting radiologist. The radiologist allocated an agreement score to the report based on the Riley et al (2010) grading system.
Results 6037 ultrasound examinations were included in the audit. Over 99% of the reports fell into the acceptable range of Grades 1 and 2. 0.35% (21) of reports were classified as Grade 3. Only 2 reports within the Grade 3 classification were changed to upgrade the classification of pathology seen. No reports were classified as Grade 4.
Conclusion This large, multicentre audit demonstrates the accuracy of sonographer reporting in the ROI with an acceptable agreement score of over 99%. Sonographers in ROI can report as accurately as their UK counterparts who report independently. With the increasing demand for non-obstetric ultrasound, the existing workforce needs to be utilised efficiently.

References
1. Riley, S.J., Groves, C.J. and Chandramohan, M. (2010) 'Musculoskeletal Ultrasound: Audit of Sonographer Reporting', Ultrasound (Leeds, England), 18(1), pp. 36-40 Available at: 10.1258/ult.2009.009011.

P207 Importance of GJ final image visualisation

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Background: It was found that some patients were having issues with their GJ tubes, which lead this investigation to revisit their images, check full visualisation of the GJ tubes were seen, and to initially confirm that there is not a loop of tube within the stomach.
Having full visualisations of the GJ tube allows us to see if there is correct placement of tip position (post pylorus/DJ flexure). This ensures that contrast is seen flowing in the correct direction which is a crucial sign when establishing the correct position of GJ tubes.
Method: 86 examinations between November 2023 and January 2024 had their final images reviewed via PACS, checking whether you could visualise the tip of the GJ tube and whether they were SM or a fluoroscopy loop.
Results: 79/86 studies had adequate visualization of GJ tube and 7/86 didn't.

20 of the studies were 9 patients returning. It was found that within these patients 18/20 (90%) had good tip visualisation and 2/20 (10%) didn't.
Whereas patients that didn't return early had 61/66 (92%) good tip visualisation and 5/66 (8%) didn't.
Conclusion: Visualising the whole tube and forward flowing contrast was well maintained by clinicians and radiographers and there wasn't an association between patient's tubes becoming malpositioned and seeing the full GJ tube on final SM or fluoroscopy images.
A standard practice could be trailed with final images being saved as a forward flowing contrast loop in order to maintain patient safety.

P208 Audit to assess the timeliness of the diagnostic pathway for patients with suspected cauda equina syndrome

Amy Digby[1]
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Background Cauda equina syndrome (CES) is a rare and potentially life changing disorder which requires urgent diagnosis with Magnetic Resonance Imaging (MRI) and emergency neurosurgical intervention. To standardise the way in which health professionals manage cases of suspected CES (s-CES), the National s-CES Pathway and provision of MRI guidance was published in 2023. This retrospective audit aims to provide a snapshot view of current practice to assess alignment against the standards and guidance at one acute NHS Trust location.
Method Data was retrieved for patients referred from the emergency department for MRI lumbar spine between January 2022 and April 2023, with 54 meeting the inclusion criteria. Time stamps from each stage of the pathway were collected and time intervals calculated. Descriptive statistics were used for data analysis.
Results 69% (n=37) of patients were scanned within 4 hours of a request for MRI being made and 85% (n=46) of scans were reported by a radiologist within 1 hour, therefore meeting the standards. 26% (n=14) of requests were made during the out of hours (OOH) on-call service times, none of which were scanned within these hours.
Conclusion A 24/7 MRI service is provided at the Trust location and the pathway standards are being met in over two thirds of cases. However, the results of this audit demonstrate that the MRI service is not necessarily being utilised to its fullest. Whilst an on-call scanning service is provided, access to relevant spinal teams overnight maybe the barrier.

P211 Faster and more efficient CT scans for patients in Emergency care

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Objective: This study addressed the challenges associated with CT scans for patients in the Emergency Department (ED), where bottlenecks and delays were identified within the patient pathway. The aim was to improve the efficiency and timeliness of CT scans, reducing unnecessary steps in the imaging process.
Methods and interventions: Detailed observations, staff feedback, and analysis of CT timings were conducted to identify specific issues. A Rapid Improvement Event brought together a multidisciplinary team to find potential solutions which included the creation of a live dashboard displaying the status of the patient and their CT scan, eliminating the need for ED doctors to call Radiologists. A business case led to the addition of 5 Radiographic Department Assistants for patient preparation. Visual controls were established in the ED to streamline the process of getting patients ready for their scans.
Results: The one-year monitoring period revealed significant improvements, with a 54% increase in patients ready for their scans, a 19% reduction in the time from request to scan, a 16% increase in scans completed within 60 minutes, and a 17% increase in results being ready within 1 hour.
Conclusions: The interventions led to a 19% increase in CT scan efficiency in the ED, resulting in more timely availability of imaging results (17% increase within 1 hour). The study also reported a major increase in staff satisfaction, improved patient experience, and enhanced ED department flow. The next steps involve extending the use of the Imaging dashboard to other areas and addressing IT barriers.

P212 Remote and rural Radiographer-led CT Coronary Angiography (CTCA) service

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Background CTCA is a non-invasive examination, with a sensitivity of up to 99% and specificity of up to 92%. Availability of CTCA throughout the UK is variable: due to scanner availability, capability and clinician availability and skill.

Typically, CTCAs are supervised by Cardiologists and/or Radiologists, however highly skilled Radiographers have demonstrated improved access to CTCA.
CTCA is recommended as a first-line investigation for stable chest pain, as exercise ECG has poor sensitivity and specificity and cannot provide structural detail of the vessels.
Purpose Communities in remote and rural areas face exceptional challenges accessing healthcare.
Employing Realistic Medicine, a reliable, safe and effective Radiographer-led CTCA service was developed with support from specialists.
Highly skilled Radiographers became competent in CTCA protocol selection, ECG familiarisation, GTN administration, comprehensive understanding of betablocker administration and advanced reconstructions.
The team having excellent communication, teamwork, training and protocol adherence ensured that the remote and rural community has access to CTCA.
The local CTCA service ensures that only patients that require invasive coronary angiography are referred for it; this reduces referrals to the tertiary centre and enables referrals to be triaged appropriately.
Summary Radiographer advanced practice is effective and safe in providing access to CTCA for remote and rural communities. Support networks with specialists are vital to success, with excellent communication and teamwork.
CTCA in remote and rural setting improves patient-centred care, and triages patients requiring invasive procedures creating increased efficiency in the specialist centre.
Radiographer-led CTCA service is cost-effective in the setting of Remote and rural healthcare.

References:
Scottish Intercollegiate Guidelines Network (SIGN) Management of stable angina. SIGN 151. April 2018
The challenge of national CT Coronary Angiography (CTCA) provision in response to NICE CG95 update 2016. BSCI/BSCCT - British Society of Cardiovascular Imaging and British Society of Cardiovascular CT Accessed on11.2.24 at 12:10hrs
Murray, A., Mullen, R., Cheasty, E,. (2023) Radiographer led administration of beta-blocker and gtn for ct coronary angiography: mobile ct. UKIO Congress 2023. Synergy and Symbiosis. Abstract book. Available at Abstracts-Book-2023.pdf (ukio.org.uk)
National Institute for Health and Care Excellence (NICE) Recent onset chest pain of suspected cardiac origin: assessment and diagnosis. Clinical Guideline 95. Nov 2016.

P213 CT rationalisation in a public district hospital in the Western Cape, South Africa.

Mia Rose Meredith Thomas[1]
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During a Global Health Fellowship with Health Education England I was lucky enough to complete a 6 month project with the radiology department in George Regional Hospital in the Western Cape, South Africa.
The aim of my project was to reduce the waiting time for CT scans at GRH. GRH has the only CT scanner in the region so requests for CTs come from all around the peripheral district hospitals. The region has had a large increase in population (up 35% since 2011 on latest census data) so demand for CTs has increased, however capacity (one CT scanner and one radiologist) remains static putting more and more strain on the system.
I worked with the heads of departments, clinical and medical managers of district hospitals and the EMS (ambulance) teams to rationalize CT scan bookings via publishing an SOP, teaching on CT rationalisation and introducing baseline performance measures on the booking system and close monitoring and reporting of requests.
By the end of the project we saw a reduction in CT scans being booked and a resultant downward trend in waiting times for scans.
This was an interesting project on resource management in a low resource setting which is an interesting conversation in and of itself, but is also a useful discussion globally on the importance and pathways of rationalising scans bookings.

References
1. Bhullar H, County B, Barnard S, Anderson A, Seddon ME. 2021, Reducing the MRI outpatient waiting list through a capacity and demand time series improvement programme. N Z Med Journal;134(1537):27-35.
2. Daniel J. Mollura, Nandish Shah, Jonathan Mazal,
White Paper Report of the 2013, 2014, RAD-AID Conference: Improving Radiology in Resource-Limited Regions and Developing Countries, Journal of the American College of Radiology, Volume 11, Issue 9, Pages 913-919,
3. Rosman, D.A., Bamporiki, J., Stein-Wexler, R. et al., 2019, Developing Diagnostic Radiology Training in Low Resource Countries. Curr Radiol Rep 7, 27
4. van Wijk M, Barnard MM, Fernandez A, Cloete K, Mukosi M, Pitcher RD. (2021), Trends in public sector radiological usage in the Western Cape Province, South Africa: 2009-2019, SA J Radiology, 25(1):2251.

P214 Introducing an abbreviated MRI protocol for pancreatic cystic lesions in oncology

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Background Pancreatic cystic lesions (PCL) are a common pathology. MRI is the modality of choice for aiding diagnosis and characterising PCL's due to it's excellent soft tissue resolution(1). Some PCL's require imaging surveillance due to

their risk of malignant transformation(3). Intervals for imaging surveillance for PCL vary from 6 months to 2 years and may be lifelong requiring a considerable burden for MRI scanner resources(2). Introducing an abbreviated MRI pancreas protocol could reduce scan time and cost for imaging departments while providing adequate diagnostic information.
Purpose This poster will explore the practicalities and benefits of implementing an abbreviated pancreas protocol at a cancer centre.
Summary of Content An abbreviated pancreas protocol will be outlined along with the rationale for implementation and potential advantages.

References
1. Al Ansari, N., Ramalho, M., Semelka, R. C., Buonocore, V., Gigli, S., & Maccioni, F. (2015). Role of magnetic resonance imaging in the detection and characterization of solid pancreatic nodules: An update. World Journal of Radiology, 7(11), 361.
2. Delaney FT, Fenlon HM, Cronin CG. An abbreviated MRI protocol for surveillance of cystic pancreatic lesions. Abdominal Radiology. 2021 Jul 26;46(7):3253–9.
3. Hill, D. V., & Tirkes, T. (2020). Advanced MR imaging of the pancreas. Magnetic Resonance Imaging Clinics, 28(3), 353-367.

P215 Improving MRI screening process for patients with hearing impairment or language differences with the use of an interactive MRI Pictorial Screening Application (App)

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Background: Magnetic Resonance Imaging (MRI) safety is vital as there are potential adverse life threatening events that can arise from lapses in MRI safety. Patients are screened for contraindications to MRI, such as pacemakers, aneurysm clips, metallic and electronic implants before they enter the MRI environment.[1] At our institution, our paperless screening process involves a verbal interview and checks on patients' past imaging history. Challenges arise when there are verbal communication issues between MRI radiographers and patients due to language differences or, in situations when patients have hearing impairment.
Purpose: Digital technology such as Microsoft PowerPoint, can be effectively used to improve and simplify the communication process between healthcare professionals and patients. Participants can apply this to fit their own clinical practice. This is a patient-centred approach as it encourages mutual respect and allows two-way communication.
Summary of Content: This presentation will display the interactive MRI Pictorial Screening App, which includes the screening questions in various languages and dialects. Translated voice recordings are embedded for patients who are unable to read. Radiographers agreed that it was useful for patients with hearing impairment, improved language barrier and reduced near-miss incidents. Patients who utilised the app agreed that it facilitated their understanding of the screening process. This App adds value to the current clinical practice as it saves time and increases efficiency, as personal devices or hospital-approved translator are no longer required. This has inevitably helped to maintain patients' privacy and confidentiality. Future improvements may include integration into patients' medical records.

References
[1]Shellock, F. and Spinazzi, A. 2008. MRI Safety Update 2008: Part 2, Screening Patients for MRI. American Journal of Roentgenology, 191(4), pp. 1140-1149

P216 The impact of video entertainment screens during MRI on the patient experience - a service evaluation

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Introduction and background: Magnetic Resonance Imaging (MRI) is often associated with anxiety and claustrophobia, even in patients who do not consider themselves claustrophobic. Several studies have examined the factors that contribute to improving the patient experience in MRI, however, there is a gap in the literature exploring the use of in-bore video entertainment screens. This service evaluation explores the patient experience of using video screens during MRI examinations.
Method: All patients attending for a range of MRI scans over an 8-week period were invited to complete an anonymous feedback survey after their scan. The survey comprised of questions ranked on a Likert scale and open questions. Permission for this evaluation was granted by the Head of Department.
Results: 76 patients completed the feedback survey. 55% (n=42) scored their experience of the video entertainment screens as "very helpful". 43% (n=33) of all respondents considered themselves to be claustrophobic. 13% (n=10) did not use the screen during their scan. Thematic analysis identified three main themes: relaxing/calming, distraction and felt less enclosed/claustrophobic.

Conclusions and recommendations: The use of a video entertainment screen during MRI examinations was helpful for most patients. The video entertainment screen provided a distraction, helping patients to feel relaxed and reducing scan anxiety. However, not all patients found the screen helpful, and in some cases, preferred not to use the screen.
Further work is required to assess the factors that contribute to improving the MRI experience, particularly for patients who are claustrophobic.

References
1. Chesson, R.A., McKenzie, G.A. and Mathers, S.A. (2002). What do patients know about ultrasound, CT and MRI? Clinical radiology, [online] 57(6), pp.477–82. doi:https://doi.org/10.1053/crad.2002.0939.
2. Hudson, D.M., Heales, C. and Vine, S.J. (2021). Radiographer Perspectives on current occurrence and management of claustrophobia in MRI. Radiography, [online] 28(1). doi:https://doi.org/10.1016/j.radi.2021.09.008.
3. Lawal, O., P. Regelous and Omiyi, D. (2023). Supporting claustrophobic patients during Magnetic Resonance Imaging examination– the patient perspective. Radiography, 29(6), pp.1108–1114. doi:https://doi.org/10.1016/j.radi.2023.09.008.
4. Munn, Z. and Jordan, Z. (2013). Interventions to reduce anxiety, distress and the need for sedation in adult patients undergoing magnetic resonance imaging: a systematic review. International Journal of Evidence-Based Healthcare, 11(4), pp.265–274. doi:https://doi.org/10.1111/1744-1609.12045.
5. Munn, Z., Moola, S., Lisy, K., Riitano, D. and Murphy, F. (2015). Claustrophobia in magnetic resonance imaging: A systematic review and meta-analysis. Radiography, 21(2), pp.e59–e63. doi:https://doi.org/10.1016/j.radi.2014.12.004.
6. Oztek, M.A., Brunnquell, C.L., Hoff, M.N., Boulter, D.J., Mossa-Basha, M., Beauchamp, L.H., Haynor, D.L. and Nguyen, X.V. (2020). Practical Considerations for Radiologists in Implementing a Patient-friendly MRI Experience. Topics in Magnetic Resonance Imaging, 29(4), pp.181–186. doi:https://doi.org/10.1097/rmr.0000000000000247.

P217 Reporting of adenomyosis: a service evaluation

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Background Adenomyosis diagnosis is based on imaging alone[4]. Ultrasound demonstrates high accuracy with expert sonographers[3], however there is little knowledge regarding how well adenomyosis is identified and reported within daily clinical practice.
Aim To assess if sonographers are effectively identifying and reporting signs of adenomyosis when seen on transvaginal ultrasound.
Methodology A retrospective service evaluation was undertaken which included (n=79) adult female participants with possible symptoms of adenomyosis who had undergone a transvaginal ultrasound scan during the first quarter of 2023. Patients were identified according to pre-defined inclusion and exclusion criteria. Data was anonymised and collected in a data collection form. The scan report and archived images were evaluated using the sonographic signs identified by the MUSA group[1] then compared to the original report. Statistical analysis for inter-rater agreement was conducted using Cohen's Kappa[2].
Results 21.5% (n= 17) of patients had signs of adenomyosis on image review. Of these, only 23.5% (n= 4) were reported as such. Overall inter-rater agreement was variable from no agreement to moderate agreement.
Discussion Results indicate that adenomyosis is not being effectively identified and reported upon.
Conclusion The majority of ultrasonic diagnoses of adenomyosis were not identified, which may be due to the lack of sonographer awareness and training, compounded by a lack of internationally agreed criteria for ultrasound diagnosis. Limitations include the small cohort of participants, the author working independently and limitations in reviewing static images.

References
1. Harmsen, M.J., Van den Bosch, T., de Leeuw, R.A., Dueholm, M., Exacoustos, C., Valentin, L., Hehenkamp, W.J.K., Groenman, F., De Bruyn, C., Rasmussen, C., Lazzeri, L., Jokubkiene, L., Jurkovic, D., Naftalin, J., Tellum, T., Bourne, T., Timmerman, D. and Huirne, J.A.F. (2022). Consensus on revised definitions of Morphological Uterus Sonographic Assessment (MUSA) features of adenomyosis: results of modified Delphi procedure. Ultrasound in Obstetrics & Gynecology, 60(1), 118–131.
2. Lazzeri, L., Morosetti, G., Centini, G., Monti, G., Zupi, E., Piccione, E. and Exacoustos, C. (2018). A sonographic classification of adenomyosis: interobserver reproducibility in the evaluation of type and degree of the myometrial involvement. Fertility and Sterility, 110(6), 1154-1161.
3. Săsăran, V., Mărginean, C., and Puscasiu, L. (2023). Current Non-Invasive Imaging Techniques Used in the Diagnosis of Adenomyosis. Clinical and Experimental Obstetrics & Gynecology, 50(3), 49–49.
4. Van den Bosch, T., de Bruijn, A.M., de Leeuw, R.A., Dueholm, M., Exacoustos, C., Valentin, L., Bourne, T., Timmerman, D. and Huirne, J.A.F. (2019). Sonographic classification and reporting system for diagnosing adenomyosis. Ultrasound in Obstetrics & Gynecology, 53(5), 576–582.

P218 Cloud and Streaming Technologies: Innovations to drive access and efficiency in Radiology

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There are a mixture of new and existing challenges facing UK radiology services, including growing data volumes, sub-specialisation, workforce shortages, and remote working. The creation of imaging networks, to help address these issues means that the requirement for agility in cross-enterprise clinical workflow will become ever more important. Furthermore, connecting the hospital imaging record with Community Diagnostic Centres (CDC's) will also be essential to

avoid study duplication and to enable real-time comparison between multiple examinations. Clinical teams will also require better and immediate access to the newly dispersed imaging record, with greater ability to manipulate the related dataset.
Cloud storage and image streaming have the potential to help solve the challenges posed. Other aspects including cyber-security, latency across dispersed networks, and integration with other parts of the medical record can also be facilitated by these novel technologies.
This presentation will consider these issues in greater detail, and outline some current and future solution opportunities that cloud and streaming provides. It will offer advice and guidance to service and system leaders on key topics to consider, to enable creation of system resilience and capacity optimisation.

P219 Analysis of [18F] FDG PET-CT Referral Patterns and Scanner Accessibility Across England: A Comprehensive BI-driven Review

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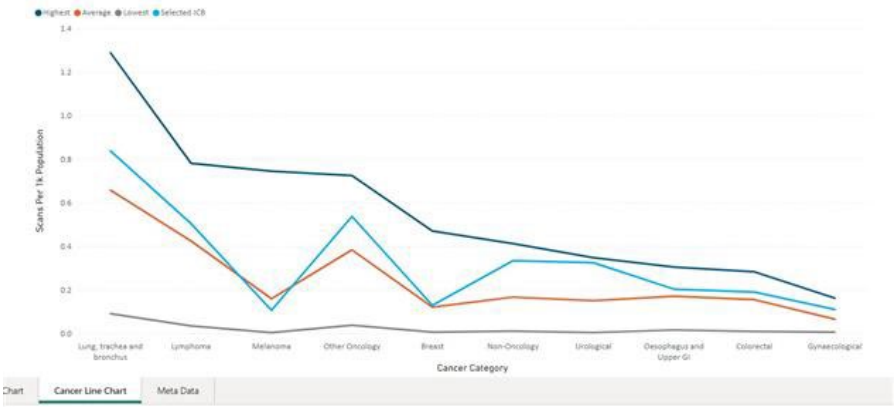
Purpose: Providing assessments of [18F] FDG PET-CT referral patterns and scanner accessibility across England, utilizing an updated Business Intelligence (BI) tool; to discern regional disparities, understand factors influencing referral patterns, and assess impact of potentially enhanced PET-CT availability on patient care over 3 years.
Methods: Thorough analysis undertaken using latest BI tool, examining data from Alliance Medical (AML) and non-AML sites against RCR 2016 PET-CT referral guidelines; and population statistics. Our approach involved reviewing referrer/referrals database, evaluating PET-CT scanner distribution, referral criteria, and regional healthcare practices for 2020-21, 2021-22 and 2022-23.
Results: Regional variations in PET-CT accessibility persist despite improvements: Urban sites and major teaching hospitals complemented by Community Diagnostic Centres exhibit better access. Referral patterns show variable correlations with cancer diagnosis, staging, and treatment planning, skewed by such factors research/trials, patient preferences, and waiting times. Variability is notable, particularly for some cancers even within proximate geographic regions. Lung cancer and lymphoma demonstrate consistency, though the timing of [18F] FDG PET-CT scans within patient pathways varies across regions; other cancers have shown changes and variations over time and region-to-region.
Conclusion: Ongoing regional variations persist in PET-CT referrals across England, emphasising the need for more equitable access and standardised practices. Updated BI tool revealed highest, average, and lowest scans per population for each cancer category/subtype, showing changes over time. This reinforces the importance of continued efforts to optimise services, which will inform ongoing work to refine services and enhance patient care based on these insights.

Table



P220 Putting People First: Implementing a bespoked Appointment Booking System

Rakhee Jagatia, Dr Christiane Zelenyanszki[1], Mr Franklin Daniel-Balan
[1]Barking, Havering And Redbridge University Hospital NHS Trust, Romford, United Kingdom
Background Our Community Diagnostic Centre (CDC), located in one of the most deprived areas in the capital, offers several radiology modalities including Ultrasound (non-obstetric ultrasound [NOUS]), without contrast using two clinic rooms.

Sonographers and booking team worked in partnership to maximise available appointment utilisations by:

- Sending out text reminders prior appointments
- Developing and implementing a 'Ultrasound Booking Pack' that included:
  - Overview of examinations and common clinical indicators
  - Ultrasound preparations
  - Scan time
  - Room allocation
  - Individual sonographer's competency checklist (by body parts, adults & children)
- Site visit by the booking team to the CDC

Looking at the acceptance of offered appointments of Q1 and Q2 it becomes apparent that:

- Cancellation rates decreased from 14.5% in April 2023 to 4.95% September 23
- Did not attend (DNA) rates decreased from 10.97% to 5.50% over the same period.

Conclusion

- Partnering the clinical and booking team had a positive impact i.e. improved the knowledge and awareness about ultrasound (purpose, method, rational) of the booking team.
- Site visit to the CDC sites raised awareness of access (travel, public transport access and parking) for the booking team.

Purpose Learning Objectives:

- Raising awareness and knowledge about diagnostics tests to the booking team had a positive impact how they engage with patients (and referrals)
- Offering a site visit to the booking team assisted them in getting insight into the access of how to get to the CDC (travel, public transport access, parking)

P221 Diagnostic utility of lung ultrasound in neonatal pneumothorax compared to conventional chest x-ray

Miss Jane Yam[1], Ms Louise Burton[1]
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Background Neonatal pneumothorax (PTX) is common in the Neonatal Intensive Care Unit (NICU) (Raimondi et al., 2016) where timely treatment is crucial (Liu et al., 2020). Chest X-ray (CXR) is conventionally used to confirm the diagnosis and monitor treatment progression, but the stochastic effects of ionising radiation and the time from requesting to conducting a CXR examination warrant quicker, non-ionising methods to confirm the diagnosis for PTX (Gislason-Lee, 2021).

Lung ultrasound (LUS) has emerged as an alternative to CXR when identifying the cause of respiratory distress in neonates. Our review systematically reviewed evidence from seven studies (Corsini et al., 2019; Deng et al., 2020; Grimaldi et al., 2019; Ismail et al., 2023; Jagla et al., 2019; Küng et al., 2020; Montero-Gato et al., 2022) on the diagnostic accuracy of LUS for neonatal PTX compared to conventional CXR. The results showed that LUS had a higher sensitivity, negative predictive value, and accuracy than CXR, while specificity and positive predictive value were similar. We also re-validated the performance of LUS diagnostic criteria outlined in Kurepa et al. (2018) for pneumothorax: "absence of B-lines", the "disappearance of lung sliding", and the "presence of lung points".

Purpose To promote and recommend incorporating LUS into the care of neonatal PTX as an alternative to CXR.

Summary of Content

- Introduction
- Methods: The literature review was designed following PICOT framework
  - Choice of Quality assessment tool: QUADAS-2
- Results Table
- Performance of LUS vs CXR, benefits of LUS
- Recommendations
- Conclusion

References

Gislason-Lee, A. J. (2021) 'Patient X-ray exposure and ALARA in the neonatal intensive care unit: Global patterns', Pediatr Neonatol, 62(1), pp. 3-10.
Kurepa, D., Zaghloul, N., Watkins, L. and Liu, J. (2018) 'Neonatal lung ultrasound exam guidelines', J Perinatol, 38(1), pp. 11-22.
Liu, J. et al (2020) 'International Expert Consensus and Recommendations for Neonatal Pneumothorax Ultrasound Diagnosis and Ultrasound-guided Thoracentesis Procedure', J Vis Exp, (157).
Raimondi, F. et al (2016) Lung Ultrasound in the Crashing Infant Protocol Study, G. 'Lung Ultrasound for Diagnosing Pneumothorax in the Critically Ill Neonate', J Pediatr, 175, pp. 74-78 e1.

P222 Dacryoscintigraphy: A useful imaging tool for possible nasolacrimal obstruction. When and How to use it?

Prof Sadia Salam[1], Dr Amrith Chamnan[1], Dr Vineet Pant[1], Dr Faisal Naeem[1], Dr Sobhan Vinjamuri[1]
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Background: Dacryoscintigraphy is a relatively less commonly used technique. A drop of radiotracer is given into each eye and sequential imaging is obtained to demonstrate the level of impaired drainage (if any). Other radiological tests include fluorescein dye disappearance test, syringing tests, Dacryocystography, dacryoendoscopy, and Dynamic magnetic resonance dacryocystography, some of these are more invasive and time consuming.

Purpose: We want to raise awareness of this technique by reviewing our practice and identifying common themes.

Summary: We reviewed 17 lacrimal scans between Sept 2015 to Jan 2024 (M:F 5:12; age range: 14-75 years) with suspected obstruction of the nasolacrimal duct system. All the patients had patent syringing test and no lid laxity. All the images were analysed qualitatively both on static and dynamic phases. Of the 17 patients, 6 patients had functional Epiphora, 5 with previous surgeries, 2 with stents, 3 with block/stenosis and 1 patient a fistula evaluation. Static and dynamic image analysis, only 1 patient was found normal,2 patients had delayed clearance, and 14 patients had unilateral (8) and bilateral (6) obstruction at different levels of nasolacrimal system.

In **conclusion**, Dacryoscintigraphy is a less commonly performed test but has the potential to diagnose the anatomical level of obstruction and drainage pattern in nasolacrimal system even in complex patients with multiple previous eye surgeries. Wider patient access for dacryoscintigraphy as a complimentary test with other commonly practiced radiological imaging techniques will be beneficial for the patients.

P223 Cyst or Aneurysm? The Role of Color Flow Doppler Mode

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Background: During ultrasound assessment, well-defined anechoic structures are not always Simple cysts. They could possibly be aneurysms. We will be presenting two anechoic structures in two different patients at different locations which initially seem a simple cyst on gray scale ultrasound assessment but turned out to be pseudoaneurysm on colour flow Doppler assessment.

Case 1: A 22-year-old known hypertensive patient who presented to Emergency department for malignant hypertension. Abdominal ultrasound revealed a well-defined anechoic Cystic structure close to the upper pole of the left Kidney. Color Flow Doppler mode applied and was found to be a huge Pseudoaneurysm.

Case 2: Ultrasound scan was requested for A 35-year-old male patient referred from Trauma Unit with a complaint of progressive Left upper thigh swelling of 3weeks duration after Road Traffic Accident.

Ultrasound revealed collection in between layers of the muscles and well-defined anechoic structure in deep soft tissue. Color flow Doppler applied and confirmed it to be a pseudoaneurysm from inferior gluteal artery.

conclusion: It is always wise to apply color Doppler signal on seemingly cystic structures before making the diagnosis of a simple cyst. Color flow Doppler is a non-invasive modality which can bring a significant impact on patient management especially in resource limited setting. That will save the patient from undergoing life threatening invasive procedures like puncture.

References

1.Silver, P.R. and Budin, J.A., 1990. Unusual manifestations of renal artery aneurysms. Urologic radiology, 12, pp.80-83.

P224 A comparison of computed tomography (CT), ultrasonography (US) and magnetic resonance imaging (MRI) in the diagnosis and characterisation of focal liver lesions

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Background: Focal liver lesions (FLLs) are commonly found incidentally through imaging for other pathologies. They can be a wide variety of pathologies themselves and so characterisation of FLLs is extremely important to rule out the more clinically serious pathologies such as primary cancers and liver metastases. National Institute for Health and Care (NICE) guidelines (2012) highlight contrast-enhanced ultrasound (CEUS) as a primary imaging modality for FLLs, however, liver imaging in other pathway guidelines suggest a variety of modalities including ultrasound (US), magnetic resonance imaging (MRI) and computed tomography (CT) (National Institute for Health and Care Excellence, 2020; National Institute for Health and Care Excellence, 2023)

Purpose: To inform healthcare workers of the variety of ways in which imaging modalities can be used to assess and characterise FLLs and highlight the benefits, drawbacks and potential contraindications of each.
Summary of content: Top left: US – sensitivity, specificity, cost, limiting factors, clinical indications, extra info
Top right: CT - sensitivity, specificity, cost, limiting factors, clinical indications, extra info
Bottom left: MRI - sensitivity, specificity, cost, limiting factors, clinical indications, extra info
Bottom right: PET CT/MRI – sensitivity, specificity, cost, limiting factors, clinical indications, extra info
Centre: Recommendations for practice
Modalities presented in style of Top Trump cards with details at the bottom of each (see attached)

Table

Section layout	
MODALITY	
Image of modality & FLL pathology	
Sensitivity	**Value**
Specificity	**Value**
Cost	**Value**
Limitations	**Number of limitations**
Details (limitations described, clinical indications indicative of modality, extra information	
Poster layout	
Ultrasound	*Space for graphics* CT
Recommendations for practice	
MRI	*Space for graphics* PET-CT/MRI

References
1. National Institute for Health and Care Excellence. (2012) SonoVue (sulphur hexafluoride microbubbles) – contrast agent for contrast-enhanced ultrasound imaging of the liver. Available from: https://www.nice.org.uk/guidance/dg5/chapter/3-clinical-need-and-practice
2. National Institute for Health and Care Excellence. (2020) Colorectal Cancer. Available from: https://www.nice.org.uk/guidance/ng151/chapter/Recommendations#management-of-metastatic-disease
3. National Institute for Health and Care Excellence. (2023) https://www.nice.org.uk/guidance/dg50/chapter/2-The-diagnostic-tests#the-comparator

P225 MRI appearances of soft tissue masses

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Background Many people will present to their GP or hospital with a soft tissue mass and many are benign. However a small percent of these will have more serious causes and may often be incidental findings when a patient presents for an MRI scan. Some soft tissue masses, such as sarcomas, are very rare and may not be obvious to an inexperienced radiographer. It is important that these are imaged appropriately to allow for rapid referral to an appropriate centre for treatment.
Purpose This paper will help a radiographer identify the appearances of many common soft tissue masses, as well as the MRI sequences which will complete imaging for a full report.
Summary of Content A brief introduction to the setup and principles of scanning a soft tissue mass, will be followed by examples of common tumour types shown on an MRI scan.
There will be a summary guide to help identify these types of mass, and the sequences which are most helpful in imaging.

P226 The challenges of managing 'static' CES within the community setting - one services approach to mitigating clinical risk

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Background Historically, patients presenting with symptoms of Cauda Equina Syndrome (CES) were referred to an acute hospital site for prompt diagnosis and treatment to prevent life-altering limb paralysis and irreversible loss of bladder, bowel, and sexual function. With increasing pressure in the NHS for imaging services, Getting It Right First Time (GIRFT) guidelines outline criteria wherein, patients presenting with static CES symptoms are suitable to have a Magnetic Resonance Imaging of the lumbar spine within a community setting to aid initial diagnosis. Given the contrast between the urgent nature of the syndrome and the non-urgent service provision of the community setting, strategic management of the patient's conditions is crucial to reduce associated risks.
Purpose This poster outlines one services approach to mitigating clinical risks associated with scanning static CES patients within the community setting, including approaches to raising awareness, referral criteria, clinical assessment, and pathways to escalation. Case study examples on how this is adapted into practice and impacted on patient management will be used.
Summary With the increasing implementation of community diagnostic centres across England, safe management of such patients outside of acute care is an essential consideration to support timely access, but also treatment where needed. Radiographers play an essential role at both triage and scanning in assessing patient condition and providing preliminary clinical evaluation to help manage the risks.

References
1. Getting It Right First Time (2023). Spinal Surgery: National Suspected Cauda Equina Syndrome (CES) Pathway [online]. Available from: https://gettingitrightfirsttime.co.uk/wp-content/uploads/2023/10/National-Suspected-Cauda-Equina-Pathway-UPDATED-V2-October-2023.pdf [Accessed 30 January 2024].
2. National Institute for Health and Care Excellence (2023) Red flag symptoms and signs. Available from: Red flag symptoms and signs | Diagnosis | Sciatica (lumbar radiculopathy) | CKS | NICE [Accessed 30 January 2024].
3. The Royal College of Radiologists (2023) MRI provision for cauda equina syndrome. Available from: https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/mri-provision-for-cauda-equina-syndrome/ [Accessed 30 January 2024].

P227 Urgent Surgical planning pathway

Mrs Catharine Berry[1]
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Background When there is clinical uncertainty following trauma, urgent diagnosis of musculoskeletal (MSK) tendon tears is required for a good surgical outcome. Delays in imaging lead to a poor outcomes for the patient.
Purpose Radiology information systems/programmes store and process all imaging referrals in order for the clinical staff to justify requests, the administration team to book the scans and the clinical teams to perform the imaging and issue a report. Delays in vetting and booking lead to delays in surgery. A system/pathway for the prompt identification of these urgent cases was required.
An additional question was added to specific MSK examination codes; 'is this scan required for urgent surgical planning?'. If answered 'yes', an automated spreadsheet of the cases were emailed to the MSK team daily. This prompt identification led to timely vetting, booking and scanning and improved patient care.
Summary of content This poster demonstrates the pathway processes and the outcomes of implementing the pathway. Data demonstrates the successes and where further improvements could be made.

P228 Evolution of a Virtual Community of Practice (VCoP) for Radiography Advanced Practitioners

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Background Communities of Practice (CoPs) are groups of individuals who share a passion for something they do and learn how to do it better as they interact regularly [1]. CoPs can support exchange of knowledge and best practice, collaboration between members and professional development.
The Covid-19 pandemic accelerated the adoption of video conferencing solutions such as Microsoft Teams and Zoom, facilitating the growth of Virtual Communities of Practice (VCoPs). A multitude of local, national and international VCoPs now exist within the radiography profession.
Purpose This poster will take the reader on a journey through the establishment, development and future plans of the Radiography Advancing Practice VCoP. The organic growth of the community will be linked to Wenger's concept of CoPs [2]. Reflections from members will be shared to demonstrate the important role that VCoPs can play for radiographers working at an Advanced Practice level.

Summary of Content The Radiography Advancing Practice VCoP evolved from an ongoing webinar series which now regularly attracts over 100 delegates. The webinars include a range of invited speakers, each presenting for five minutes, with a focus on sharing their lived experience of Advanced Practice rather than didactic teaching.
A dedicated mailing list and a FutureNHS workspace and forum have been established to improve communication and facilitate sharing of knowledge, ideas and best practice.
Organisation of the VCoP is undertaken by an informal non-hierarchical network of interested members. A strong emphasis is placed on encouraging the involvement of radiographers with varying experience from across the profession.

References
1. Wenger-Trayner, E., Wenger-Trayner, B., Reid, P., & Bruderlein, C. (2023). Communities of practice within and across organizations: A guidebook. Sesimbra: Social Learning Lab.
2. Wenger, E., McDermott, R., Snyder, W. (2002). Cultivating Communities of Practice: A guide to managing knowledge. Cambridge: Harvard University Press.

P229 Towards building a culture of equality, diversity and inclusivity across Radiography research: The Radiography Equality, Diversity and Inclusivity Working Group

Dr Amy Hancock[1], Dr Helle Precht[2,3,4], Dr Marie-Louise Ryan[5], Dr Yobelli Jimenez[6], Dr Ernest Ekpo[6], Dr William Kwadwo[7], Dr Theo Akudjedu[8]
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Background Equality, Diversity and Inclusion (EDI) is an important concept to consider in all aspects of clinical practice and research activities for the medical radiation science (MRS) professions. EDI allows the incorporation of different perspectives, skill sets, and experiences into research to improve the translation and impact of research on clinical services and patient experience. Thus, there is a need to introduce and champion EDI across all aspects of professional practice including research(1).
Driven by an ambition to ensure the Radiography Journal not only aligns with EDI principles but actively promotes EDI standards and best practice across the research cycle, including conduct, peer-review, and publication, the Radiography EDI Working Group was formally established in March 2023. The group's overarching objective is to provide high level strategic oversight and direction to all EDI activity.
Purpose The working group wishes to highlight the importance of EDI across research and showcase their current and future projects
Summary of Content The poster will invite delegates to: 1) learn about the group and its members from across three continents who represent the journals International Advisory Board and Associate Editors; 2) hear about the work that has already been completed by the working group including the publication of a guest editorial(2) and the establishment of Terms of Reference; 3) learn about the groups ambitions and research projects, which aim to benchmark current EDI practice within the Radiography Journal and internationally across research practices in the MRS profession.

References
1. Cusson T, Lebel K, Spalluto L, Hillier T, Darras K, Yong-Hing C. Recommendations for improving Canadian radiology equity, diversity and inclusion. Can Assoc Radiol J 2023;74(1):30e6. https://doi/10.1177/08465371221099956
2. Hancock, A. Precht, H. Ryan, M-L. Ekpo, E. Jimenez, Y. Akudjedu, T.N. Towards building a culture of equality, diversity and inclusivity across Radiography research: a foundational template by The Radiography EDI Working Group. Radiography, 2024, 30(1),123-124.

P230 Embedding multidisciplinary student leadership placements across integrated care systems

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Background: Current Diagnostic Radiography training numbers fail to meet workforce shortfalls and increasing imaging services demand. National drivers advocate workforce expansion, however, placement capacity remains a challenge. Innovative placement models which enhance the student experience and equip them for future professional progression across all four pillars of advanced practice, were required. The Integrated Care System (ICS) is the first nationally to introduce leadership placements as core components to the course curriculum, rather than being elective placement opportunities. Spearheaded by the AHP Faculty and Imaging Network these non-clinical placements bring positive learner outcomes and improve system-wide quality of care.

Purpose: Leadership placements within an ICS offer unique opportunities for student development of leadership skills in a collaborative environment. Building on University interprofessional learning, this multidisciplinary system and regional working, develops value attributes to support and learn from each other. Educator and peer support was a strength of the placements providing learning opportunities in project planning and delivery. The initiative has overcome practical challenges whilst enhancing the student experience and enabling them to gain greater understanding of the wider NHS. The project work is proving to have system and regional impact.
Summary of Content: The student experience will be central to the poster with feedback quotes from them. The learning and benefits of the placement will also be outlined from the student, educators, patient, and services perspective. The impact of the learning from the project work will be outlined and transferable to other ICS, AHP Faculties, and Imaging Networks nationally.

P231 The environmental sustainability implications of contrast media supply chain disruptions in the covid-19 pandemic: A document analysis

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Background Travel restrictions implemented during the acute phases of the COVID-19 pandemic disrupted the supply chain pathways for critical radiology consumables including contrast media leading to shortages. Accordingly, some departments had to restructure their clinical workflows in accordance to recommended guidelines to oversee the safe continuity of patient care. This study aimed to evaluate the recommended guidelines for contrast usage during the acute shortage following the supply chain disruptions and to explore the implicit environmental sustainability considerations embedded in these documents and positions statements.
Methodology Documents were obtained through a search in the databases and a manual search in the Google Scholar. The selected documents were subjected to a pre-defined eligibility criteria for inclusion. The READ approach was employed for the document analysis and a thematic analysis of the obtained data was conducted.
Results 17 documents were included. Of these, 80% emanate from the United States of America. The findings were themed around contrast media conservation based on 1) Type and priority of examination 2) kind of imaging modality and 3) use of smaller vials over multi-dose vials packaging.
Conclusion Critical lessons of sustainability essence are implicitly embedded in the policy guidelines issued during the periods of acute contrast media shortage in the COVID-19 pandemic. These lessons relate to minimising contrast media usage through strategic clinical approaches without compromising diagnostic quality. These lessons need to be embedded in post-pandemic practice for patient safety while saving cost and the environment through education and training, collaboration with industry partners and policy renewal.
References

1. 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. and Franklin, J. M., 2021. The global impact of the COVID-19 pandemic on clinical radiography practice: A systematic literature review and recommendations for future services planning. Radiography, 27 (4), 1219–1226.
2. Grist, T. M., Canon, C. L., Fishman, E. K., Kohi, M. P. and Mossa-Basha, M., 2022. Short-, Mid-, and Long-term Strategies to Manage the Shortage of Iohexol. Radiology, 304 (2), 289–293
3. Koeppel, D. R. and Boehm, I. B., 2023. Shortage of iodinated contrast media: Status and possible chances – A systematic review. European Journal of Radiology [online], 164, 110853. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0720048X23001675
4. Mossa-Basha, M., Medverd, J., Linnau, K. F., Lynch, J. B., Wener, M. H., Kicska, G., Staiger, T. and Sahani, D. V., 2020. Policies and Guidelines for COVID-19 Preparedness: Experiences from the University of Washington. Radiology, 296 (2), E26–E31
5. Rosen, M. P., Norbash, A., Kruskal, J., Meltzer, C. C., Yee, J. and Thrall, J., 2020. Impact of Coronavirus Disease 2019 (COVID-19) on the Practice of Clinical Radiology. Journal of the American College of Radiology, 17 (9), 1096–1100.
6. Salazar, G., Mossa-Basha, M., Kohi, M. P. and Burke, L. M., 2022. Short-Term Mitigation Steps During the Iohexol Contrast Shortage: A Single Institution's Approach. Journal of the American College of Radiology.

P232 Radiographer led discharge - collaborative working improves emergency department patient experience

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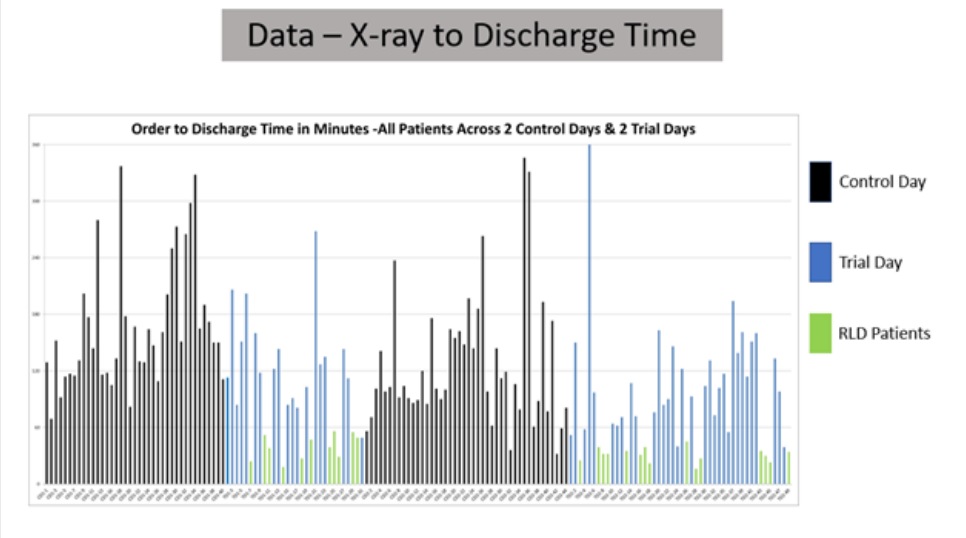
Background: Radiographer-led discharge (RLD) by appropriately trained radiographers is a role extension that facilitates patient discharge directly from the imaging department[1].

Introduction of RLD in our hospital reduced total time in department, improved patient satisfaction, and improved MIU adherence to Emergency Care Standard (ECS) target of 100% <4 hours.
This presentation illustrates positive impact of RLD from the perspective of emergency department clinicians, radiographers and patients, also documenting barriers encountered during implementation.
Reporting radiographers worked closely with Emergency Department (ED) colleagues to design a robust RLD pathway, utilising see and treat model.
RLD patient inclusions: Adult patients with a closed musculoskeletal (MSK) injury from shoulder to fingers, knee to toes. Full clinical assessment must be performed prior to X-ray referral with comprehensive 'Plan A, Plan B' style management plan documented on electronic patient record.
Following x-ray, patient reviewed by RRP and if no bony injury (NBI) discharged by RRP with advice; all patient interactions and x-ray findings documented.

- Average X-Ray to discharge time reduced from 1hr 43 minutes to 19 minutes.
- Radiographer Led Discharge = 100% compliance with ECS <4-hour target.
- Between April and August 2023 up to 67% of MIU patients used the RLD pathway

Patient feedback was positive:
"The new system...was excellent... very quick but thorough"
Our RLD pathway design respects professional boundaries, utilising each profession to maximum patient benefit. The efficiencies of RLD offer potential for workforce developments. For example, nurse colleagues have since expanded their training to include fracture manipulations.

Table



References
1. Howard, M. (2017) Radiographer-led discharge: What are we waiting for? Imaging and Oncology, 34-38.

P233 Advanced imaging for earlier diagnosis and morbidity prevention in multiple Myeloma: best practice guidance

Dr Nicholas Spencer[1], Dr Vicky Goh[2], Dr M Kaiser[3], Dr N Rabin[5], Dr S Stern[4], Dr F Seymour[6], Dr K Ramasamy[7], Dr S Lawless[8], Dr R Soutar[9], Dr J Ashcroft[1], Dr G Pratt[10], Dr C Bygrave[11], Dr Christina Messiou[3]
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Background and Purpose: Multiple Myeloma (MM) is an incurable but highly treatable remitting-relapsing cancer of bone marrow plasma cells. Uncontrolled, MM causes lytic bone lesions of spine, pelvis and long bones, impairing quality of life and incurring additional healthcare costs. This paper informs the UK radiology community about latest best practice regarding use of advanced imaging for earlier diagnosis and morbidity prevention in MM.

Method: Literature search using EMBASE and MEDLINE databases was conducted, using the terms - myeloma imaging, myeloma MRI, myeloma PET/CT, myeloma CT. Evidence was reviewed to confirm current UK practice, and make recommendations about optimal imaging investigations, timing of investigations, and advice on best healthcare resource utilisation. The role of advanced imaging during remission, at relapse and for specific disease sub-types has also been reviewed.
Results: Current UK use of non-functional imaging with X-Ray skeletal survey and whole-body low dose CT is unable to detect disease before destructive bone lesions are present. Detection of disease with Whole-Body MRI (WB-MRI) has the highest sensitivity by prospective comparison. FDG-PET/CT is an alternative modality of choice. Advanced Imaging at best response should also be considered to provide a baseline for comparative imaging and decision making at relapse.
Recommendations: Early detection of extramedullary disease by imaging offers potential preventative treatment and thus better outcomes. All MM patients should have access to advanced functional imaging with whole body MRI or FDG PET/CT at diagnosis and relapse, whenever the presence of active disease is suspected by diagnostic test results or clinical symptoms.

P234 MRI image quality audit as a tool for quality assessment and improvement in Independent Sector diagnostic imaging; Static Operations (includes Community Diagnostic Hub), and Mobiles

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Background: Image quality in MRI as a measure of diagnostic accuracy and image appearance as influenced by numerous practical quality factors. Assessment can be subjective, relying on individuals' perceptions of those quality factors, but standardising MRI image quality audit allows greater objectivity. Audit can identify suboptimal quality trends and radiographer training needs, providing prompt feedback to all staff.
Purpose: As part of our organisation's wider quality assurance and improvement programme, Alliance Medical Ltd (AML) defined quality criteria with 5-point scoring system; used as a powerful, vital tool to provide auditors across various operational areas with a systematic and joined up approach to producing high standard diagnostic MRI images across the entire fleet of 64 scanners. A target of 5% of throughput to be audited.
Through routine image QA audit, we can demonstrate sites meet adequate, good, or excellent diagnostic scores for image quality. Outputs reaching Regional Managers, Static Unit Managers, Mobile Managers and Clinical Teams as necessary, enabling action plans for quality improvement. Discussion around image quality audit results are regularly incorporated into local team meetings; aiding radiographer in CPD efforts for best practice, service excellence and providing optimum patient outcome in their clinical imaging.
Summary of Content: To share AML Standard Operating Procedure, quality metrics and data collections for MRI image quality audit with UKIO participants, with the aim to promote image quality audit in achieving best practice, continual learning, and quality improvement.

P235 Evolution of Incident Management in Patient Safety at Alliance Medical

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Background: As regards patient safety, incident management frameworks continue to evolve. One emerging methodology being used for investigating incidents is System Engineering Initiative for Patient Safety (SEIPS). In turn, SEIPS are being incorporated into Patient Safety Incident Response Framework (PSIRF)—to provide comprehensive insights into principles behind near misses and incidents in no-blame, supportive environments. The national shift towards evaluating learning from incidents presents an opportunity to reframe organisational cultures and mindsets for all healthcare organisations.
Purpose: Alliance Medical (AML) is preoccupied with incidents and committed to resilience. SEIPS delineates the interplay between work systems, processes, and outcomes within complex socio-technical systems and these will be discussed. All organisations in or engaged with NHS are required to move to PSIRF, which emphasises considered responses, compassionate engagement, and system-based learning in the aftermath of patient safety incidents; and we share what we have learned on the journey so far.
Summary: We will outline the 4 main components of PSIRF and its' 9 principles of engagement. We will illustrate key concepts from this framework, highlighting relevance in fostering robust patient safety culture and introduce PSIRF's forthcoming thematic reviews that AML has adopted in order, ultimately, to show how a proactive approach addresses specific safety concerns and can improve patient safety. AML approaches incident management in a structured way incorporating the PSIRF principles within an organisation with national scope covering diverse patient populations,

developing and enhancing the Just Culture of the organisation and identifying challenges specific to imaging and national organisations.

References
1. NHS England, B1465 PSIRF documents & guidance (england.nhs.uk)
2. NHS_0932_JC_Guide_A3 (england.nhs.uk)

P236 Normal and variant hepatic arterial anatomy: a pictorial review

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Background: Approximately 2/3rds of pancreatic adenocarcinomas lie in the pancreatic head and uncinate process, as oppose to distally in the body or tail. Surgery for the former is complex, as is the vascular anatomy in this region. 'Normal' arterial anatomy is reportedly only present in 55% of people[1] – therefore a significant number of patients undergoing surgery will have atypical anatomy. Depending on the variation in question, problems associated include an effect on the patient's tumour resectibility, predisposition to tumour extension and risks of iatrogenic injury during surgery[2] – therefore it is vital to have an appreciation of the anatomy beforehand. As radiologists, we have an important role to convey this to the surgeon. The hepatic arteries are particularly prone to variation, and a lack of awareness of this before surgery could pose the patient's vascular supply to the liver at risk. Some of the terminology for the variants can be confusing – e.g. a 'replaced' vs 'accessory' artery – therefore it is crucial these are understood in order to ensure the radiologist and surgeon are on the same page.

Purpose: To provide an overview of both the conventional arterial anatomy in the region of the pancreatic head and of the common anatomical variations encountered.

Summary: This pictorial review aims to provide a reminder of the normal and variant vascular anatomy in the context of resection for pancreatic cancer, in order to ensure clear communication of anomalies to the operating surgeons and avoid serious risks such as vascular iatrogenic injury.

References
1. Winter, T.C. et al. (1995) 'Hepatic arterial anatomy: Demonstration of normal supply and vascular variants with three-dimensional CT angiography.', RadioGraphics, 15(4), pp. 771–780. doi:10.1148/radiographics.15.4.7569128.
2. Pancreatic cancer - CT staging 2.0 (no date) The Radiology Assistant : Pancreatic Cancer - CT staging 2.0. Available at: https://radiologyassistant.nl/abdomen/pancreas/pancreas-carcinoma-1 (Accessed: 09 February 2024).

P238 Analysis of PIRADS 3 Cases at Southend University Hospital

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Prostate magnetic resonance imaging (MRI) reporting using the Prostate Imaging-Reporting and Data System (PI-RADS) v2.1 has been promulgated as the standard for prostate cancer detection and risk stratification.

The updated version of PI-RADS v2.1 is anticipated to improve inter-reader variability, simplify and standardise the assessment of prostatic MRI, improve interdisciplinary communications and the detection and risk stratification of prostate MRI. However, the latest version of PI-RADS has been reported to have poorer specificity than its predecessor for diagnosing clinically significant malignancy.

PIRADS 3 lesions are equivocal for the presence of prostate cancer and pose a significant clinical management challenge, the aims of this analysis is to:

- To determine whether PIRADS 3 lesions represent clinically significant prostate cancer
- Whether those PIRADS 3 lesions that are histologically significant, have factors (such as PSA density >0.10) that may differentiate it from being insignificant/benign
- Compare data from three readers of varying degrees of experience with MR Prostate

Table 1

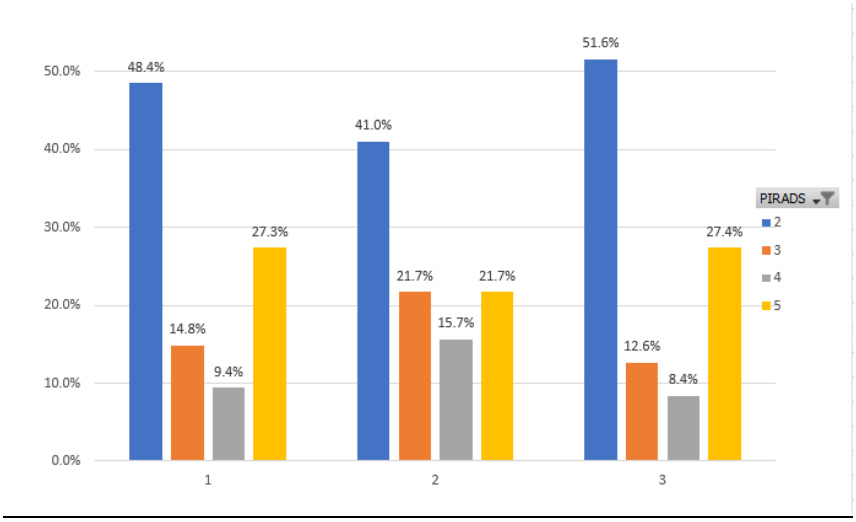
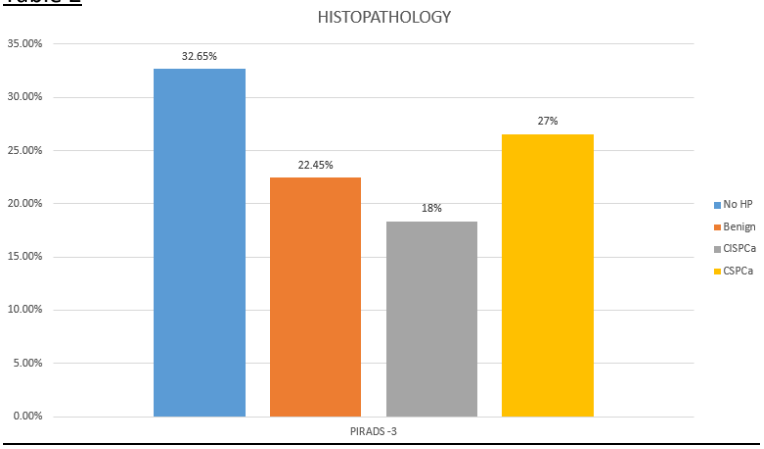


Table 2



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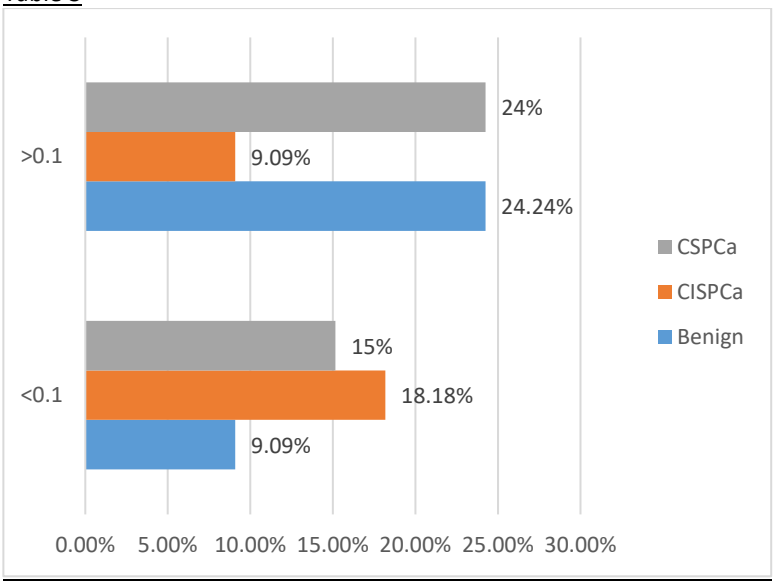

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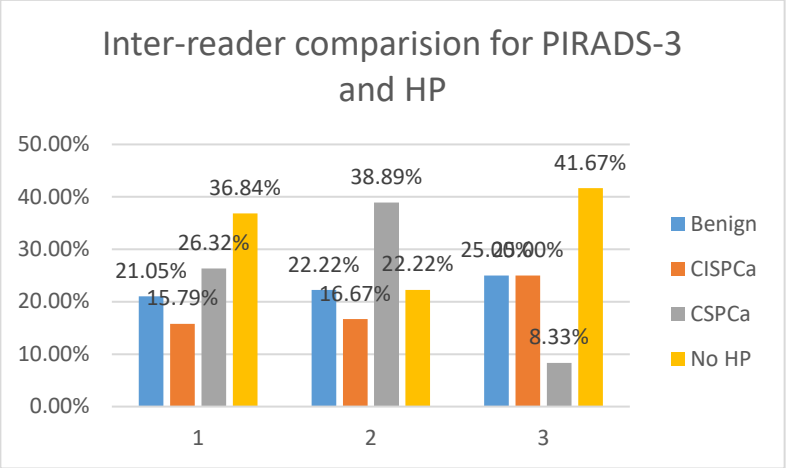

References
1. Turkbey B, Rosenkrantz AB, Haider MA, Padhani AR, Villeirs G, Macura KJ, et al. Prostate Imaging Reporting and Data System Version 2.1: 2019 Update of Prostate Imaging Reporting and Data System Version 2. Eur Urol 2019 September 01;76(3):340-351.
2. Westphalen AC, McCulloch CE, Anaokar JM, Arora S, Barashi NS, Barentsz JO, et al. Variability of the Positive Predictive Value of PI-RADS for Prostate MRI across 26 Centers: Experience of the Society of Abdominal Radiology Prostate Cancer Disease-focused Panel. Radiology 2020 July;296(1):76-84.

P239 Urinary bladder rhabdomyosarcoma in a juvenile animal at ultrasound.

Annette Kerins[1]
[1]Northwest Veterinary Specialists, Runcorn, United Kingdom

Rhabdomyosarcoma of the urinary bladder is a rare occurrence in dogs. This case documents some of the ultrasound findings in a 6month old Springer Spaniel pup that was assessed for haematuria and dysuria. Definitive diagnosis was possible from a minimally invasive ultrasound-assisted catheter suction biopsy technique. A brief review of the case and the literature is presented here.

References
1. Pierini A, Criscuolo MC, Caccamo R, Bottero E, Campanile A, Pisani G, Marchetti V, Benvenuti E. (2023) A case series of urinary bladder rhabdomyosarcoma in seven dogs. Open Vet J. 13(11):1498-1503.
2. Shelmerdine SC, Lorenzo AJ, Gupta AA, Chavhan GB. (2017) Pearls and Pitfalls in Diagnosing Pediatric Urinary Bladder Masses. Radiographics. 37(6):1872-1891.

P240 Extrahepatic ultrasound findings during HCC screening: A UK single site review

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Introduction Hepatocellular carcinoma (HCC) surveillance ultrasounds (US) at many institutions includes examination of the whole abdomen. There is no consensus on the role of imaging of extrahepatic structures and limited data describing frequency and clinical significance of incidental extrahepatic findings during HCC surveillance. The purpose of this study was to assess the prevalence and significance of extrahepatic incidental findings during HCC surveillance US.
Methods A retrospective review of all HCC surveillance US in a single centre was conducted over a 4-month period. All findings were screened, recorded and graded by two individuals, obtaining consensus agreement in any conflicting gradings. Findings were graded as normal, clinically unimportant, likely unimportant, potentially important finding/requires review with other clinical speciality, finding related to liver disease.
Findings 189 scans over a 4-month period were reviewed. 91 (48%) of the cases had extrahepatic findings identified during US with 102 total extrahepatic findings seen. 71 (78%) of the extrahepatic findings were already known, 5 (5%) of the extrahepatic findings led to further imaging tests. 29.6% (56) were graded as clinically unimportant, 2.6% (5) likely unimportant, 3.2% (6) potentially important and 17.5% (33) related to liver disease, 14 patients had multiple extrahepatic findings. None of the findings led to a cancer diagnosis. Location of extrahepatic findings by frequency were gallbladder (46.2%), spleen (25.3%), renal (20.9%), ascites (9.9%), pancreas (6.6%) and varices (1.1%).
Conclusion Important extrahepatic findings during HCC US surveillance are uncommon. Incidental findings identified during surveillance did not result in significant additional follow-up imaging or interventions.

P241 Sequence of Contact X-ray Brachytherapy (CXB) and External Beam Radiation (EBRT) in organ-preserving treatment for small rectal cancer

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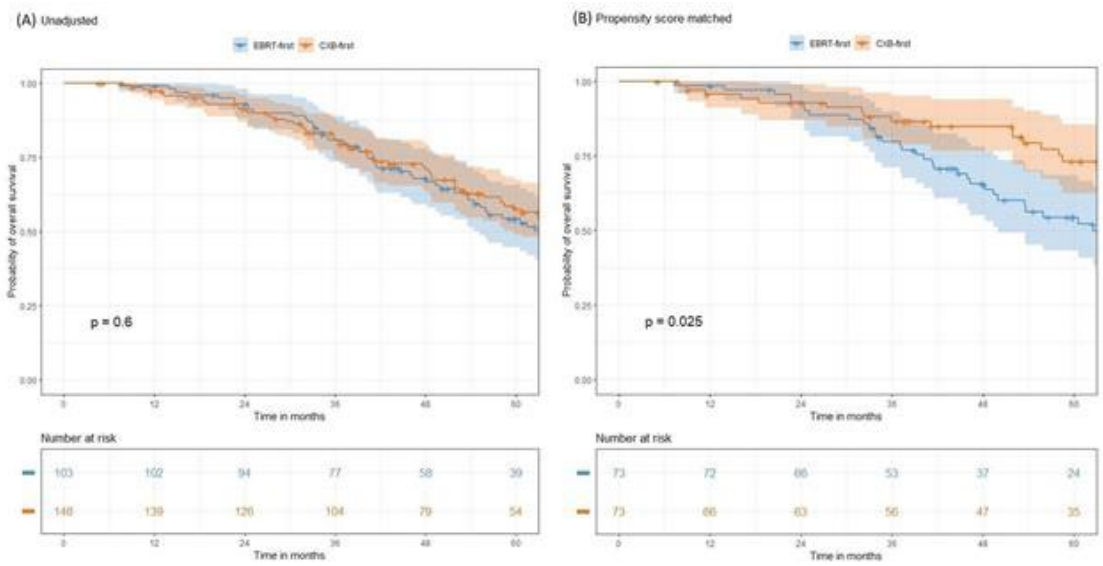
Background External Beam Radiotherapy (EBRT) followed by Contact X-ray Brachytherapy (CXB) and vice versa are viable alternatives to surgery for selected rectal cancer patients who have small tumours (≤3cm). However, the optimal sequence of treatment needs to be established. [1-3] We compared two approaches using Propensity Score (PS) matching and inverse probability treatment weighting (IPTW) analyses to investigate whether the sequence of treatment affected patient outcomes.
Method This retrospective analysis (2008-2019) included patients with rectal adenocarcinoma (cT1-3, cN0-1, cM0, grade 1-2, size ≤3cm) who received both EBRT and CXB, irrespective of treatment sequence. Overall survival (OS), disease-free survival (DFS), local regrowth (LR) rate, organ preservation (OP) rate, and rate of post-treatment rectal bleeding were assessed with unadjusted, adjusted, PS-matched, and IPTW models.
Results Following adjusted, PS matching and IPTW analyses from 251 eligible patients; 103 starting with EBRT (median follow-up: 37 [IQR:18-56] months) and 148 with CXB (median follow-up: 32 [IQR:16-54] months, a significant improvement in OS (p=0.04, HR (95%CI): 0.48 (0.30-0.79)) and a higher risk of post-treatment rectal bleeding (grade 1 (26%) and grade 2 (6%)) were found in patients who started with CXB. No significant differences were observed in DFS (p=0.87), LR rate (p=0.70), or OP rate (p=0.80) between the groups.
Conclusion Commencing treatment for rectal cancer (≤3cm) with CXB rather than EBRT was associated with improved OS, despite a higher risk of rectal bleeding, which align, in part, with other emerging evidence from recent studies. No statistically significant differences were observed in DFS, LR, or OP rates.

Table



References
1. Benezery, K., Montagne, L., Evesque, L., et al. (2020) 'Clinical response assessment after contact X-Ray brachytherapy and chemoradiotherapy for organ preservation in rectal cancer T2-T3 M0: The time/dose factor influence', Clinical and Translational Radiation Oncology, vol. 24, pp. 92-98.
2. Dhadda, A., Sun Myint, A., Thamphya, B., et al. (2021) 'A multi-centre analysis of adjuvant contact X-ray brachytherapy (CXB) in rectal cancer patients treated with local excision – Preliminary results of the CONTEM1 study', Radiotherapy and Oncology, vol. 162, pp. 195-201.
3. Gerard, J.-P., Barbet, N., Schiappa, R., et al. (2023) 'Neoadjuvant chemoradiotherapy with radiation dose escalation with contact x-ray brachytherapy boost or external beam radiotherapy boost for organ preservation in early cT2–cT3 rectal adenocarcinoma (OPERA): a phase 3, randomised controlled trial', The Lancet Gastroenterology & Hepatology, vol. 8, no. 4, pp. 356-367.

P245 Engagement of diagnostic radiographers and radiology support workers in clinical audits

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Introduction: The purpose of this project is to see how engaged radiology staff are with clinical audits and to find out what encourages/ dissuades people from undertaking them at a local level. A local service evaluation was performed.

Methods: A questionnaire was formed to gain an understanding of why staff are not completing audits. The questionnaire was disseminated via Microsoft Forms and data electronically collated and analysed.
Results: There was a 22% response rate with accurate representation of each banding within the population group. Most staff members understand why clinical audits are carried out, with some having the misunderstanding that audits are research. 92% of staff agreed that 'Clinical audits promote quality, cost effective and safe patient care' but only 18% have completed an audit in the last 3 years (Abela, 2023). Just over half of staff are interested in undertaking an audit however, only 31% of staff would actually feel confident about undertaking one. The themes which were prevalent in encouraging audits were a need for good education, good support and the desire to improve the department. Themes which might deter completing an audit were lack of education of audits, limited support and a poor audit culture locally.
Conclusion: There are members of staff who see the benefit of undertaking audits, are interested but need to learn more about the process before being able to fully engage with audits.

References
1. Abela, S., 2023. Clinical Effectiveness and Clinical Audit. In Leadership and Management in Healthcare: A Guide for Medical and Dental Practitioners (pp. 73-82). Cham: Springer International Publishing.

P246 North West Imaging Training Academy - Results of the North West (NW) of England reporting radiographer survey: plain film/projectional imaging

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Introduction Diagnostic Radiographers have been undertaking reporting since the 1980's, across a range of modalities, from a wide spectrum of referral sources. Demand for radiographers working in this role is rising to meet service demand and the predictions outlined in the Richards' report (2020), notably that 50% plain film/projectional imaging reporting should be undertaken by diagnostic radiographers1,2.
Method NHSE (formerly HEE NW) funded a research project scoping the contribution that reporting radiographers make to diagnostic throughput and related governance/patient safety issues over a data collection period of activity (1/4/22>31/3/23). 24 NHS Trusts in the NW of England were recruited. A mixed-methods questionnaire study resulted in a 100% return rate, scaffolded on a similar London study2.
Results/discussion In relation to radiographer reporting, this paper will discuss:
° Number/banding/wte
° Status/implementation of job plans
° Reporting activity/patterns
° Number, type of images, and combination of body regions reported
° Barriers to undertaking more sessions/ scope of practice
° Impact of independent sector working
° Nature/year/location of qualification in reporting
° Resources required for training
° Adherence by trusts to practice guidelines
° Governance, peer review, audit and discrepancy/error management
° Preceptorship, ongoing mentorship/ CPD for qualified staff
Recommendations to:
° Adopt a consistent approach to job planning
° Establish a minimum number of reports to maintain competence and capability
° Develop a governance structure for this service linked to patient safety
° Develop a local education and training plan to maintain workforce need
° Develop a Community of Practice for Reporting Radiographers pan NW
° Promote sharing learning between organisations to inform best practice

References
1. Richard's M. (2020) Diagnostics: Recovery and Renewal – Report of the Independent Review of Diagnostic Services for NHS England
2. Woznitza N et al. (2020) Clinical reporting of radiographs by radiographers: Policy and practice guidance for regional imagingnetworks, Radiography, https://doi.org/10.1016/j.radi.2020.08.004

P247 North West Imaging Training Academy - Results of the North West (NW) of England reporting radiographer survey: modality data - breast, fluoroscopy, CT, MRI, DEXA & nuclear medicine

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Introduction Diagnostic Radiographers have been undertaking plain film/projectional imaging reporting for many decades. The scope of practice for radiographer reporting has extended to other imaging modalities driven by increasing demand, with CT requests predicted to increase by 100% by 2025. Reporting Radiographers were cited as an efficient/effective method of improving patient pathways1.
Method NHSE (formerly HEE NW) funded a research project scoping the contribution that reporting radiographers make to diagnostic throughput and related governance/patient safety issues. Exclusions: ultrasound and plain film/projectional imaging. 24 NHS Trusts in the NW of England were recruited. A mixed-method questionnaire study resulted in a 100% return rate.
Results/discussion In relation to radiographer reporting, this paper will discuss:
°Number/banding/wte
°Status/implementation of job plans
°Reporting activity/patterns
°Number, type of images, and combination of body regions reported
°Barriers to undertaking more sessions/ scope of practice
°Impact of independent sector working
°Nature/year/location of qualification in reporting
°Resources required for training
°Adherence by trusts to practice guidelines
°Governance, peer review, audit and discrepancy/error management
°Preceptorship, ongoing mentorship/ CPD for qualified staff
Recommendations to:
°Adopt a consistent approach to job planning
°Establish a minimum number of reports to maintain competence/capability
°Develop a governance structure for this service linked to patient safety
°Develop a Community of Practice for Reporting Radiographers by modality pan NW
°Promote sharing learning between organisations to inform best practice
°Develop national standards/guidance for reporting all imaging modalities
°National review of education and training resources across the modalities that can be adapted to meet local workforce needs

References
1. Richard's M. (2020) Diagnostics: Recovery and Renewal – Report of the Independent Review of Diagnostic Services for NHS England

P248 The Evolution of the South East Imaging Training Academy

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Introduction: Initially set up by Health Education England (HEE) as a direct recommendation following publication of The Richards Review in 2020, the South East Imaging Training Academy (SEITA) was established to expand the Diagnostic imaging workforce across the 4 South East (SE) networks.
Content: The primary aim of the now NHSE funded SEITA is to facilitate a major expansion of the imaging workforce with additional radiologists, radiographers, advanced practitioner radiographers and support staff, and to increase clinical placement capacity within radiology in the SE.
Promotion of a multi-professional engagement approach to high quality training, with continuous learning programmes for the wider imaging workforce including sonographers, medical physics experts, radiology nurses and assistant practitioners is also a key strategic aim of the Academy and innovation will be needed to achieve this.
Task and finish groups across work streams including diagnostic and reporting radiographers, mammography and radiology nursing have already been completed, and subsequent innovative curriculum design has enabled a range of interactive digital teaching to be delivered to a wide and varied audience across the 4 SE networks.
An image sharing platform has recently been procured and content is currently being curated, again with multi-professional inclusivity, and the use of ultrasound simulation training is also being promoted across the region.
Imaging Academies play a pivotal role in shaping the future of radiology training and this poster aims to demonstrate some of the key strategies of the SEITA, and give insight on future developments, collaboration and advancement in learning support and opportunity.

References
Richards, M. (2020) Diagnostics: Recovery and Renewal – Report of the Independent Review of Diagnostic Services for NHS England. NHSE

P249 "Don't touch the sterile bits": Variations in infection, prevention and control in Computed Tomography and contrast injectors by Australian radiographers

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Introduction: In radiology, Computed Tomography (CT) has the highest incidence of infection-related risk for patients through a combination of equipment and human error. Critical errors can occur through the process of administration of medicines, primarily contrast, through pressure injectors. This study takes a qualitative approach to understanding variations in infection and prevention control (IPC) practice in CT.
Methods: A large survey of 138 Australian radiographers was deployed, mapping the baseline of IPC and contrast administration. Following this, 13 experienced CT radiographers participated in 3 focus groups, which were transcribed verbatim and coded using thematic analysis to identify key themes and concepts.
Results: The survey demonstrated that practices differed across workplaces, including public versus private department/clinics, and cannulation and power connection roles when radiology nurses were present. Education related to staff use of contrast injectors was largely through peers, with new staff often not having an induction. Key themes from the focus groups included 'IPC communication', 'safety in CT' and 'injector technology', with a lack of detailed CT-specific IPC policies and risk from external staff undertaking roles in contrast administration a salient concept. Some uncertainty was evident by radiographers regarding formalised sterile practices, and the change between single and multi-use power injectors.
Discussion: The lack of CT-specific IPC training and policies led to variations in practice from radiographers, especially for new staff or locums. Future research should include a Delphi-style best-practice guide to the use of high technology power injectors and expectation of threshold competencies for radiographers.

P250 "We've got 30 patients, so who's working Saturday?" Seven ideological dilemmas for sonographers with work-related musculoskeletal disorders

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Background: In the course of their work, clinicians across all spheres of healthcare are routinely faced with contradictions that should, in theory at least, prove to be intractable obstacles to 'getting things done'. In practice, however, such 'ideological dilemmas' (Billig et al., 1988) seldom transpire to be insurmountable and, moreover, can be essential - and highly constructive - features in individuals' everyday reasoning about self, (professional) identity and (working) environment. This paper qualitatively investigates a set of such ideological dilemmas that emerge from experienced sonographers' accounts of experience with work and work-related musculoskeletal disorders (WRMSD).
Method: Detailed semi-structured interviews were conducted with N=9 sonographers, all working in the UK. An Interpretative Phenomenological Analysis (Miller, Booth and Spacey, 2019) indicated points of pragmatic contradiction and participants' sense-making around them.
Results: Analysis revealed seven common dilemmas: (a) Practical necessities versus WRMSD prevention techniques; (b) Being ill versus not being ill; (c) Increasing workload versus job pressure; (d) Self-care versus care of the group; (e) Needing to change versus needing to persevere; (f) Practical versus ethical judgement, and; (g) Self-preservation versus professional pride. In navigating these, participants were often able to find and reinforce their own sense of a committed, professional and agential self.
Conclusions: The findings have import for sonographers and other clinicians faced with contradictory voices and difficult choices around work and injury/illness, not least by highlighting the enabling elements of what might otherwise be viewed as a set of straightforward everyday barriers to both practice and wellbeing.
References
Billig, M., Condor, S., Edwards, D., Gane, M., Middleton, D. and Radley, A. (1988) Ideological dilemmas: a social psychology of everyday thinking. London: Sage.
Miller, P.K., Booth, L. and Spacey, A. (2019) Dementia and clinical interaction in frontline radiography: Mapping the practical experiences of junior clinicians in the UK. Dementia. 18(3), 1010-1024.

P251 UK sonographers' perspectives on the cultural, professional and environmental contexts of living with work-related musculoskeletal disorders

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Background: Work-related musculoskeletal disorder (WRMSD), already widespread among sonographers, is increasingly prevalent due, at least in part, to the physical stresses of working in understaffed environments (Miller et al., 2019). More than 80% of UK sonographers report suffering from WRMSD at some point, and it is estimated 20% will experience a career-ending injury (Sommerich et al., 2019). While sonographers typically understand that their own working practices can contribute to higher risk of WRMSD, many continue to scan even when directly affected condition. In order to help shape a stronger understanding of the circumstances above, this paper qualitatively reports sonographers' own perspectives on the cultural, professional and environmental contexts of living and working with WRMSD.
Methods: Using Interpretive Phenomenological Analysis (Mawson et al., 2022), N=9 semi-structured interviews with experienced (>5 years) sonographers were analysed.
Findings: Five major themes emerged from the data: (a) 'It's just what we do' - sonographer culture as rationale; (b) 'They just don't care about us' - exasperation, faceless attribution and anxiety; (c) 'We just do what we can with what we've got' – finding practical workarounds; (d) 'The pressure is just ridiculous' - WRMSD, workload and stress; (e) 'Ergonomic instructions? What ergonomic instructions?' – physical environment and equipment.
Conclusion: It is contended that the findings above help provide depth and dimension in an understanding of why sonographers with WRMSD might pursue superficially self-defeating courses of action at work. In turn, this could help inform more practitioner-sensitive interventions around WRMSD in ultrasound and analogous AHP domains.

References
Mawson, J., Miller, P.K. and Booth, L. (2022) Stress, a reflective self and an internal locus of control: On the everyday clinical placement experiences of older undergraduate radiographers in the UK. Radiography, 28(1), 55-60.
Miller, P.K., Waring, L., Bolton, G.C. and Sloane, C. (2019) Personnel flux and workplace anxiety: personal and interpersonal consequences of understaffing in UK ultrasound departments. Radiography, 25(1), 45-50.
Sommerich, C.M., Evans, K.D., Lavender, S.A., Sanders, E., Joines, S., Lamar, S., Radin Umar, R.Z., Yen, W. and Park, S. (2019) Collaborating with Sonographers and Vascular Technologists to Develop Ergonomics Interventions to Address Work-Related Musculoskeletal Disorders. Journal of Diagnostic Medical Sonography, 35(1), 23-38.

P252 Incorporating Leadership and Advanced Practice Elements in Healthcare Education and Training

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Background: The HCPC Standards of Proficiency have emphasised the role and importance of leadership at all levels of practice in healthcare professions ensuring high quality, safe and effective delivery of care to patient (HCPC, 2023). It is outlined that leadership is not just about the management or supervision of others, but is an attribute healthcare professional should demonstrate in their roles. Higher education institutions (HEI) and clinical training providers play important role in embedding leadership in the curriculum allowing healthcare students develop their leadership skills from early on in their career. Additionally, this is inline with the clinical placement expansion intend in increasing student placement capacity which has been one of the agenda in recent years aiming to strengthening healthcare workforce in the NHS.
Purpose: This work explores the collaborations between HEI and NHS trusts in developing and implementing leadership and advance practice placements opportunities for diagnostic radiography students.
Summary of Content: This pilot project has explored two areas of leadership which are clinical and managerial. The framework was developed based on Clinical Leadership Competency Framework which focused on five domains; demonstrating personal qualities, working with others, managing services, improving services and setting direction (CLCF, 2012). In this training, students have opportunities to explore role extensions in diagnostic radiography practice including, but not limited to, shadowing advance practitioner in various medical imaging modalities, observing senior staff working in multi-disciplinary team and spending time with research team in clinical setting.
Acknowledgement: Elizabeth Booth, Former Regional Clinical Fellow Health Education England, UK.

References
1. HCPC (2023) Leadership. URL: https://www.hcpc-uk.org/standards/standards-of-proficiency/revisions-to-the-standards-of-proficiency/leadership/
2. NHS Leadership Academy (2011) The Clinical Leadership Competency Framework. NHS Institute for Innovation and Improvement, University of Warwick, Coventry CV4 7AL, UK.

P253 Unravelling the leadership Genome: A Chromosomal Model for Healthcare evolution

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Background Effective leadership is pivotal for successful clinical settings. Drawing insights from documents such as the NHS England Multidisciplinary Framework for Advanced Clinical Practice 2017, the College of Radiographers Education and Career Framework (ECF) 2022, and the International Society of Radiographers and Radiological Technologists (ISRRT) 2024 position statement, leadership, when rooted in the four pillars of practice, is foundational for service delivery evolution and safety, in medical imaging and radiation therapy.

Method A multinational collaboration utilising a virtual mini-delphi method to achieve consensus, was used to generate a novel model (figures 1-4), elucidating the core values and attributes of effective leadership, by metaphorically applying the principles of DNA, Genes, Chromosomes, meiosis and mitosis.

Results The model delineates leadership characteristics across three fundamental domains:

1. Self: Encompassing individual values and the imperative for personal growth.
2. Leader: Highlighting resilience, authenticity, empathy, reflection, inspiration, innovation, and engagement.
3. Awareness: Fostering self-awareness, understanding others and system-level awareness.

The model further articulates key leadership actions:

- Leading through change: Initiating, strategizing, inspiring, and feedback.
- Distributed leadership: Identifying optimal leaders for specific contexts.
- Say and Do: Demonstrating situational awareness, communication, transparency and accountability.
- Research active: Advocating for patient values and perspectives.

Conclusions The model demonstrates the application of effective leadership in healthcare contexts and offers everyday practice insights from historical and contemporary leadership programs. By embracing this chromosomal model, healthcare practitioners can navigate the complexities of effective service delivery leadership, demonstrating recognisable outcomes and guide healthcare evolution with integrity, innovation and inclusivity.

Table

Fig 1

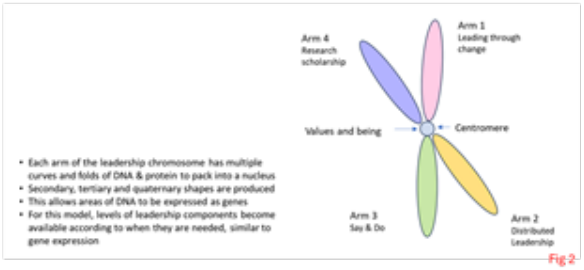

Fig 2

Figs 1-4 revealing gradual building of the model. Figs 1 and 2 show centromere and arm details. Figs 3 and 4 show ultimate model content on an effective leadership outcomes base.

Fig 4

References

College of Radiographers (CoR) 2022. Education and Career Framework. Embedding the four pillars of practice (p9). https://www.sor.org/getmedia/b2f6bf07-668f-4155-950a-b9d96c48eae1/12604-CoR-ECF-Interactive-v9a.pdf (Accessed : 01 February 2024).

International Society of Radiographers and Radiological Technologists (ISRRT) 2024 Vision and Mission Statement https://www.isrrt.org/about/vision-and-mission-statement/ (Accessed: 01 February 2024).

NHSE Health Education England (2017). Multi-professional framework for advanced clinical practice in England (p9-10) https://www.hee.nhs.uk/sites/default/files/documents/multi-professionalframeworkforadvancedclinicalpracticeinengland.pdf (Accessed: 01 February 2024).

P254 Early specialisation of Radiography graduates

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Background The demand for diagnostic imaging reached saturation pre-pandemic. Year on year increases in activity, coupled with comparatively low scanner count per unit population have had a detrimental effect on healthcare delivery. Both Diagnostics: Recovery and Renewal and Getting it Right First Time (GIRFT) reports emphasise the need to expand and streamline existing imaging service lines.
Physical expansion of services requires appropriate staffing and training with a significant lead time for undergraduate training followed by graduate preceptorship in general x-ray (1-3 years) before deciding whether to remain or pursue an alternative modality career.
Purpose Our local diagnostic radiography graduates are already employed direct to imaging specialties as well as general x-ray role by our local and regional institutions, with many completing preceptorship within a year. Preparing new graduates for an expanded opening career choice allows some shortage modalities to recruit earlier. However, this requires extensive undergraduate experience and an open mindset from the prospective employer.
This presentation aims to showcase some of the success achieved from regional recruitment direct to specialty imaging. This will be illustrated from the perspective of employer and new graduate.
Summary of content The poster will provide introductory information on the need for and implementation of expanded imaging services. Insight will also include the perception of students who have taken this route and imaging leads who have realised the benefits. We will also include how our students are prepared at undergraduate level, thus giving them the confidence to take a non-traditional career first step.

P255 The deployment and utilisation of the diagnostic imaging support workforce: A scoping review

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Background: The demand on healthcare services, exacerbated by patient backlogs and difficulty in recruiting and retaining healthcare staff, has led to increased interest in workforce redesign. Clinical Support Workers are a key component of workforce redesign, yet little is known about the effective deployment of this workforce. This scoping review aimed to explore how Support Workers and Assistant Practitioners (I-SWAPs) are utilised within allied health professions. The findings relevant to diagnostic imaging services are presented.
Method: Electronic databases (MEDLINE, CINAHL complete, Scopus, and Google Scholar) were searched to find English Language primary research articles that explored the deployment of SWAPs within Allied Health and diagnostic imaging. Following the scoping review methodology[1], the design, key findings, and implications from each study were analysed.
Results: Eleven articles met the eligibility criteria, two undertaken in Australia and nine in the UK. Most articles employed qualitative methods, with highly variable research quality identified. Key findings were that cost-effectiveness of this workforce has not been formally evaluated, and the small amount of research that exists in the UK focuses on Assistant Practitioners (Band 4), largely overlooking support workers at Bands 2 and 3.
Conclusions: Rigorous, quantitative, and mixed methods research into the deployment and impact of I-SWAPs is needed in order to gain a clearer understanding of their optimal utilisation.

References
1. Arksey, H. and O'Malley, L., 2005. Scoping studies: towards a methodological framework. International journal of social research methodology, 8(1), pp.19-32.

P256 An exploration of regional approaches to the training, education, and deployment of imaging support workers and assistant practitioners (I-SWAPs) in England.

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Background The I-SWAPs are a vital component of imaging services, with our research confirming they form approximately a fifth of the imaging establishment. No research to date has investigated the deployment of this essential workforce. This study aimed to explore the regional approaches to the deployment, recruitment and retention, training and education of this workforce across imaging departments in England.

Methods Semi-structured interviews were conducted with 16 senior workforce leaders representing 17 of the 22 Imaging Networks across England. Interview transcripts were then analysed and evaluated using thematic analysis to identify emergent themes.
Results Two overarching themes emerged from the data: education and development of the workforce and recruitment and retention. There was clear linkage between the two themes with support for education and development positively impacting on recruitment and retention and conversely, where this was perceived as lacking, there were typically challenges in employment of the I-SWAPs. Variance in the scope of practice and pay bandings was also evident as were examples of innovative practice, providing valuable transferable learning across regions.
Conclusions The study highlighted the importance of increasing recognition for, and understanding of, the roles of the support and assistant workforce in imaging. There were clear benefits associated with this, particularly in geographical locations where challenges around recruitment and retention were prevalent. Examples of innovative deployment and development showcased workforce transformation and education.

P258 Incorporating Clinical Practice Development roles into University Hospitals of Leicester Imaging to improve and standardise training, education and development for new and established Radiographers with a view to Train, Retain and Reform

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Background: The NHS long term workforce plan sets out the case for long-term change for the NHS workforce. 2 main actions are to improve retention of staff and reform the working practises
Retain: working to improve culture and leadership across NHS organisations and better support staff throughout their careers to ensure that the NHS retains more of its staff.
Reform: improving productivity among the workforce by ensuring staff have the right skills to take advantage of new technologies that provide patients with the care that they need more efficiently and effectively, and by expanding enhanced, advanced roles.
Purpose: The Learning Development Team was established to standardise training support across the 7 UHL Hospitals and improve the quality of Imaging
Summary of Content: This role has worked across 3 modalities standardising the induction documentation for new staff, ensuring they receive the same training and development opportunities and the recording of skill and competence is standardised. A Band 5-6 Development Pathway has been introduced to educate and develop band 5 radiographers in their onward career. The role requires a high level of clinical expertise enabling the PDL to work alongside staff in a supportive, educational capacity. The PDL team has worked to standardise protocols and procedures across Leicestershire ensuring patient care is not compromised and improving image quality. The role is established as a core part of the strategy to provide training and education to all clinical staff, it continues to evolve and will look at career pathways for band 6 staff.
References
1.NHS England (2023) NHS Long Term Workforce Plan

P259 A 10-month impact evaluation of a journal club among diagnostic radiographers in a single NHS Trust- A service evaluation study

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Background Journal clubs are introduced in healthcare environments to encourage familiarisation and understanding of research publications of participating individuals. This often translates into development of critical appraisal skills, improvement in evidenced-based practice (EBP) and, engagement of the participants in research related activities1-5. This evaluation sought to evaluate the impact of Journal club activities among diagnostic radiographers in an NHS Trust.
Method A pre-test and post- test survey design was adopted to explore the impact of a novel journal club introduced among diagnostic radiographers in a UK NHS Trust. Impact was assessed based on pre-determined outcomes such as: Knowledge of EBP; Attitude to EBP; Critical Appraisal Skill; and Research interest. The online survey included both Likert type questions and open-ended questions.
Results Out of 20 attendees of the radiographer's journal club, 18 participated in the service evaluation. However, there were only 6 radiographers who completed both pre- and post- journal club online surveys. Findings show overall

improvement in all measured outcomes with a statistically significant improvement on participants attitude to EBP (P<0.05). Percentage improvements in outcomes were 16.5% (EBP Knowledge), 19.4% (EBP attitude), 11.1% (critical appraisal skills) and 16.5% (Research Interest). Thematic analysis of open-ended questions revealed both factors and barriers that have impacted on the effectiveness of the journal club.
Conclusion The adoption of Journal club activities can be used to promote professionals' knowledge of EBP, attitude to EBP, critical appraisal skills and interest in research. A larger scale evaluation may be required for more generalisable findings.

Table

Fig 1. Summary of the service evaluation process.

References
1. Farrell L, Bourgeois-Law G, Regehr G, Ajjawi R. Autoethnography: introducing 'I' into medical education research. Medical Education. 2015;49(10):974-82.
2. Matus J, Walker A, Mickan S. Research capacity building frameworks for allied health professionals - a systematic review. BMC Health Serv Res. 2018;18(1):716.
3. Sánchez-Mendiola M, Morales-Castillo D, Torruco-García U, Varela-Ruiz M. Eight years' experience with a Medical Education Journal Club in Mexico: a quasi-experimental one-group study. BMC Med Educ. 2015;15:222.
4. Slade SC, Philip K, Morris ME. Frameworks for embedding a research culture in allied health practice: a rapid review. Health Res Policy Syst. 2018;16(1):29.
5. Wenke R, O'Shea K, Hilder J, Thomas R, Mickan S. Factors that influence the sustainability of structured allied health journal clubs: a qualitative study. BMC Medical Education. 2019;19(1):6.

P260 The apprentice and the degree: a fairy tale ending?

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Radiography degree apprenticeships were being discussed in 2017 and have been available since 2020 as an alternative route to the into the profession. The first cohort of apprentice students graduated in summer 2023, and locally these graduates are already successfully continuing their professional development in specialty training roles such as CT and ultrasound in Band 6 level jobs. This piece will be an individual case study of a degree apprentice graduate who is already set to be an enhanced sonographer practitioner in a Band 7 role by 2025, having started in the National Health Service (NHS) in 2009 as a Band 2 pharmacy distribution officer. It showcases the possibilities the apprentice route can offer, and the broader more accessible reach of this course for potential applicants, that would have traditionally not been able to consider the conventional path to radiography. This has a positive impact on recruitment, retention and allows employees to move through the radiography career framework from assistant to enhanced practitioner and beyond!
The case study will seek to demonstrate the challenges and benefits of a degree apprenticeship in radiography- for the individual student, the employer and the wider workforce.
It is hoped that through a case study format, the overall benefit that a degree apprenticeship in radiography can be demonstrated, hopefully challenging the perception that an apprenticeship is a lower-class qualification.
Ultimately, this abstract aims to inspire dialogue fostering a collective commitment to advancing the quality and accessibility of radiographic apprenticeships in the UK

P261 Radiographer chest x-ray reporting in Scotland in 2023: an exploratory study into the attitudes and challenges concerning the development of a standardised, countrywide reporting service

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Background: The worsening backlog of chest x-ray (CXR) reports is well documented, as is reporting radiographer's (RR) ability to provide a cost effective solution to this. Despite this, only 8 CXR RRs currently work in Scotland. This study will explore the perceived reasons for this lack of role development by investigating the relevant enablers and challenges to better support future workforce planning.

Method: An 18 question electronic survey was emailed to the members of the Reporting Radiographer Interest Group Scotland regarding the enablers and challenges surrounding CXR RR training and employment in Scotland. All Scotland based RRs were invited to contribute. The survey was live for approximately 6 weeks. Results were then thematically analysed.

Results: The survey returned 14 respondents from 9 different health boards, 3 of which were CXR RRs. Currently no CXR RR training is currently ongoing in Scotland with only 1 of the responding health boards claiming they had a sufficient quota of CXR RRs. 5 main themes have been uncovered: service development, monetary factors, a lack of support from upper management, workforce issues and Scottish geopolitical challenges.

Conclusion: This survey highlighted a desire for further CXR RR training from the current Scottish RR cohort but there was a lack of confidence that this would be facilitated. It is recommended that NHS management and the Scottish government increase engagement with this service to tackle the longstanding malaise surrounding CXR RRs by challenging historical biases and providing further funding for future training and posts.

References
1. Cuthbertson, L.M., Rob, Y.A. & Blair, S. (2020). The journey to advanced practice: An Interpretative Phenomenological Analysis of reaching destination and beyond for reporting radiographers in Scotland. Radiography. 26(3), 214-219.
2. McConnell, J. (2020). A longitudinal review of Scottish reporting radiographer output between 2015 and 2019. Radiography. 27(1), 200-207.
3. Piper, K., Cox, S., Paterson, A., Thomas, A., Thomas, N., Jeyagopal, N. & Woznitza, N. (2014). Chest reporting by radiographers: Findings of an accredited postgraduate programme. Radiography. 20(2), 94-99.
4. Royal College of Radiologists. (2017). The radiology crisis in Scotland: sustainable solutions are needed now. London: Royal College of Radiologists.
5. Royal College of Radiologists. (2021). Clinical Radiology: UK Workforce Census 2020 Report. London: Royal College of Radiologists.
6. Royal College of Radiologists. (2021). NHS Backlogs and waiting times Inquiry. London: Royal College of Radiologists.
7. Stevens, B.J., Skermer, L. & Davies, J. (2021). Radiographers reporting chest X-ray images: Identifying the service enablers and challenges in England, UK. Radiography. 27(4), 1006-1013.
8. Woznitza, N., Piper, K., Burke, S., Patel, K., Amin, S., Grayson, K. & Bothamley, G. (2014). Adult chest radiograph reporting by radiographers: Preliminary data from an in-house audit programme. Radiography. 20(3), 223-229.
9. Woznitza, N.,Piper, K., Burke, S. & Bothamley, G. (2018). Chest X-ray Interpretation by Radiographers Is Not Inferior to Radiologists: A Multireader, Multicase Comparison Using JAFROC (Jack-knife Alternative Free-response Receiver Operating Characteristics) Analysis. Academic Radiology. 25(12), 1556-1563.

P262 Establishing a member-driven special interest group in Radiography: evaluation of impact in year one.

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Background Special interest groups (SIGs) are one type of community of practice, which are used widely throughout healthcare for shared learning, peer support and to drive practice forwards1-4. It is advocated that such groups should be self-governed, without hierarchy and responsive to member needs5. One such SIG was established in 2023, facilitated by the authors.

Method The SIG leads wanted to undertake a 'sense-check' with the SIG members, to understand if their needs were being met and to gain direction for next steps with the group. Therefore, at a time interval of nine months after group inception, an online anonymous survey was distributed to all members via email. Participation was voluntary.

Results The survey gained a response rate of 58%. Positively, 86% of participants felt the SIG had met or exceeded their expectations, while 97% stated that they intended to continue being a member. Respondents identified a range of benefits from engaging in the SIG, including knowledge sharing, a sense of community and professional networking. All respondents felt that the SIG activities either would, or might, impact their clinical practice. Free text responses were gathered around reasons for joining the SIG, ideas for future events, and suggestions for improvement.

Conclusion The data gathered will enable the SIG facilitators to tailor future plans to meet the group needs, maintaining their aspired for member-led approach. More broadly, these findings add to the evidence base that SIGs have many advantages for members, as well as the potential for impacting clinical practice.

References
1. Jiménez-Zarco A.I. and González-González I. and Saigí-Rubió F. and Torrent-Sellens J. (2015) The co-learning process in healthcare professionals: Assessing user satisfaction in virtual communities of practice. Comput Human Behav. 51, 1303-1313.
2. NHS England (2015) Communities of Practice Learning Handbook. Available at https://www.england.nhs.uk/improvement-hub/wp-content/uploads/sites/44/2015/08/learning-handbook-communities-of-practice.pdf (Accessed 5 January 2024).
3. Ranmuthugala G. and Plumb J.J. and Cunningham F.C. and Georgiou A. and Westbrook J.I. and Braithwaite J. (2011) How and why are communities of practice established in the healthcare sector? A systematic review of the literature. BMC Health Services Research. 11: 273.
4. Wenger-Trayner E. and Wenger-Trayner B. (2015) Introduction to communities of practice. Available at https://www.wenger-trayner.com/introduction-to-communities-of-practice/. (Accessed 17 December 2023).
5. James-McAlpine J. and Larkins S. and Nagle C. (2023) Exploring the evidence base for Communities of Practice in health research and translation: a scoping review. Health Research Policy and Systems. 21: 55.

P263 Building an Advancing Practice in Radiography Special Interest Group (SIG)

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Background: Publication of the NHS Long Term Workforce Plan (2023) places clear focus on upskilling the workforce to offer modernised career pathways and retain staff delivering clinical care. Opportunities for enhanced, advanced and consultant level practice across the radiography profession are therefore expected to increase. Whilst advanced and consultant level practice are well established within radiography the publication of the College of Radiographers Education and Career Framework (4th Edition) in 2023 offers an updated advancing practice pathway. The increasing level of autonomy which comes with advancing practice means that peer support is crucial for practitioners' future success and wellbeing, as well as ensuring appropriate supervision and governance is supported. Opportunity to network brings a sense of parity as these roles develop locally, regionally and more widely across the profession in all 4 nations.

Purpose of poster: This poster will raise awareness of the newly established Advancing Practice in Radiography Special Interest Group (SIG) hosted by The Society and College of Radiographers amongst diagnostic and therapeutic radiographer delegates.

Summary of content: The SIG workspace has been designed to develop a community of practice across the radiography profession around advancing practice and is inclusive of those thinking of moving into this space, trainees and experienced practitioners at each level of practice (enhanced, advanced and consultant). It provides central access to relevant published guidance around each level of practice and supports peer learning to nurture and support the development of advanced practice pathways amongst diagnostic and therapeutic radiographers.

References
1. NHS England. (2023). NHS Long Term Workforce Plan. Available at: https://www.england.nhs.uk/wp-content/uploads/2023/06/nhs-long-term-workforce-plan-v1.2.pdf (Accessed: 31 January 2024).
2. College of Radiographers (2023). Education and Career Framework for the Radiography Workforce (4th Edition). Available at: https://www.sor.org/getmedia/b2f6bf07-668f-4155-950a-b9d96c48eae1/12604-CoR-ECF-Interactive-v9a (Accessed on: 31 January 2023)

P264 A Service Evaluation on the Perceived Barriers to and Facilitators of a Band 6 Radiographer's Career Progression in Computed Tomography (CT), at one United Kingdom (UK) Trust

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Introduction Improving the retention, education and career progression of radiographers is vital to meet the increasing demand and workforce challenges in Computed Tomography (CT). The scope of practice and career progression opportunities for radiographers in CT vary. This service evaluation aimed to explore the barriers and facilitators to a radiographer's career progression in CT, at one United Kingdom (UK) Trust.

Methods An interpretive phenomenological approach with a purposive sampling strategy of 10-12 Band 6 radiographers were interviewed individually, on a voluntary basis. The interviews followed a semi-structured interview guide, with open-ended questions. Interviews were audio-recorded, transcribed verbatim and thematically analysed using NVivo 12 until data saturation was reached.

Results The facilitating themes to career progression were education, experiences, opportunity and people. The themes identified as a barrier to career progression were communication, Continuing Professional Development (CPD), lack of opportunity, money, staffing and time. Radiographers feel frustrated when trying to progress their career and are seeking opportunities into clinical routes such as CT reporting and Advanced Clinical Practitioner (ACP) roles.

Conclusion Improving the educational and career progression opportunities for radiographers working in CT, will attract and retain radiographers. Radiographers are seeking increased opportunity, time for CPD and career progression opportunities in clinical avenues such as reporting and Advanced Practice. Prioritisation of education and career progression opportunities are required for radiographers working in CT.

P265 Information wranglers and system coaxers; a qualitative interview study of radiologists experience reporting dementia imaging.

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Background: Neuroimaging forms a core component in the routine assessment and diagnosis of dementia. Demand for MRI and CT for these purposes continues to rise with the aging population. Novel treatments for Alzheimer's type dementia may put further strain on these resources in the future. Little previous research has aimed to explore the experiences of radiologists in reporting these scans.

Method: A qualitative interview based study with five consultant radiologists who were sampled using a purposive non-probability method was undertaken. Interviews were recorded using MS Teams and subsequently transcribed verbatim. Reflexive Thematic Analysis (RTA) was used to analyse the interviews and derive themes (Braun & Clarke, 2017). Analysis was organised using Qualitative Data Analysis Software NVivo 12 (2017).

Results: From the RTA four key themes were developed. (a) When undertaking dementia imaging the radiologists work is understood as involving the management of professional interfaces between specialists and technology. The demarcation of this is set by differing knowledge, language and priorities. (b) Radiologists role as 'wrangling' information; including interrogating, transforming and communicating, often ambiguous, information. (c) Radiologists work involves 'coaxing' a strained and sometimes recalcitrant system to meet their and their patients needs. Lastly, (d) the place of dementia imaging in a radiologists work was articulated as small and precarious.

Conclusion: This study describes a complex and contested place of dementia imaging within a radiologists wider work. It points to a potential need for more sustained development of resources for this important radiological task.

References
1. Clarke, V. and Braun, V. (2017) 'Thematic analysis', The Journal of Positive Psychology, 12(3), pp. 297-298.
2. Lumivero. (2017) NVivo (Version 12) [available at: www.lumivero.com]

P266 DxCARES: A data-sharing platform, for education, research, REALM, peer-review and all CME requirements built with AI technology.

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Purpose: A single solution is required for NHS trusts, private radiology providers, imaging academies and educational institutions to facilitate secure uploading of any relevant clinical/image data; this would support efficient learning environments, robust research, REALM activities and peer-review. Current solutions available through PACS infrastructures or educational suppliers have not been designed for all these activities. DxCARES is a novel secure platform created by the University of Sydney entity DetectedX to address this deficiency.

Methods & Materials: DxCARES platform includes a unique range interactive educational and training templates with a fully customized DICOM web viewer to accommodate viewing of images from any modality. AI algorithms are weaved into the platform to personalise experiences.

Results: DxCARES is a world-first platform that provides rapid uploading patient images/data from any clinical imaging facility and facilitates rapid access wherever the recipient/learner is located 24/7. The solution is ISO27001, HSCN and DSPT-compliant.

The platform:

- Automatically deidentifies patient/clinical data
- Allows annotations (markers/measures)
- Stores/accesses images in a personalised library
- Allows for the construction of an array of teaching materials for OSCEs, quizzes, test sets etc
- Searches images/data according to body part, disease state etc
- Uses AI solutions to tailor the clinician's experience

Conclusion: DxCARES is a single platform designed to meet the educational, research and clinical needs of radiologists, radiographers and trainees wherever they are located. Security, privacy and tailored access is available 24/7. The tool has recently been implemented in the UK (NHS and private facilities), Europe, North America and APAC countries.

P267 Transforming radiographer training: a strategic approach from January 2022 to present

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Background From January 2022 until present, the host Trust welcomed 90 radiographers to the Imaging department, 41% of this workforce joined the CT department. Of these CT-specialist radiographers: 16.2% were band 5 training roles, 37% had prior experience in the NHS, 59% were internationally recruited. To robustly support the needs of all new starters, a new CT training model was developed alongside with an induction programme aimed to achieve competency swiftly and safely[1].

Purpose This study seeks to explore the strategies employed in our training programme and provides recommendations and insights for future studies.

Summary The design of the model involved close collaboration between the CT CPD&Education and the CT clinical management team. Key considerations included clinical hours, educational components, mandatory training, Trust and local induction procedures, safety protocols, staffing levels and shift patterns.

The Plan-Do-Study-Act model[2] was employed, featuring one-on-one scanner time and various group activities. Feedback from new starters was collected regularly and the training plans were adjusted accordingly. Areas of development and for improvement were identified and trends were gathered to enhance the model. Outcomes were measured using qualitative and quantitative data obtained from feedback, competency trackers and incident percentages. A former trainees survey conducted in June 2023, involving 14 participants, also reflected positively on the programme.

Conclusion To date, the new training model resulted in 85% of CT radiographers achieving competency within 10 weeks, increased radiographers confidence and team morale. Besides, it contributed to reducing patient waiting times and improving overall patient care and safety.

References
1. NHS England (2023) NHS Long Term Workforce Plan
2. Deming, W.E. (1986). The Plan-Do-Study-Act cycle. [Model]. Wiley.

P269 Assessing training gaps in IGRT for abdominal tumours: A UK-based Survey of Therapeutic Radiographers

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Background Abdominal IGRT is challenging due to poor soft tissue visualisation, gastro-intestinal tract proximity, and motion. This evaluation seeks to determine whether current abdominal IGRT training received by UK therapeutic radiographers (RTT) is sufficient and whether additional training is desired.

Method A 26-question survey was developed, validated and piloted. Close-ended questions were used, including multiple-choice, Likert scale, ranking and limited open text. Questions covered demographics and online abdominal image registration (IR) and training. Non-UK, non-working responses were excluded.

The online survey was distributed via UK professional networks, over 2 weeks.

Results 244 of 246 responses were analysed.

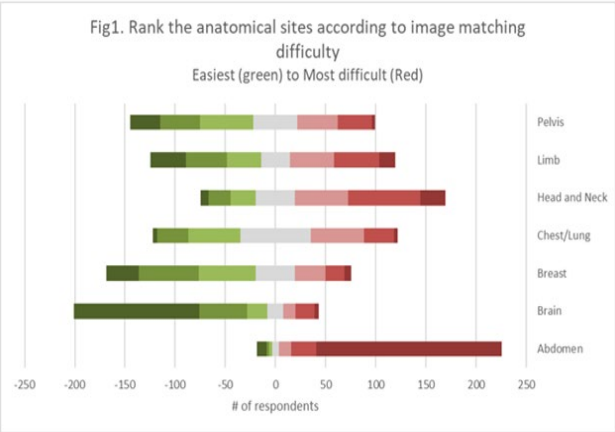
86% of respondents stated that pre-registration training was insufficient to prepare them for volumetric IR, despite 77% indicating they received pre-registration cross-sectional anatomy education. 87% received department volumetric IR training during clinical placement and 75% stated this was sufficient preparation for clinical practice.

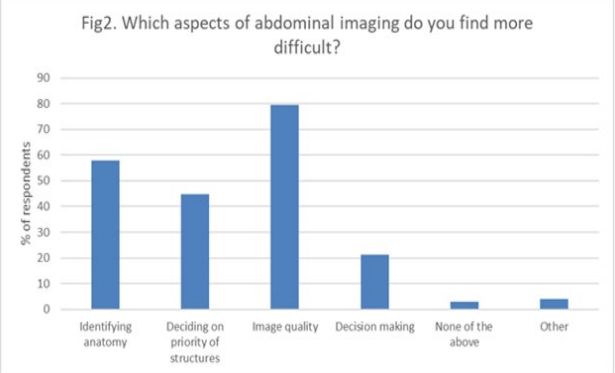
76% indicated the abdomen as the most difficult anatomical site for IR (Fig1). Image quality (80%), identifying anatomy (58%), and deciding the priority of structures (45%) were factors contributing to abdominal IR difficulty (Fig2). Organ motion and gas were also mentioned in additional comments.

85% desired more abdominal IGRT training in a variety of formats: in-house practical (68%), workshop (67%), webinar (41%), and post-graduate course (18%).

Conclusion UK RTTs indicated that department training provides sufficient training for abdominal IGRT, while pre-registration was inadequate. Addressing training gaps could enhance RTT competence.

Table





P268 Review of the impact of postgraduate education on career development in clinical reporting.

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Background This project aims to explore and assess evidence of the impact of educating reporting radiographers at a single higher education institution since the 1990s.

Method An online, anonymous survey was sent out to relevant alumni via purposive sampling (social media, word of mouth and email). Eligible participants included any past students from four imaging modalities (X-ray, Magnetic Resonance Imaging (MRI), Computed Tomography (CT) and fluoroscopy in the UK and beyond.

A combination of quantitative and qualitative questions were asked using quick response Likert scale measurements to evaluate areas such as career development opportunities, scope of reporting practice, barriers to reporting and number of reporting sessions undertaken per week related to areas of clinical practice. The responses were analysed in conjunction with questions relating to barriers and enablers to radiographer reporting. Basic demographics were requested to include area/s of reporting specialty, region of UK or non UK and NHS banding.

Results 82 responses were received from radiographers who undertook a reporting course between 1991-2023. Over 50% of respondents studied musculoskeletal plain film reporting and approximately 35% had undertaken chest reporting. 89% are currently practicing with the majority allocated up to 6 sessions of reporting time per week.

16% continued their studies by completing a masters or PhD.

Factors impacting on reporting time included clinical workload and career progression. The majority of limitations to scope of practice were paediatric referrals.

Conclusion Initial analysis shows that radiographers continue to practice and develop their skills at enhanced and advanced levels.

P270 Service evaluation of the local induction package undertaken by newly recruited Therapeutic Radiographers

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Background: New Therapeutic Radiographers are assigned a 6 week supernumerary period as part of the on-boarding process – Including corporate induction, mandatory training and acquiring clinical skills
Method: An audit was undertaken to assess the time period from starting in department to gaining clinical skills.
A number of improvements were identified: keeping the supernumerary period at 6 weeks; completing imaging training during supernumerary period; commencing the treatment preparation training earlier.
The time taken to gain competencies, both pre- and post-streamlining, have since been re-audited and the feedback process has been repeated
Results: The median time taken from Day One in department to gaining treatment preparation competency was reduced from 249 days pre-streamlining to 88 days post-streamlining; treatment preparation training processes reduced from 85 days to 35 days.
The median time taken from Day One in department to gaining standard kV imaging competency was reduced from 112 days to 38 days; imaging training processes reduced from 52 days to 27 days.
Discussion: This streamlining process has provided a reduction in overall time by around a third. The time taken from training delivery to competency gain has reduced by half.
The department has benefitted by gaining competent staff without delay
The staff felt they were better integrated into the treatment team by being more efficient and useful in performing tasks.
The rapid turnaround in training also allowed staff the opportunity to develop their technical skills sooner, by being able to progress on to training for CBCT imaging sooner than the previous cohort.

P271 Exploring the experiences of Radiographers required to shield during the Covid-19 Pandemic

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Background This project was a continuation of previous published work which explored the experiences of Radiographers working clinically through the Covid-19 pandemic (Naylor et al, 2022). Available research exploring the experiences of frontline workers advised to shield at home during the early stages of the pandemic, are not well-documented. The lack of research in this area was highlighted by Dean (2022) in a letter to the editor of the 'Radiography' journal. The feelings of being "forgotten" and "redundant" are powerful descriptors and echo studies published from other disciplines (Iliff et al, 2020; Chattopadhyay et al, 2020).
Method Using purposeful sampling and inclusion criteria, 8 participants consented and were subsequently interviewed individually using a semi-structured interview guide.
Results Analysis identified common feelings of guilt, conflict and disconnection during their time shielding. Many highlighted a lack of communication and support from departmental managers over the duration of time shielding, which for many, extended into a period of several months. The impact on individuals mental health in some cases has been profound and long-lasting. Experiences of returning to work varied, with many describing heightened anxiety and hypervigilant behaviour.
Conclusion The pandemic has provided valuable learning opportunities for training and development within clinical practice. This study has allowed radiographers who were removed from their normal scope of practice, a voice to share their own experiences during an unprecedented time. These findings can enable the profession to address potential working practice adaptations and implement support mechanisms for such individuals in the instance of future pandemics.

References
1. Chattopadhyay, I., Davies, G. and Adhiyaman, V., 2020. The contributions of NHS healthcare workers who are shielding or working from home during COVID-19. Future healthcare journal, 7(3), p.e57.
2. Dean, V., 2022. Letter to the editor regarding the article by Naylor et al. in the February 2022 issue of Radiography. Radiography, 28(3), pp.869-870.
3. Iliff, H.A., Simpson, K.A., Tomlinson, C.R., Webb, C.M. and Anaesthetists, I.S., 2020. 'Shielded' anaesthetists and intensivists during the COVID-19 pandemic. Anaesthesia, 75(11), p.1541.
4. Naylor, S., Booth, S., Harvey-Lloyd, J. and Strudwick, R., 2022. Experiences of diagnostic radiographers through the Covid-19 pandemic. Radiography, 28(1), pp.187-192.

P272 Examining Moral Distress and Injury resulting from the COVID-19 pandemic: Insights from a Radiography Workforce

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Background: Moral distress has been an issue under consideration in healthcare practice. The COVID-19 pandemic became a critical factor that contributed to heightened moral distress and injury among healthcare professionals. Despite the substantial engagement of radiographers in the management of COVID-19 patients, the consequent moral distress

and injury states experienced by this critical frontline workforce have not received any attention. This study investigated the level of moral distress and the coping mechanisms employed by radiographers in Ghana during the pandemic.
Methods: Utilising a cross-sectional design, a survey approach was employed for data collection between June 2023 and August 2023 from clinically-active radiographers working in Ghana. Both descriptive and inferential statistics were generated using the Statistical Package for the Social Sciences (v.26) and Microsoft Excel 2019.
Results: The COVID-19 pandemic escalated the risk of moral distress among radiographers from 22% to 43%, with 33% exhibiting signs of moral injury, impacting the mental health of 12% of respondents and is a reported contributor to career-changing decisions of radiographers. Notably, those affected did not seek formal support but relied on personal coping strategies and family support. Inadequate resources (69%) emerged as the primary cause of moral distress, and the study underscored that the most effective means of mitigating moral distress was through the provision of resources and additional staff support (66%).
Conclusion: The findings emphasize the importance for healthcare institutions to proactively implement systems to address moral distress and cater to the mental health needs of radiographers, ensuring a resilient clinical radiography workforce.

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