



**Results:** Results from the reporting radiographer showed a  $\sim 2^\circ$  intra-participant variation in angle. Inter-participant results showed that a total of 14 participants estimated on average the angle to within  $2^\circ$  of the gold standard on average, although the standard deviation of each participant ranged between  $2-9^\circ$ , with the students as a whole generally overestimating the angle.

**Conclusion:** The results showed that Bohler's angle was generally not measured accurately or reliably enough suggesting further training interventions are required. Reasons include lack of clinical experience measuring Bohler's angle and the absence of a radiography abnormality detection scheme at the student's placement site. It is recommended that time on placement is established for students to practice measuring anatomical angles and more stringent guidelines are established in relation to radiographer abnormality detection systems and the measuring of angles.

#### P209 Values-based practice (VBP) training for radiographers

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VBP is consideration of a patient's values in decision-making. It is an approach that compliments evidence-based radiography to ensure a holistic service. By patient values we mean the unique preferences, concerns and expectations each patient brings to a practice encounter. VBP takes into account and highlights what matters to the patient (Fulford et al., 2012).

A small team including committee members of the Association of Radiography Educators (ARE) and other interested radiography educators have adapted materials from a handbook, originally developed for medicine (Fulford and Handa, 2011), this has been adapted for radiography. The handbook has been produced with the intention that it will be used by and for radiographers. The scenarios included have been piloted with radiographers and undergraduates at study days and in teaching sessions.

We are grateful to participants for their input. Raising the awareness of values is essential to enable contemporary person-centred care. Sustainable implementation, however, depends on a whole-systems approach where patients are at the centre of service delivery. The handbook introduces the concept and provides examples. ARE have facilitated two successful VBP radiography study days and also facilitated teaching sessions with student radiographers at their individual universities. Our aim has always been to share this material; we advocate that all radiographers must gain an understanding of VBP and adopt the approach in practice. The handbook is a method of raising awareness. This is the beginning of VBP conversations in radiography; when embedded, VBP will provide assurance we put the patient at the centre.

Fulford K.W.M and Handa A (2011) Values Based Practice In Clinical Care – A Training Template. The Collaborating Centre for Values-Based Practice in Health and Social Care, Oxford. Fulford K.W.M, Peile E and Carroll H (2012) Essentials of Values-based Practice: Clinical Stories Linking Science with people. Cambridge University Press, Cambridge.

## EDUCATION & RESEARCH

#### P210 Improving the experience of LGBTQ patients in the healthcare environment: An analysis of a Twitter chat

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<sup>1</sup>University Hospitals Leicester; <sup>2</sup>BC Cancer; <sup>3</sup>QUT & TRI

**Background:** Twitter provides a popular international platform for medical radiation professionals to connect and share their experiences. The medical radiation sciences' MedRadJournalClub (MRJC) attracts a global group of participants to monthly sessions to discuss selected articles. The September 2017 session explored discrimination against LGBTQ people within the healthcare environment. The aim of the chat was to establish what current training was available to medical radiation professionals how their organisations approached the issue and what participants would do differently at work or at home following the chat.

**Method:** Data was extracted using the Twitter advanced search function with #MedRadJClub from the 19th-23rd September. A first review was conducted to eliminate tweets from authors or those pre/post chat. A second review allowed for each tweet to be categorized by their main theme using a spread sheet. A thematic analysis was then performed.

**Results:** 44 participants took part in the September Twitter chat. 50 tweets were deemed appropriate for analysis. Almost all of the participants disclosed they had no undergraduate education or workplace training in this area. Workplaces of a limited few participants had specific approaches to improve experiences for LGBTQ patients. Many participants were eager to talk to managers about future training at their workplaces or lectures for their students following the Twitter chat.

**Conclusion:** There is a great deal of work to be done to educate radiography staff to enhance their LGBTQ patients' experience. Specially tailored lectures e-learning modules or training sessions would prove beneficial to both students and qualified professionals.

**P211 Learning radiology is not always black, grey and white**

*Sarus Jain; Sophie Cheshire; Syed Ali*

Royal Preston Hospital

**Background:** Radiology training is intense and complex; there is a huge pressure to acquire a vast amount of theoretical and practical knowledge in a relatively short 5 year training programme. This is most acutely felt in the first two years of core training. Knowledge and skills can be acquired in many learning formats some of which are more effective than others. Different teaching methods include 1:1 teaching, didactic lectures, journal clubs, "hot seat" teaching and interactive group based multiple choice question sessions.

**Method:** We sent a simple email survey tool to 40 radiology trainees in their first two years of training in the Northwest Radiology Deanery. We evaluated their responses and summarised the major findings.

**Results:** We present the findings of our survey; we rank the learning techniques from the most popular and effective, to the least popular. We include comments of individual feedback of good and bad learning practice. We correlate the ranking of learning techniques with individual perception of confidence in preparation for formal exams.

**Conclusion:** By highlighting the effective and favourable learning tools, trainees can have a more productive and valuable learning experience. Radiology departments and trainers can assess their training provision and consider how they may improve the experience for their trainees.

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**P212 Developing student clinical decision making competency in medical imaging**

*Catherine Lyman; Karen Wallis; Jenny Sim*

University of Auckland

**Introduction:** Clinical decision making (CDM) is a complex cognitive process that has bearing on patient outcomes and the quality of care. The art of clinical decision making is an elusive practice that appears complex and seemingly lacks process and structure. It is therefore important to provide a structural approach to facilitate the development of students' clinical decision making skills.

**Methods:** At the University of Auckland, a CDM model has been specifically developed to assist Medical Imaging students in their clinical reasoning. The model provides a structural approach to CDM, starting from pre-patient encounter, patient encounter, to hypothesis generation, hypothesis evaluation and ending with students reflecting on their CDM learning. The CDM model has been integrated as part of student learning activities during tutorials, as well as part of student online assessments.

**Results:** This presentation focuses on student feedback on the effectiveness of the CDM model. Interviews were conducted to better understand students' approach to CDM learning. Preliminary findings indicate that students found the CDM model useful in the development of their clinical decision making competency. Through the interviews, we have identified a number of factors which impact upon student learning, which educators must consider in the CDM learning space.

**Conclusion:** The CDM model provides the mental scaffolding and offers a structured step-by-step practical problem solving approach to clinical reasoning, paving the way for consistency and accuracy in student clinical judgment.

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**P213 A longitudinal study on the trait emotional intelligence development in diagnostic radiography and radiotherapy students studying degree programmes**

*Stuart Mackay; Elen Pritchard*

University of Liverpool

The aim of this study was to determine any changes in student emotional intelligence (EI) across the diagnostic radiography and radiotherapy degree programmes. A before and after, questionnaire based, cohort study design was used. Students completed the short form of the published trait EI questionnaire at the start of year one and towards the end of year 3 of their degree.

There were 159 students eligible to complete the questionnaire at the start of their degree. The data from two consecutive cohorts was combined giving a sample size of 159 at the start of the programmes giving a response rate of 58.5%.

The results showed a statistically significant increase in Emotionality between the two time points. Emotionality mean score (SD) at time point 1 was 5.51(0.79) and 2 was 5.70 (0.70)  $P \leq 0.03$ . In addition, Global EI, Self-Control, Sociability, Emotionality and Well-being scores were higher for males than females. Global EI, Well-being, Emotionality and Sociability were all higher in DR students, but Self Control was higher in RT students although not statistically so.

No association between age of the students and their trait EI was identified. It is suggested that the curriculum could be the cause of this change in EI. Further studies are required to confirm this finding.

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**P214 The effect of undergraduate radiology teaching on students' confidence and knowledge at interpreting radiographs**

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<sup>1</sup>Barts Health NHS Trust; <sup>2</sup>University of Central Lancashire; <sup>3</sup>Barts and the London School of Medicine and Dentistry

**Background:** Undergraduate radiology teaching is inadequate; this is corroborated by various studies<sup>[1,3,4]</sup>. Only 6/32 medical universities in the UK were reported to have dedicated radiology placements<sup>[2]</sup>. The RCR produced a document highlighting the various imaging modalities foundation year doctors must be proficient at interpreting<sup>[5]</sup>. We aimed to provide students with a teaching day to improve both their knowledge and confidence in interpreting common radiographs.



**Methods:** A one day lecture-based course teaching chest, abdominal and bone radiographs was organised and advertised to all medical students ranging from first to final year. Pre-course and post-course confidence ranging from 1-10 was recorded. Furthermore, a pre-and post 15-point quiz was given to measure knowledge improvement; these were of a spot-diagnosis nature.

**Results:** 28 students attended; 22 completed the pre-course quiz/confidence scores and 20 completed the post-course assessments. Knowledge significantly increased by 46%, from an average pre-course score of 8.83 to 12.9 post-course ( $p=0.0001$  95% CI 2.86-5.28). Confidence significantly increased in all imaging modalities, with overall confidence increasing by 43%, from 5.1 to 7.3 ( $p<0.00001$ ). Confidence in interpreting CXR improved from 5.9 to 7.6 ( $p<0.001$ ); AXR from 4.27 to 6.75 ( $p<0.001$ ); upper limb from 4.05 to 6.75 ( $p<0.0001$ ); lower limb from 4.09 to 6.75 ( $p<0.001$ ) and pelvis from 3.72 to 6.45 ( $p<0.0001$ ).

**Conclusion:** We conclude that knowledge and confidence of medical students in interpreting common radiographs can be significantly improved by a one day teaching course. Radiology should be introduced as part of the medical school curriculum to provide the knowledge required by the RCR.

1. Dmytriw, A. A., Mok, P. S., Gorelik, N., Kavanaugh, J. and Brown, P. (2015) 'Radiology in the Undergraduate Medical Curriculum: Too Little, Too Late?', *Med Sci Educ*, 25(3), pp. 223-227. 2. Kalami, T. R., Hood, A. and Craven, I. (2016) 'Undergraduate radiology teaching: starting from scratch', *Clinical Radiology*, 71(1), pp. 55-56. 3. Nyhsen, C. M., Lawson, C. and Higginson, J. (2011) 'Radiology teaching for junior doctors: their expectations, preferences and suggestions for improvement', *Insights Imaging*, 2(3), pp. 261-266. 4. Nyhsen, C. M., Steinberg, L. J. and O'Connell, J. E. (2013) 'Undergraduate radiology teaching from the student's perspective', *Insights Imaging*, 4(1), pp. 103-9. 5. The Royal College of Radiologists. Undergraduate Radiology Curriculum London: The Royal College of Radiologists, 2012

### **P215 Simulation of the theatre environment to improve confidence of undergraduate radiography students**

**Claire Richards**

University of Derby

**Background:** Theatre can be challenging for newly qualified radiographers (Naylor et al., 2016). It is imperative that students gain confidence in this setting to ensure high quality, safe working practice and effective team working skills. High level simulation has been shown as an effective teaching method for faster learning of skills which are transferable to the clinical setting (Hravnak et al., 2007). Simulation can be defined as "a technique...to replace ... real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner" (Gaba, 2004 p.i2.).

**Purpose:** Recognise the benefits/limitations of simulation in radiography education in the theatre setting. Modify the simulation scenario presented to enhance their own teaching practice.

**Summary:** The students were briefed on the 45 minute theatre scenario and placed in peer groups of three. A Dynamic Hip Screw examination was chosen and students were able to interact with the environment, equipment and team. A timeout option was given, to allow students to interact with their group and teaching staff members before key decisions were made. Students were debriefed after the activity. Students were given an evaluation form to discuss how the simulation impacted on their knowledge, understanding and confidence of theatre radiography. These findings will be discussed alongside current literature. Benefits and limitations of the simulation will be considered. Images from the simulation will be included.

1. Gaba, D. M. (2004) The future vision of simulation in health care. *Quality and safety in Health care*, Quality Safety British Medical Journal, 13(suppl 1), p. i2-i10. 2. Hravnak, M., Beach, M., & Tuite, P. (2007) Simulator technology as a tool for education in cardiac care. *Journal of Cardiovascular Nursing*, 22(1), p. 16-24. 3. Naylor, S., Ferris, C., & Burton, M. (2016) Exploring the transition from student to practitioner in diagnostic radiography. *Radiography*, 22(2), p.131-136.

### **P216 Introducing first year diagnostic radiography students to open wounds: The findings of a doctoral pilot study**

**Naomi Shiner**

University of Derby

**Purpose:** First year Diagnostic Radiography students can experience anxiety when imaging trauma patients (Hyde and Strudwick 2017), impacting negatively on the students' performance and as a result the patient experience. Higher Education Institutes have a duty of care to prepare students psychologically. Simulation based education provides experiential learning in a safe environment. The use of moulage (special effects make up) replicates the sight of open wounds increasing authenticity and immersion for participants (Stokes-Parish 2017). A gap in the literature was identified and led to this pilot study for a doctoral thesis; preparing students for open wounds prior to clinical placement.

**Method:** Ethical approval was granted. A mixed method quasi-experimental study was designed. Six first year students formed the experimental group and would support a radiographer to image a patient's ankle. The patient had suffered an open fracture simulated using moulage. Three students formed a control group. Visual Analogue Scales were used to measure immediate emotions pre and post simulation. Focus groups will be held following the students first clinical placement to understand their experiences and evaluate the value of the simulation.

**Results:** It is hypothesised that the experimental group will value the opportunity to explore and discuss imaging patients with open wounds. The control group will have similar experiences to previous cohorts indicating difficulties in this area.

**Conclusion:** As work is in progress the findings of this study will be reported. This is an innovative use of moulage in this context, contributing to the evidence base supporting transitioning students.

1. Hyde, E. and Strudwick, R. (2017) How prepared are students for the workplace? *Imaging and Therapy Practice*. Sept 5-11 2. Stokes-Parish, J. (2017) Does appearance matter? Current issues and formulation of a research agenda for moulage in simulation. *Simulation in Healthcare*. 12(1) 47-50



**P217 How the implementation of a morning "huddle" enhanced the student experience at one of the biggest hospitals in Europe: A model for best practice**

**Sharon Stewart**; Jason Stanley; Jules Silverton  
Queen Elizabeth Univeristy Hospital

**Context and aim:** In one of the most radical redesigns of the National Health Service (NHS) three large hospitals were closed, and a new hospital built. Services moved to the new Hospital Site. This meant relocation for staff and students from three radiology sites to a new, very large radiology department in the 1,109 Adult bed hospital over 14 floors. Clinical placements are a core component of radiography education and are supported by experienced clinical practice supervisors. It is important that the learning experiences provided adheres to quality standards set by NES, HCPC and SCoR. Mason et al (2006) argue that students often feel stressed regarding placement, and that availability of the clinical instructors and other staff can alleviate this. It was recognised that transitioning caused issues regarding robust supporting mechanisms for students in this new clinical environment. An innovative solution was sought, and the daily huddle was born. The poster will outline this simple procedure and provide feedback from students and staff regarding the efficacy of the intervention.

1. College of Radiographers 'The approval and Accreditation of Educational Programmes and Professional Practice in Radiography' 2006 Mason, S. L. (2006). Radiography student perceptions of clinical stressors. *Radiologic Technology*, 77(6), 437-50. 2. Health Care Professions Council 'Standards of Education and Training' 2017 <https://www.hcpc-uk.org/publications/standards/index.asp?id=183> accessed 10/12/17 3. NHSScotland Quality Improvement hub 2017 Hospital Huddles available at <http://www.qihub.scot.nhs.uk/quality-and-efficiency/whole-system-patient-flow/hospital-huddles/what-is-it.aspx> accessed 11/12/17 4. NHS Education for Scotland 'The Development of Quality Standards for Practice Placements' <http://www.nes.scot.nhs.uk/media/7057/Enhancing-quality0510.pdf> accessed 10/12/17 5. NHSScotland Quality Improvement hub 2017 Hospital Huddles available at <http://www.qihub.scot.nhs.uk/quality-and-efficiency/whole-system-patient-flow/hospital-huddles/what-is-it.aspx> accessed 11/12/17 6. Price, R. Hopwood, N., Pearce, V. 2000 Auditing the clinical placement experience. *Radiography*, 6 (3) (2000), pp. 151-160

**P218 A systematic flow chart to support radiographer commenting**

**Naomi Shiner**; Kirsty Wood  
University of Derby

The HCPC and SCoR require radiographers to be competent in differentiating between normal and abnormal findings and to communicate this to the referrer. The red dot system has been the accepted system since the 1980s. However, this is also known for its limitations, the main being a lack of detail. Radiographer commenting can overcome this limitation; yet the establishment of these systems can be hindered by a radiographer's confidence and limited training in producing a coherent comment (Howard 2013).

The University of Derby have recently delivered a programme of Continual Professional Development study evenings. Focussing on improving the detection of abnormalities and structuring a radiographer comment using appropriate terminology for the appendicular and axial skeleton. To support the delegates a simple flow chart was developed to help structure a radiographer's comment. The flow chart is flexible, encourages the use of new terms and supports the use of the AABCS systematic approach to identifying an abnormality. Evaluation forms were completed for both CPD evenings and several positive comments were related to the use of this flow chart. The flow chart has also been incorporated into image interpretation modules within our BSc and MSc pre-registration Radiography programmes. Further to this we have received a recent request from a local trust to use the flow chart to support reporting radiographers in training. Following the positive experiences, a recommendation is made the flow chart is placed in radiology departments as a visual aid to support the practice of radiographer commenting, thus improving patient management.

1. Howard, M.L. (2013) An exploratory study of radiographer's perceptions of radiographer commenting on musculo-skeletal trauma images in rural community based hospitals. *Radiography*. 19 (2) 137-141

**P219 MedRadJClub: An impact analysis of an international Twitter journal club**

**Amanda Bolderston**<sup>1</sup>; Nick Woznitza<sup>2</sup>; Julia Watson<sup>3</sup>; Adam Westerink<sup>4</sup>; Carly McCuaig<sup>5</sup>; Lisa DiProspero<sup>6</sup>; Charlotte Beardmore<sup>7</sup>; Julie Nightingale<sup>8</sup>

<sup>1</sup>BC Cancer; <sup>2</sup>Homerton University Hospital and Canterbury Christ Church University; <sup>3</sup>Foothills Medical Centre;

<sup>4</sup>Royal Brisbane and Women's Hospital; <sup>5</sup>Journal of Medical Imaging and Radiation Science; <sup>6</sup>Radiation Therapy Odette Cancer Centre and University of Toronto; <sup>7</sup>Society and College of Radiographers; <sup>8</sup>Salford University

**Introduction:** Online Twitter journal clubs are a popular recent innovation with the potential to increase research awareness and inform practice<sup>[1]</sup>. The medical radiation sciences' #MedRadJClub (MRJC) attracts a global group of participants to monthly sessions and is associated with three international journals<sup>[2]</sup>. Topics are wide-ranging and have included image interpretation, research productivity, and patient experience. This analysis will examine the impact of MRJC and its accompanying monthly blog.

**Methods:** The 32 sessions from March 2015 to September 2017 were analysed for number of participants, numbers of tweets, and tweet impressions using Symplur. An analysis of journal website hits for the selected monthly articles was performed. Blog traffic was analysed by views per post and geographic reach. Research and networking activities associated with MRJC were also examined.

**Results:** Monthly sessions averaged 43 participants (range 21-92). The most tweets sent per session were 907, and highest impressions per session were 1,341,602. The most popular session discussed early career researchers (July 2017). Research





activities associated with MRJC included conference presentations, published papers, collaborative chats with post-graduate students, and organization of conference networking events. Journal articles were downloaded more frequently when they were selected for MRJC. Finally, the most popular blog (1,003 views) discussed research and consultant radiographers (October 2016). Blog visitors and chat participants came from over 100 different countries; the top three are the United Kingdom, Canada, and Australia.

**Conclusion:** Our analysis indicated that MRJC is an impactful source of continuing professional development and networking with a wide global)

1. Luby, M. Riley, J. Towne, G. (2006). Nursing Research Journal Clubs: Bridging the Gap Between Practice and Research. *Medsurg Nurs.* 15(2), 100-102. 2. Currie, G. Woznitza, N. Bolderston, A et al (2017). Twitter Journal Club in Medical Radiation Science. *J Med Rad Sci.* 48(1), 83-89.

## P220 Coping and the plain radiography student: Professionalism and the crippling dilemma of accountability before and after graduation

**Charles Sloane;** Paul Miller

University of Cumbria

**Background:** While the HCPC standards for radiography have not altered significantly since their initial publication, an examination of current NHS medical imaging workload data and case mix<sup>[1,2]</sup> reveals that real-world medical imaging practice itself is undergoing a period of sustained change and increasing professionalisation. This movement places enhanced accountability on even the most junior of clinicians, against an escalating variety of practical clinical tasks.

Building on the work of Sloane and Miller<sup>[3]</sup> regarding radiography unit managers' perceptions around the "fitness for purpose" of new radiography graduates, the findings detailed herein explore in greater depth the relationship between contradictory structural pressures in UK Higher Education (HE) and the NHS.

**Methods:** Using a Straussian model of Grounded Theory<sup>[3,4]</sup> extended accounts provided by N=20 radiography department leads were analysed.

**Results:** Three themes emerged:

1. Participants voiced a degree of frustration around having to chase new graduates to undertake core roles and professional activities
2. Newly qualified staff were regularly reported to have difficulty in maintaining a work life balance in 24/7 medical imaging services
3. Recent graduates found difficulty in taking responsibility for their own mistakes.

**Conclusions:** The recent shifts in accountability-modelling in HE and the NHS place new radiography graduates in a profoundly difficult position regarding their adaptation/coping capacities. Shifting suddenly from an environment (HE) in which nearly all accountability is presently placed upon their lecturers and clinical tutors, into a professional context (NHS) in which all accountability is placed upon them, was noted to be crippling for them in many cases.

[4]. Charmaz, K. 2008, "Grounded Theory" in *Qualitative Psychology: A Practical Guide to Methods*, ed. J.A. Smith, Sage, London, pp. 81-110. [1]. CREDO 2014, A White Paper investigation into the proposed commissioning of new PET-CT services in England, CREDO, London. [2]. NHS England 2014, NHS Imaging and Radiodiagnostic activity, NHS England Analytical Services, Leeds. [3.] Sloane, C. & 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*, vol. 23, no. S1, pp. S16-S22.

## P221 Select me! preparation for employment using workshops and speed dating interviews

**Catherine Williams**

Directorate of Diagnostic Radiography, The Quad

UK Diagnostic Radiography students study similar topics as a necessity to meet legislative and clinical requirements therefore it is essential that additional "soft" skills required to gain employment are enhanced to allow competition. Preparing year 3 students in these skills is challenging particularly with large cohorts and many will have limited interview experience. To meet this challenge a new method using a triple workshop approach and speed dating interviews has been introduced with support from the university Employability and Educational Opportunities Department; clinical partners and university lecturers.

Workshop 1 introduces students to electronic job searches and selection of appropriate positions. Registration onto NHS jobs takes however direction to other opportunities is given eg private healthcare and the military. Workshop 2 involves small group work looking at ten key interview questions provided by clinical partners. Students discuss and produce answers to the questions. Workshop 3 takes place on the same day as workshop 2- groups of students (4-5) rotate around ten interview stations where an interviewer asks one key question to one student.

Peer feedback is sought by the interviewer re the quality of the answer before giving additional feedback and guidance. A bell indicates time to rotate to the next station- each student will answer a minimum of 2 questions and will give peer feedback on 8 others. This process has been well received by students with positive module reviews. Anecdotal evidence exists from external interviewers that our students out perform competitors leading to 100% employment each year.

1. Health and Care Professions Council. (2017) Standards of Education and Training. Publication code: 20120801POLSETS (amended June 2017). HCPC. London 2. The Society and College of Radiographers. (2007) *Clinical Imaging and Oncology; Learning and Development Framework for Clinical Imaging and Oncology*; SCoR London. 3. Jackson D. (2012) Testing a model of undergraduate competence in employability skills and its implications for stakeholders. *Journal of Education and Work.* Volume 27Pages 220-242 ; 2014 - Issue 2; Pub. Taylor & Francis.



**P222 Is it just in their bones?**

***Charlotte Burnside***

Birmingham City University

Morley (2001) argues that employability has become a performance indicator within higher education, which overlooks 'how social structures interact with labour market opportunities'. On vocational programmes students are undertaking vocational training for a specific career, and therefore need to demonstrate that they have the qualities and skills required for that working environment. As educators over the years we have become complacent regarding the area of employability hiding behind the numbers.

Employment rates following graduation are consistently above 90% for diagnostic radiography graduates in the UK, with approximately two-thirds of qualifying students choosing to take up employment within the region. Despite this anecdotal evidence from radiographers states that the graduates aren't work ready, how did they qualify, they just don't fit in to the team, it is just a gut feeling, they don't have the x-factor, why don't they stay in the career? Work by Rich also echos this "I recognise that it takes time to settle in, but why nine months? Why not nine hours? Surely, graduates should be better able to hit the ground running?"

This study investigates the important part that habitus and character have in the recruitment to Diagnostic Radiography programmes to the future employment of the student. From the reading it is apparent that there is lots to be done regarding a framework for employability and the notion of character or is it just in their bones?

Andrews, J and Higsopn, H (2008) Graduate Employability, 'Soft Skills versus 'Hard' Business Knowledge: A European Study. Higher Education in Europe, 33:4, 411-422 Atkins, M.J. (1999) Oven-ready and self-basting: taking stock of employability skills. Teaching in Higher Education 4 (2) 267-280 Birmingham City University Academic Plan 2020 <http://cdn.bcu.ac.uk/human-resource/new-starter-documents/Strategic-Plan.pdf> [Accessed 8th June 2017] Collini, S. (2012) What are universities for? The highest aspirations and ideals: Universities as a public good. London. Penguin. Cranmer, S. (2007) Enhancing graduate employability: best intentions and mixed outcomes. <http://www.tandfonline.com/doi/abs/10.1080/03075070600572041> [Accessed 8th June 2017] de la Harpe, B., Radloff, A. & Wyber, J. (2000) Quality and generic (professional) skills. Quality in Higher Education. 6 (3) 231-243 Davies, A., and Jones, K., (2016) Mind the Gap: Exploring the needs of early career nurses and midwives in the workplace. [PDF] Birmingham. Health Education England. [https://www.hee.nhs.uk/sites/default/files/documents/Mind%20the%20Gap%20Report\\_0.pdf](https://www.hee.nhs.uk/sites/default/files/documents/Mind%20the%20Gap%20Report_0.pdf) [Accessed 20.01.2017]. Dictionary. Com <http://www.dictionary.com/> [Accessed 20.01.2017]. Davis, S. (2014) What Are the Benefits of Competitive Sports for Youth? Last Updated: Jan 11, 2014 <http://www.livestrong.com/article/134568-what-are-benefits-competitive-sports-youth/> [Accessed April 2017] Francis, R. (2013) The Mid Staffordshire NHS Foundation Trust Public Inquiry. <http://webarchive.nationalarchives.gov.uk/20150407084003/http://www.midstaffspublicinquiry.com/sites/default/files/report/executive%20summary.pdf> [Accessed 20.01.2017]. Harvey, L. (2000b) An employability performance indicator? Perspectives... Harvey, L. (2001) Defining and measuring employability. Quality in Higher Education, 7 (2) 97-109 Harvey, L. & Knight, P (1996) Transforming Higher Education. Society for Research into Harvey, L., Plimmer, L., Moon, S. & Geall, V (1997) Student satisfaction manual. Open University Press, Buckingham. Higher education: teaching excellence, social mobility and student choice (2015) <https://www.gov.uk/government/consultations/higher-education-teaching-excellence-social-mobility-and-student-choice> [Accessed 8th June 2017] May A, L. (2009) Communities of Practice in Health and Social Care. London. Wiley-Blackwell. McLeod, S. (2010) <https://simplypsychology.org/learning-kolb.html> Kolb - Learning Styles. [Accessed April 2017] Nutbrown C. (2011) A box of childhood: small stories at the roots of a career. International Journal of Early Years Education. Vol. 19, pp. 233-248. O'Donnell, J. (2017) The Benefits of Non-Competitive Sports - Team Sports Aren't for Every Child. Updated February 28, 2017 <https://www.verywell.com/tweens-and-non-competitive-sports-3287962> [Accessed April 2017] Picardo, J. (2012) Why students need a global awareness and understanding of other cultures. <https://www.theguardian.com/teacher-network/2012/sep/25/students-global-awareness-other-cultures> [Accessed April 2017] Reay D. (2004) 'It's all becoming a habitus': beyond the habitual use of habitus in educational research. British Journal of Sociological Education. Vol. 25, No 4, pp. 431-444 Society and College of Radiographers (SCoR) (2013) Improving retention of the radiotherapy workforce – the role of practice placements in student attrition from pre-registration programmes in England: Full report. SCoR, London. Society and College of Radiographers (SCoR) (2009) Improving Student Retention: Guidelines and Good Practice. SCoR, London. Teaching Excellence Framework (REF) (2015). Teaching Excellence Framework. [www.ref.ac.uk](http://www.ref.ac.uk) Accessed June 2017. Yorke, M. (2001) Employability in the first cycle higher education. A working paper for the 'Skills plus' Project. Liverpool John Moores University.

**P223 The impact of radiographer led research on staff and patient experience**

***Paula Evans; Louise Harding***

Warrington and Halton Hospital

**Background:** Over recent years, there has been a growing movement in healthcare that is focused around the shift of conversations from 'What's the matter with you?' to 'What matters to you?' The aim of this shift is to support the development of high quality compassionate support, care or treatment focused on what people really want and need, and the importance of patient centred outcomes<sup>1</sup>. In the UK, Scotland has been leading the way with innovative work to develop reliable ways to identify what matters to patients, to listen to them and to act upon responses. Currently, there is very little evidence of this type of patient or staff involvement being undertaken within Radiology departments.

**Purpose:** This poster will help demonstrate the impact of Radiographer led research utilising What Matters To You (WMTY) and Always Events to encourage change about the way we approach our patients and listen to our staff. It will also show how we have developed 'What matters to you?' within our department and demonstrate the outcomes that we have achieved and difficulties encountered.

1. <https://ihm.org.uk/the-kings-fund-has-published-a-new-briefing-paper-caring-to-change-how-compassionate-leadership-can-stimulate-innovation-in-health-care/> 2. Carlos, R.C. (2012) Patient Centered Outcomes in Imaging: Quantifying Value. J Am Coll Radiol. 9(10) 3. <https://www.england.nhs.uk/ourwork/pe/always-events/>



**P224 Exploring and understanding research pedagogy in radiography, in a UK university**

***Louise McKnight***

Birmingham City University

**Background:** As a radiography educator studying for a Professional Doctorate in Education, research pedagogy in radiography is the focus of my study. The aims include addressing issues raised by The College and Society of Radiographers 'Research Strategy 2016-2021' (Society and College of Radiographers 2015) around embedding research in the curriculum. This research will explore how current practice in one educational setting endeavours to realise the aims of this research strategy from the perspective of educators and radiography students at all levels of education.

**Method:** By developing an innovative use of imagery in both data collection and presentation of results, my method is symbolic of the practices of the radiography profession as it maintains the importance of images, their interpretation and use, in my research. Participants within the setting were invited to take part in individual interviews which included participant image making. Information gathered will be reported as a pictorial and written narrative of what is discovered, in an echo of our professional work of image making and reporting.

**Results:** Preliminary results will be collated and presented.

**Conclusion:** The findings will be used to inform future research pedagogy and curriculum development in radiography, helping us to embed research in the curriculum in a way that educators and students recognise. My aim is to make clear to students how important research is for them, their profession and overall, for our patients.

1. Society and College of Radiographers (2015) Society and College of Radiographers Research Strategy 2016-2021, available:

[https://www.sor.org/sites/default/files/document-versions/research\\_strategy\\_final\\_4.pdf](https://www.sor.org/sites/default/files/document-versions/research_strategy_final_4.pdf) [accessed 04/11/2015].

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**P225 Communicating radiation risk to research participants**

***Andrea Shemilt***

Nottingham University Hospitals NHS Trust

With healthcare research continuing to develop across the UK, more patients than ever are being given the opportunity to participate in research trials. All research carries both risks and benefits, however, and these must be articulated as well as possible prior to a patient's enrollment in the study. The process of communicating risks and benefits is key to giving informed consent for participation, a fundamental tenet for modern research ethics. Ionising radiation carries its own particular risks, and therefore has its own ethical and governance requirements.

This specialist area of communication requires in-depth knowledge of radiation risk, UK policy framework and skills in describing technical information to the lay audience. This talk will discuss the relevant policies and legislation in England, and give examples of participant information that is both compliant and effective at communicating risk arising from ionising radiation exposure in research. Common pitfalls in preparing participant information will be discussed, aiming to support the audience in preparing research documentation that will satisfy both ethical and local R&D review.

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**P226 An account of silences in radiography: A cultural quilt stitched together with the threads of social defences**

***Tracy O'Regan***<sup>1</sup>; *Leslie Robinson*<sup>2</sup>; *Ann Newton-Hughes*<sup>2</sup>; *Ruth Strudwick*<sup>3</sup>

<sup>1</sup>The Society and College of Radiographers; <sup>2</sup>University of Salford; <sup>3</sup>University of Suffolk

The purpose of the study was to provide an account of cultures of silence that present in diagnostic radiography practice. Multi-professional disciplines contribute scholarly literature identifying typologies of silence. Approximately sixty different forms, functions and motives for silence are theorised. This study provides an interpretation of the form and functions of silence at three UK clinical imaging departments.

A qualitative methodology, visual ethnography, was used to produce an account of silence in radiography practice. A main method of creative collage workshops and twelve interviews were supplemented with observations of twenty five staff working in accident and emergency and general practice (primary care) radiography. Thematic analysis results in five overarching themes grounded in the data. Silence in radiography clinical practice is related to:

1. Emotional labour and social defences;
2. Workload;
3. Avoiding conflict;
4. Legal and ethical dilemma and dichotomy;
5. Hierarchy.

Silence strategies were used to facilitate the smooth running of imaging services. Silence also functioned to reflect and enact empathy toward patients and colleagues; it facilitated staff and patient wellbeing, promoted harmonious teamwork and was also a strategy used to keep waiting times to a minimum. Silence reduced threat of litigation, decreased emotional anxiety and diminished the demands of emotional labour. The study results in knowledge of silence and silencing strategies used in diagnostic radiography. Data in the form of images will be presented in captioned pictorial form to raise awareness of emotional labour and social defences employed within radiography. Silence is both help and hindrance to service.

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## P227 Exploratory study to investigate the role of general consultant radiographers in the UK

**Valerie Middleton**

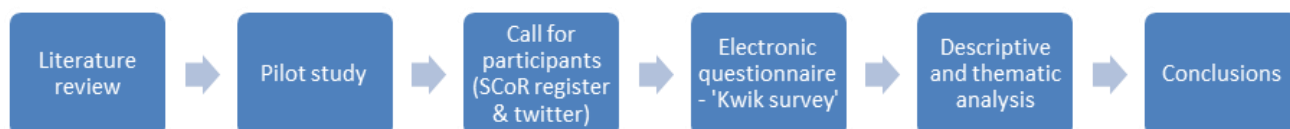
University Hospitals of the North Midlands

**Background:** Following publication of the 'The NHS Plan' (DoH 2000a) and 'Meeting the Challenge: a Strategy for the Allied Health Professions (AHP)' (DoH 2000b), consultant roles within AHP's have been developed. The role of AHP's and Consultant Radiographers (CRs) have been researched but there has been no specific research looking at 'general' CR's as a lone population. This study provides the opportunity.

### Aim and Objectives:

- Scope the general CR population to identify and highlight key trends of practice.
- Produce profile of general CR population currently practicing.
- Ascertain whether the 4 core domains of CR practice (DoH 2000b) are being achieved.
- General CR's specialise within the general field?
- General CR's embrace SCoR accreditation?

### Method:



**Results and conclusions:** 67% (n = 10) of predicted population was recruited. None were identified in Wales and NI, and 90% (n=9) practice in the trusts with 500 beds or larger, suggesting they are mainly based in the larger teaching trusts. All participants demonstrated a wide scope of practice. 70% (n=7) all plain imaging and 80% appendicular/axial/chest. No specific trends of specialisation within the general field found. 4 core domains were identified to be key to the general CR job plan and all domains were performed by all, however, the time afforded to each considerably varied. ECP afforded the largest, with research and evaluation the least. 50% perform research demonstrating a low level when CR's are being looked to for the research base. 50% SCoR accredited/30% have no plan to become accredited.

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2. Department of Health (2000a) The NHS plan. London, HMSO.
3. Department of Health (2000b) Meeting the challenge: a strategy for the allied health professions. London, HMSO.
4. Field, L. and Snaith, B. (2013) Developing radiographer roles in the context of advanced and consultant practice. *Journal of Medical Radiation Sciences* 60, 11-15.
5. Harris, R. and Paterson, A. (2016) Exploring the research domain of consultant practice: Experiences of consultant radiographers. *Radiography* 22 (1).
6. Manning-Stanley (2017) Radiography research. SCoR. <https://www.sor.org/learning/library-publications/imaging-therapy-practice/march-2017/radiography-research>. Accessed 10.6.2017.
7. Milner, R. C. and Snaith, B. (2016) Are reporting radiographers fulfilling the role of advanced practitioner? *Radiography*.
8. NHS England (2014) Five Year Forward View. London, NHS England.
9. NHS England (2017) Allied Health Professions into Action. Using Allied Health Professionals to transform health, care and wellbeing. London, NHS England.
10. NHS Wales (2016) Modernising Allied Health Professions' Careers in Wales. A post registration framework. Cardiff, Llywodraeth Cymru Welsh Government.
11. Piorowska, M. (2017) Post Brexit: challenges and opportunities for radiology beyond the European Union. London, British Institute of Radiology.
12. Radiologists, R. C. o. (2017) The Radiology crisis in Scotland: sustainable solutions are needed now. <https://www.rcr.ac.uk/posts/radiology-crisis-scotland-sustainable-solutions-are-needed-now> Accessed 10.6.2017.
13. Royal College of Radiologists and Society and College of Radiographers (2012) Team working in clinical imaging. London, The Royal College of Radiologists.
14. Society and College of Radiographers (2015) 2016-2021 society and college of radiographers research strategy. London, College of Radiographers.
15. Society and College of Radiographers (2017) Consultant Radiographer - Guidance for the Support of New and Established Roles. London

## P228 Evaluating the roles of CT radiographers in the UK

**Martine Harris; Maryann Hardy**

University of Bradford

**Purpose:** Despite ongoing advancement in imaging technologies, particularly in computed tomography (CT) the expectation for radiographer competency at registration, as defined by the UK Health and Care Professions Council (HCPC), is limited. Published generic skills and knowledge frameworks are inconsistent in their role expectations. This study presents the development and application of a unified knowledge and skills analysis tool to UK CT radiographer role descriptors. The findings form the first part of a multi-phase study exploring CT radiographer competencies.

**Methods and materials:** A convenience sample of role descriptors from UK advertised radiographer vacancies requiring participation in CT were evaluated. This enabled comparison of current clinical roles with the theoretical framework. Systematic structured content analysis was undertaken to determine correlation with the themes of the unified framework tool.

**Results:** Radiographer role descriptors were analysed from a range of recruiting organisations across the UK. Variation in role title, grade and experience required was noted. There were, key knowledge, skills and behaviors evident across all roles, but inconsistency in role expectations. Importantly, the language used to describe role characteristics was open to interpretation.





**Conclusion:** Small changes in language across recognized levels of radiography practice may have a significant impact on the expectations of decision-making, responsibility and autonomy of radiographers in clinical practice. The majority of competencies reflect generic radiographic professional standards, whereas CT clinical task competencies remain largely undefined.

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**P229 Reducing anxiety in new ultrasound students: is peer-mentoring an effective method?**

**Sara Copsey**<sup>1</sup>; **Gill Harrison**<sup>2</sup>; **Allison Harris**<sup>2</sup>

<sup>1</sup>Barts Health NHS Trust; <sup>2</sup>City University London

**Background:** Returning to university after a period away from academia has been reported to bring a degree of stress and anxiety amongst ultrasound students. Peer support has been cited as a method of reducing anxiety in undergraduate students from a variety of disciplines, including those within the healthcare sector.

**Method:** This study aims to identify whether peer discussion could be effective in supporting postgraduate ultrasound students. Nineteen new ultrasound students (65%), from a single institution, participated in a session of peer support as part of the induction programme. Peers from the previous cohort answered questions regarding the course in small groups. Anxiety levels before and after the session were measured using the short form Stait Trait Anxiety Inventory (STAI). Feedback was also collected via a short questionnaire. Non-research participating students were involved in the peer support session, so none were disadvantaged.

**Results:** There was a significant reduction in anxiety scores following the session of peer mentoring ( $p < 0.0001$ ). Student opinion favoured this method of support.

**Conclusion:** Students valued the peer support session, which provided a relaxed environment to discuss their concerns. Anxiety levels were significantly reduced following the session. The use of peer support will be developed further in the ultrasound programme to evaluate other areas which might benefit the student learning experience. The value to the peers could also be investigated.

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**P230 The impact of a clinically-orientated approach to teaching physics in ultrasound to sonography students**

**Dean Harris**<sup>1</sup>; **Shelley Smart**<sup>2</sup>; **Robert Gill**<sup>3</sup>; **Paul Miller**<sup>2</sup>; **Gareth Bolton**<sup>2</sup>; **Lorelei Waring**<sup>2</sup>; **Amanda Marland**<sup>2</sup>

<sup>1</sup>University of Liverpool; <sup>2</sup>University of Cumbria; <sup>3</sup>School of Women's and Children's Health, University of New South Wales (UNSW)

**Background:** It is recognised by professional bodies (eg CASE1) that student sonographers need to be educated in the science and technology of ultrasound equipment, both for patient safety and to obtain the best diagnostic image possible. Sonographers who study ultrasound physics are known by teaching practitioners to have difficulties in comprehending the topic<sup>[2]</sup>. The purpose of this action research was to evaluate if deeper learning might be achieved through more engaging activities which focussed on active learning, and incorporated stronger links to clinical applications.

**Method:** A review of current ultrasound physics teaching methods was conducted via peer review. The student's preconceptions were explored using a survey. A newly designed module was purposefully incorporated small group tutorials led by members of the academic team and practical ultrasound lab activities. The impact of this intervention was evaluated via student feedback.

**Results:** The majority of respondents had negative experiences learning ultrasound physics. Following the intervention, students generally felt they had an improved understanding of ultrasound physics and technology and that they were better equipped to apply this to their clinical work.

**Conclusion:** This action research adopted qualitatively confirmed that the more engaging methods has improved student's perception of studying ultrasound physics and the belief that physics does indeed apply to their work as clinical practitioners. Overall, this makes students more likely to apply these principles in clinical practice, thereby aiding the development of safe and competent practitioners. Future studies can expand this approach to larger cohorts of students.

1. Consortium for the Accreditation of Sonographic Education (2015) CASE Validation and Accreditation Handbook. Available at: <http://www.case-uk.org/handbook/> (Accessed: 17th January 2013). 2. Oates, C.P., 2015. Reviewing the curriculum for physics and technology in postgraduate sonography courses. *Ultrasound* 23, 42–47. doi:10.1177/1742271X14567499

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**P231 An overview of academy based ultrasound training for speciality radiology registrars**

**Sara Riley**; **Terry Humphrey**; **Ian Craven**

Leeds Teaching Hospitals NHS Trust

**Background:** Radiology academies were introduced with the aim of addressing the shortfall of Radiologists. The academy facilitates training over five years for an increased number of specialist trainees (ST1-5) by teaching large numbers of trainees on site to complement their clinical placements. Following the appointment of two Consultant Sonographers in 2016, we have implemented a new training programme for our ST1 to ST3 trainees accommodating increased numbers without detriment to quality.

**Purpose:** In our aim to produce Radiologists with high quality ultrasound skills, this poster will give an overview of the US training of the 82 trainees within our Radiology Academy. The methods and resources used to tailor the teaching to the requirements of trainees at different stages of their training will be outlined. The importance of feedback in informing teaching will be discussed.



**Results:** The Consultant Sonographers coordinate practical hands-on sessions from the first week of training complimented by use of an ultrasound simulator. This culminates in formative and summative assessments that are used to prepare trainees for on-call. One of the core learning drivers for our ST1-ST3 trainees is the FRCR Fellowship examinations. In addition to focussing on core practical competencies, we are now able to provide formal teaching and skills based workshops focussing on the Part 1, 2A and 2B examinations, informed by the RCR curriculum. For the higher-specialist trainees, the ultrasound training requirements are more focussed with individualised programmes dependent on the chosen speciality.

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**P232 BSc (Hons) Medical Ultrasound, direct entry undergraduate education for sonographers**

**Anushka Sumra**

*Birmingham City University*

It is universally accepted that the ultrasound profession is becoming evermore diverse. As such a board spectrum of healthcare professions are choosing to adopt and embrace the use of ultrasound technology to create a competitive advantage within their respective fields. It must also be noted that alongside an exponential increase in the clinical requirement of CASE trained sonographers and the service needs, the ever-varying needs of the patients must also be addressed. It is accepted that a significant overhaul to the traditional Postgraduate intake route must be implemented, failure to do so, resulting in the above aspirations not being delivered upon.

For those individuals wishing to pursue a profession in Sonography, there are a number of defined pathways available, namely, Post Graduate Study and Short Stand Alone Ultrasound courses (Focused Courses). In order to address the education, clinical shortfalls and provide a greater volume of skilled students, there must be focused effort by the education bodies to provide a wider and more varied pathway, without depleting other struggling professions such as Radiography, Midwifery, Nursing or Physiotherapy. The introduction of the Innovative new Direct Entry Course will ensure that a new generation of professionals are both attracted to the profession and set on a structured education pathway, resulting in a diverse workforce needed to address the constraints present in today's system.

The poster will be utilised as the core medium of presenting the contents of the Direct Entry BSc (Hons) Medical Ultrasound plus PgCert Medical Ultrasound (preceptorship) programme.

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**P233 Growing capacity for sonographer training through effective clinical academic partnership**

*Heather Venables<sup>1</sup>; Anthea Ferguson<sup>2</sup>; Emma Hyde<sup>1</sup>*

<sup>1</sup>University of Derby; <sup>2</sup>Derby Teaching Hospitals NHS Trust

**Background:** In response to well-documented staffing deficits, multiple alternative models for sonographer training have been proposed. However, attempts to increase trainee numbers are constrained by placement capacity. HEIs and clinical providers must explore alternative approaches that increase training capacity and reduce pressure on clinical departments, without compromising quality of patient care, student experience or outcome.

**Case report:** The University\* and a local NHS Trust\*\* are working in partnership to establish a sustainable approach to sonographer training. Following successful validation and CASE accreditation of a full-time graduate entry MSc Ultrasound in 2016, the Trust and University have worked closely to develop innovative approaches to on-campus support for practical skills development.

Key initiatives include:

- Extensive use of state of the art simulation
- Dedicated training lists through establishment of an on-campus satellite ultrasound service
- Simulation using experts by experience
- Expansion of normal volunteer scanning to include second and third trimester obstetrics.

**Discussion:** To address current and projected sonographer shortages we need to think beyond the small scale 'home grown' approach to local sonographer training models that rely almost entirely on 'one to one' student-mentor working arrangements. However, the push to train 'at scale' is unfeasible and restricted by lack of credible alternative models of support for skills development. In this project we propose a range of achievable adjustments to clinical academic partnership that provide effective expansion of training capacity and shift support for early stage skills development in particular away from busy clinical departments.

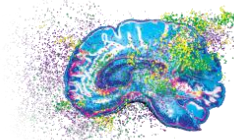
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**P234 Empathy scores following an interactive service user session for sonography students: A pilot study**

**Gill Harrison**; Allison Harris; Jacque Torrington

*City University of London*

**Background:** Empathy and compassion are deemed to be important skills needed for working in the healthcare setting. Sonographers are expected to deliver difficult news to patients, often under challenging circumstances, without warning and in some cases when unsure of the actual diagnosis. This study aims to assess medical ultrasound students' opinions of a new interactive service user and carers session, which was introduced to the programme in June 2017. It also investigated whether empathy scores changed in response to the interaction with service users.



**Method:** Students were invited to participate in the study by completing the Toronto Empathy Questionnaire (Spreng et al, 2009) before and after the service user session. Students and service users also completed a short questionnaire at the end of the afternoon, to evaluate the session and provide suggestions for future iterations. Students were asked to reflect on what they had learnt and how it might impact on their practice. Thirteen students (45%) participated in the study at a single institution.

**Results:** Only 10 empathy scores were valid, so results need to be reviewed with caution, although there appears to be an increase in empathy score after the session. The event met or exceeded students' expectations, despite one student thinking they would not 'get anything out of it'.

**Conclusion:** Students valued the 'candid and frank' exchange with service users. Empathy levels increased for most students. Suggestions for practice developments, which would impact on patient care and communication were highlighted.

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## P235 Exploring experiences and perceptions of the ScanTrainer ultrasound simulator

**Pauline Reeves; Catriona Hynes**

Sheffield Hallam University

**Background:** The role of simulation in healthcare education is increasing rapidly, and as technology has improved, high-fidelity simulators can provide a variety of learning experiences in ultrasound education. Increasing pressures in clinical departments, including staff shortages and an increased demand for services, mean that alternative methods of teaching clinical skills are being explored. However the effectiveness of any teaching methods requires assessment and monitoring.

**Method:** A qualitative study was undertaken, using semi-structured interviews to investigate the experiences of a group of six MSc Medical Ultrasound programme ultrasound students and academic staff using the ScanTrainer simulator.

**Results:** The findings confirm that ultrasound simulation provides learning opportunities in an unpressured environment, which can improve clinical skills, and therefore reduce risk to patients. However, simulation learning cannot support the development of the full range of skills required by sonographers, and the ScanTrainer is therefore not suitable as a replacement for clinical experience, or as a summative assessment tool. The fidelity of the simulation, and therefore the transferability of skills into the real clinical environment requires further study. This study found that there were concerns regarding the ergonomic design of the ScanTrainer equipment, and several suggestions for improvements to the equipment and software were made. The cost effectiveness of this expensive equipment also requires further evaluation.

**Conclusion:** Simulation can play a useful role in ultrasound clinical training, however it remains a useful addition to clinical placements, rather than a replacement for learning in the real clinical environment.

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**P236 Addressing the UK's sonographer shortage through new initiatives higher education: Evaluating the perspectives of ultrasound unit managers**

**Lorelei Waring;** Paul Miller; Amanda Marland; Shelley Smart

University of Cumbria

**Background:** Over the last decade, progressively fewer available posts in UK sonography have been filled<sup>[1,2]</sup>. As such, interventions in higher education (HE) to attract new blood have become a matter of increasing interest for medical imaging research<sup>[3,4]</sup>. While this corpus of literature has produced a range of actionable findings to date, the views of employers in clinical ultrasound around how the issue might be addressed in HE have remained largely unresearched.

**Methods:** Three models of ultrasound education were proposed to N=20 ultrasound department leads in public (n=17) and private (n=3) units:

1. The direct entry undergraduate model (DEUM);
2. The direct entry postgraduate model (DEPM); and
3. The 3+1 postgraduate model (31PM).

Participants were encouraged to express a preference, reasons for their preference, and which components of each model were desirable/undesirable. Using a Straussian model of Grounded Theory<sup>[5,6]</sup>, the extended accounts provided were analysed.

**Results:** Of the participants, n=9 indicated a sole preference for the DEPM, while n=3 indicated a sole preference for the 31PM. However, n=8 found variable strengths/weaknesses in each. Qualitative concerns thematised as:

1. The feed of undergraduate entry programmes into extant pay banding.
2. A lack of life, communication and time management skills synonymous with younger graduates.
3. Sustaining the current quality of sonographers without a prior background in plain radiography.
4. Condensing ultrasound learning into too brief a period.

**Conclusions:** There is no simple solution in HE to the sonographer shortage. Unit managers' perspectives add depth to our understanding of what might be required.

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**P237 Charting the practical dimensions of understaffing from a managerial perspective: Everyday consequences of the UK's sonographer shortage**

**Lorelei Waring;** Paul Miller; Gareth Bolton; Charles Sloane

University of Cumbria

**Background:** The Society and College of Radiographers reports that, by 2014, 18.1% of UK ultrasound vacancies remained unfilled, a substantial rise from the 10.9% reported in 2011, and the 10.1% reported in 2009<sup>[1,2]</sup>. Indeed by 2013, the UK government's Migration Advisory Committee had listed sonography as an official 'shortage specialty'<sup>[3,4]</sup>. The research reported herein is designed to lend qualitative depth to our current understanding of the "coal-face" situation in the UK's ultrasound units from the perspective of their managers.

**Methods:** Using a Straussian model of Grounded Theory<sup>[5,6]</sup>, extended accounts provided by N=20 ultrasound department leads in public (n=17) and private (n=3) units were analysed.

**Results:** Three global themes emerged from the analysis. The first addresses how a lack of staff in the broader economy has created a migratory system that works chiefly to the advantage of the most junior and the most senior clinicians, often leaving mid-career professionals in a borderline impossible situation. The second highlights how the knowledge economy in many departments is being stymied by early retirement and late-career migration, rendering questions about how advanced expertise in ultrasound might be obtained and sustained by the remaining experienced clinicians. The third underscores how it is often workplace instability, rather than simple short staffing, that is most damaging to staff morale, planning capacity and clinical self-efficacy.

**Conclusions:** This work ideally opens up debates on some largely undiscussed practical contingencies of the sonographer shortage, and can help ground future deductive research in the real-world experience of key actors.

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**P238 Ultrasound cases from a district hospital in Sierra Leone**

**Thomas Peachey**<sup>1</sup>; **Taymoor Asghar**<sup>1</sup>; **Daniel Van Leerdam**<sup>1</sup>; **Martelien Grootjans**<sup>1</sup>; **Jonathan Van Nunes**<sup>2</sup>; **Oliver Hamilton**<sup>2</sup>; **Hanna Matheron**<sup>2</sup>; **Thomas Gresnigt**<sup>2</sup>; **Håkon Bolkan**<sup>1</sup>

<sup>1</sup>Capacare; <sup>2</sup>Masanga Hospital

**Background:** Pathology in rural Sierra Leone is very different from that seen in the UK.

**Purpose:** We present a summary of cases seen during a two week ultrasound course as part of the Capacare surgical training programme (Capacare, 2017) in a rural district hospital in Sierra Leone. We provide a pictorial review of the cases seen.

**Summary:** We present a review of imaging findings in patients scanned during a two week ultrasound course in Sierra Leone. The cases include infectious diseases such as tuberculosis, schistosomiasis, eccinocosis, liver abscesses and pelvic inflammatory disease. Oncological disease included cervical cancer and breast cancer. Other diseases included nephrotic syndrome, gallstones and urinary tract stones (including kidney, ureter and urinary bladder).

Capacare. 2017. Capacare website. [Online]. [12 December 2017]. Available from: <https://capacare.org/about/>

**P239 The ABC of adrenal lesions**

**Mubeen Chaudhry; Arparna Maddali**

North Cumbria University Hospitals Trust

**Introduction:** With the marked increase in cross-sectional imaging over the last few decades, we have also seen an increase in the prevalence of 'incidentalomas' within the adrenal gland. It is important for the Radiologist to differentiate these from benign and malignant aetiologies. The following pictorial review will highlight the commonly encountered pathologies within the adrenal gland and provide for a reminder of their radiological appearances, as we have appreciated from our multi-disciplinary team meeting settings.

**Adrenal lesions:** A Adenoma: Typically less than +10 HU on unenhanced imaging. Size is generally less than 5 cm. Found incidentally in 1% of CTs. B Blood - haemorrhage: May be traumatic or non-traumatic. B 'Blubber' - Myelolipoma Constitute predominantly fat. Look for drop in signal on the out-of-phase images on MR. C Cancer - Adrenocortical carcinoma/Metastases Large, aggressive lesions. Calcification noted. High T1 and T2 signals on MR. Metastases seen most commonly from lung carcinoma. C phaeochromocytoma (Multiple Endocrine Neoplasia, MEN and Von Hippel Lindau Disease, VHL) Chromaffin tissue tumour. Heterogenous with avid contrast enhancement. Commonly seen in MEN and VHL C Cushing Syndrome/Conns Syndrome Hyperfunctioning adenomas -- cortisol overproduction in Cushing's and aldosterone in Conns.

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**P240 Necrotising fasciitis: A case study**

**Melissa Dargue; Paula Evans**

Warrington and Halton Hospitals NHS Foundation Trust

Necrotising Fasciitis (NF) is a serious condition. If untreated, it leads to sepsis, organ failure and death. Time is critical to diagnose and treat NF in order to prevent these consequences. I will be discussing the typical signs, symptoms, risk factors, diagnostic tests, treatment options and also the radiographic appearances of NF. I will also be linking this to the pathophysiology of sepsis.

A 57 year old male presented to the Accident and Emergency Department with chest and shoulder pain. Initial X-rays revealed unusual and unexpected appearances. The case study follows the patient's journey of diagnosis and treatment, and highlights the significance of time in the diagnosis and treatment of NF if a favourable outcome is to be achieved.

My aim in conducting this research and case study is to educate my fellow radiology professionals about this deadly; albeit uncommon; disease. This poster aims to display my findings, and to raise awareness of NF and how it links closely to sepsis.

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**P241 A critical review of physical psychological and social effects of breast cancer for younger women**

**Tara Gallagher; Jo Edgerley; Mike Kirby**

University of Liverpool

**Purpose/objectives:** Young breast cancer survivors (YBCSs) are a minority group in the breast cancer population yet breast cancer contributes to 43.4% of cancers in females aged 20-59 (2). YBCSs face age-specific challenges influencing their quality of life (QoL). Treatment can often have a significant negative impact on sexual function and their QoL<sup>[1]</sup>. This critical literature



review aimed to examine the impact of breast cancer on the QoL of YBCSs under the age of 50 focusing on sexual function with these objectives:

- Identifying the prevalence and severity of sexual functioning problems
- Examining associations between these problems and physical psychological and social QoL focussing on physical health body image and relationships
- Identifying age-specific interventions aimed at alleviating psychosocial distress in YBCSs.

**Materials/methods:** Multiple databases were used to search for articles from 2006-2016 focusing on the effects of breast cancer on QoL of young women with regard to sexual function and body image. The final 12 papers were critically appraised.

**Results:**

- Physical Effects: 21-52% of YBCSs reported sexual problems affecting QoL after treatment.
- Psychological Effects: YBCSs were particularly susceptible to damaging effects of low body image.
- Social Effects: 41% of YBCSs reported a decline in sexual relationship. In terms of interventions most were tailored to the older majority population of breast cancers survivors with YBCSs feeling under-supported.

**Conclusions:** YBCSs appear to have a poorer QoL across physical psychological and social domains than older survivors. Cancer providers should give consideration to the unique barriers experienced

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**P242 A critical review of migration effects on cancer incidence and mortality in the UK**

*Taka Mapimhidze; Jo Edgerley; Mike Kirby*

University of Liverpool

**Background:** Recent statistics show that nearly 500000 non-British immigrants entered the UK to the year-ending June 2017 resulting in changes in ethnic diversity as (e.g.) Asian Black and Chinese communities now represent 6.8 3.4 and 0.7 % of the current population respectively. This work endeavoured to critique the current literature for the effects of migration on cancer profiles.

**Methods:** PubMed was used for searches using MeSH headings of ("Cancer" OR "Neoplasm") AND ("Immigrant" OR "Migrant" OR "Refugee") AND ("U.K." OR "United Kingdom" OR "England") over the past 20 years. The search was refined with relevant inclusion and exclusion criteria and standard CASP tools were used.

**Results:** Nine key papers were identified all being longitudinal Cohort or Cross-sectional studies relating to Scottish Irish African Caribbean South Asian/Indian and Vietnamese migrants. Key findings included:

- Epidemiological changes of the host country: caused by migrants arriving with contrasting risk levels from the native population. E.g. increased incidence of prostate cancer in the Caribbean and African migrant
- Consequential changes in public health priorities. E.g. targeted PSA screening for high-risk groups; campaigns to discourage health behaviours which increased risk of developing these cancers.

**Conclusions:** There are statistically significant differences between migrants and native populations for certain cancers for incidence and mortality. Appropriate interventions such as targeted screening and health promotion campaigns could improve health for both populations although further research is needed to study aspects such as the generational evolution of risk and finding alternative methods for classifying ethnicity other than country of origin.

**P243 Implementation of a lung cancer screening programme in the UK using low-dose Computed Tomography - does the literature support it?**

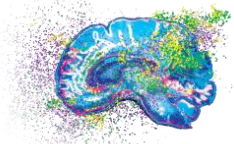
*Adam Davies; Jo Edgerley; Colette Bennion; Mike Kirby*

University of Liverpool

**Background:** Lung cancer is the most common cause of cancer-related mortality in the UK, but there is presently no nationally approved screening programme. However, the 2011 results of the National Lung Screening Trial (NLST) in the US found a 20% reduction in overall mortality when using low dose computed tomography (LDCT) as a screening tool.

**Methods:** A literature search was therefore conducted to identify research reporting on the efficacy of LDCT in screening for lung cancer. Papers were selected based on strict inclusion and exclusion criteria and critically appraised using CASP methodologies. Key papers were identified using keyword searches in Scopus, SCI and Medline and through 'snowballing', to identify suitable papers for in-depth critique.

**Results:** Five key articles were identified. Critical review of these revealed positive findings such as up to 20% reduction in mortality using LDCT vs CXR (from NLST); significantly higher early-stage (I-II) detection and higher sensitivity of LDCT for lung abnormalities, from all five trials. Less-positively, some data was too immature to conclusively highlight mortality reduction; relatively low sample sizes were evident in some studies and lower socioeconomic group participation was challenging in others. Inter-observer variability was evident across all contributing to a number of false-positive cases.



**Conclusion:** This critical review revealed a mixed economy of points for and against a national screening programme. Aspects such as poorer participation in lower socio-economic locations and also the potential negative impact of false-positives and overdiagnosis, must be addressed to firmly support a lung cancer screening programme in the UK.

**P244 UFOs in pelvic imaging: a pictorial review of unrecognized foreign objects of surgical origin**

**Lovis Kling**<sup>1</sup>; **Alexander Clark**<sup>2</sup>

<sup>1</sup>Medical Faculty Mannheim of Heidelberg University; <sup>2</sup>University Hospitals of North Midlands NHS

Inguinal hernia repair procedures are estimated to be among the most performed surgeries often including insertion of surgical meshes. A considerable number of meshes nowadays are also used for tension free vaginal tapes (TVT) and laparoscopic ventral mesh rectopexy (LVMR). Consistently radiologists are exposed to an increasing number of imaging studies from patients with meshes in the pelvic region either in order to judge mesh appearance hence function or incidentally. This work summarizes the imaging characteristics of inguinal TVT and LVMR meshes in magnetic resonance imaging (MRI) computed tomography (CT) and ultrasound scans (US).

MRI visualizes mesh material with hypointense signal on T1 and T2 weighted sequences both producing excellent contrast to surrounding fat and some other soft tissues. Mesh representation on MRI was reported to be improved using an iron oxide containing material. By contrast CT demonstrates isoattenuation of meshes adjacent to muscle and soft tissue depending on the material. However, multiplanar reformation maximum intensity projection and hyperattenuating surgical clips enable mesh visualization. Adjacent fibrosis is a good indicator on CT too therefore often referred to as pelvic pseudolesions in the literature. On US hyperechoic signal often combined with acoustic shadowing discloses mesh localization. The twinkling artifact using Doppler US has been recognized useful in indirect mesh demonstration. Nonetheless US mesh identification is complicated in the sacral region as of relevance in LVMR due to limited penetration depth.

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**P245 Service evaluation project on the use of adaptive planning target volume (PTV) margins for prostate radiotherapy**

**Anne McKenna**<sup>1</sup>; **David Green**<sup>2</sup>; **Peter Jenkins**<sup>1</sup>; **Naomi Bulmer**<sup>1</sup>; **Chris Foy**<sup>1</sup>

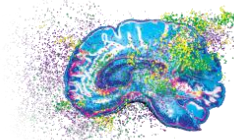
<sup>1</sup>Gloucestershire NHS Foundation Trust; <sup>2</sup>Sheffield Hallam University

**Aims:** To determine whether an adaptive treatment margin allows for the reduction in planning target volume (PTV) margins. The dosimetric impact of an adaptive PTV margin, and adaptive PTV with reduced margins (from 10mm to 7mm for PTV1) were assessed using dose data acquired from Cone Beam Computerised Tomography (CBCT) and planning scans.

**Methods:** An adaptive PTV (10mm margin) and reduced margin adaptive (7mm margin) was derived from the first five fractions CBCTs and the planning CT. Coverage of the PTVs were assessed on subsequent weekly CBCTs. Dose Volume Histograms (DVHs) from the CBCTs were compared to the original planned DVHs to ascertain whether the delivered treatment varied from the original plan.

**Results:** The mean prostate PTV1 D95 (in Gy) for the planned, adaptive and reduced volume margins were 62.3 (range 58.9-68.2), 60.7 (53.4-65.4) and 63.7 (57.2-68.1) respectively. No statistically significant difference was detected between the planned prostate PTV1 D95 and the adaptive prostate PTV1 ( $p=0.078$ ). A statistically significant difference was detected between the planned prostate PTV1 D95 and the mean of the first five CBCTs ( $p=0.005$ ). The mean centre of gravity of the first five CBCTs for all patients (in mm) were; in the lateral, anterior/posterior and superior/inferior directions -0.3, 0.1 and 1.6 respectively. **Conclusion:** No statistical difference was found between the planned prostate PTV1 D95 and the adaptive prostate PTV1 ( $p=0.078$ ). However the variations between patients for the adaptive PTV1 D95 suggest that the adaptive margin would not be an adequate class solution for this group of patients.

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## P246 Dysphagia, dyspepsia and dysphonia: The role of the barium swallow

**David Merrett**

Maidstone Hospital

The purpose of this poster was to highlight the diagnostic role of the barium swallow when evaluating and managing patients with the symptoms of dysphagia, dysphonia and dyspepsia. All three are symptoms surprisingly common complaints that can be longstanding and frustrating. They span both sexes and all age groups, whilst interfering with two of the most enjoyable social interactions, eating and speaking.

Evaluation of these symptoms requires a multidisciplinary approach, utilizing a number of diagnostic investigations. These test are normally determined by clinical history and clinicians preference. Endoscopy is recommend as the first line investigation by the RCR and British Society of Gastroenterology when excluding esophageal abnormalities. This has resulted in the reallocation of the diagnostic burden by replacing the "older" barium swallow, with newer techniques such as manometry and cross sectional imaging.

The poster looks at the presentation of these symptoms, differential diagnosis and a compares the barium swallow against the "gold standard". Pathological causes and radiographic appearances attributed to dysphagia, dysphonia and dyspepsia are highlighted, whilst evaluating the advantages and disadvantages of the barium swallow when compared to the "gold standard" endoscopy. Each investigation has its own distinct advantages but the poster highlights the need for a combined approach when patients present with one or all of the defined symptoms.

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## P247 Veterinary interventional radiography: Minimally invasive procedures improving outcomes for man's best friend

**Sharyn Bray**; Gerard McLaughlan

Fitzpatrick Referrals Oncology and Soft Tissue

Radiography in the veterinary field has advanced considerably over the last 15 years, with many procedures conducted on dogs and cats mirroring those performed in people. To illustrate, our specialist veterinary referral hospital employs seven radiographers and is equipped with a Siemens 1.5T MRI scanner, two Toshiba 160-slice CT scanners, ultrasound, digital radiography and a Ziem fluoroscopy unit.

One emerging field is in the area of interventional medicine. Procedures are performed on anaesthetised animals in a dedicated operating theatre using a Ziem image intensifier. Some of the procedures being regularly performed in our hospital include:

- Oesophageal strictures: Strictures are a rare complication arising from gastric reflux during anaesthesia. These are managed by repeated balloon-dilatation or with intraluminal stents.
- Intra-arterial chemotherapy: Delivery of chemotherapy directly into the arterial supply of the tumour is performed for certain tumours to provide an enhanced cytotoxic effect, providing sustained tumour control and remission of clinical signs.
- Intravascular embolisation: Inoperable liver tumours in the dog are treated by targeted embolisation of the arterial supply, causing cessation of tumour growth and palliation of clinical signs.





- Ectopic ureters: Congenital ectopic ureters can be readily corrected by laser-assisted ablation of the ectopic ureter, allowing for resolution of incontinence without the need for invasive surgery.
- Kidney stones: Life-threatening ureteral obstructions in cats are effectively managed by placement of a subcutaneous ureteral bypass (SUB) system.

This presentation will share some of these interesting cases with you, and show you the procedures that can now be performed on your favourite family member.

#### P248 Reporting common cancers on CT: Advice for non-specialised radiologists

*Neil McIntyre ; Sarah Higgins ; Karis McFeely ; David Buckley ; Rebecca Green*

Torbay Hospital, NHS South Devon and Torbay

**Background:** Providing an imaging report which accurately diagnoses and describes a new malignancy can often be challenging and time-consuming, particularly when presenting as an incidental finding. Radiologists whose sub-specialty interests lie elsewhere from the origin of a particular cancer may not be aware of the salient details to include to be of most benefit to the referring specialist or multidisciplinary team.

**Purpose:** The aim of this educational poster is to identify common pitfalls in the reporting of three common cancers, and to suggest relevant findings to include in reports which may be useful to referring clinicians and the wider multidisciplinary team. The poster will focus on lung, colorectal and breast cancers which together accounted for 39.4% of all new cancer diagnoses in England in 2016 (Office of National Statistics, 2018). This topic is particularly relevant when an increasing pressure on radiologists to commit to sub-specialisation risks detracting from their general reporting skills.

**Summary:** The poster will have examples of annotated cross-sectional imaging with text descriptions exploring useful reporting technique and practical advice on how to convey relevant findings succinctly. These will be organised into three sections, one for each of lung, colorectal and breast cancer. This advice will draw on sources including Royal College of Radiology guidelines.

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#### P249 Type 2 chemical shift artefact in clinical applications of MRI

*Claudine Henderson*

UK Biobank

Certain artefacts that occur in MRI images can aid diagnosis. One artefact is type 2 chemical shift artefact (CSA) also known as India ink artefact and is used for tissue characterisation, particularly for lesions containing both fat and water tissues. It is especially noticeable in the abdomen and can be seen at interfaces of normal structures (kidneys, bladder) as well as at borders with pathologic lesions such as lipid-containing dermoids.

It appears as a black line around fat-water boundaries such as those between water-based tissues such as muscle and peritoneal fat which results in a sharp outlining of the muscle-fat boundary that is sometimes visually pleasing but not an anatomical structure. Type 2 CSA is dependent on the fat-water chemical shift and the TE used and happens in those voxels which contain both fat and water. It can be found at any field strength but is seen only in gradient echo sequences (GRE) at certain TE's. It is never seen with spin echo sequences (SE) as the phase shifts due to chemical shift are cancelled by the 180° refocusing pulse. Independent of spatial encoding it occurs in both the frequency-encode and phase-encode directions. The poster explains the physical principles of this artefact and why it occurs, how it can be valuable for tissue characterisation and its use in the diagnosis of focal fatty liver or adrenal adenomas. We aim to identify various methods employed to eliminate this effect including slice thickness, field of view, matrix size and receiver bandwidth.

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#### P250 MR safety, RF heating, implants and MR scanning duration, MR Conditional labeling and total MR examination time - history and state of the art

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**Purpose:** There is still a lot of discussion on the "15 min continuous MR scanning" duration provided in MR Conditional labeling. We show the history and state of the art.

**Outline:** The amount of RF energy, the MR scan duration, the anatomical area irradiated are critical for heating of tissue. This pulsed RF power used implies that the time provided by the MR Conditional labeling \*Is NOT assigned to the duration of ONE



MR sequence only as mentioned in Shellock et al '...it applies to only each particular pulse sequence that is used...'<sup>[4]</sup>, but the whole MR examination (possibly consisting of multiple scans) must be taken into account (usually 15 min. duration, because of 15 min. ASTM RF heating testing).

\*Can be the duration of a number of subsequent MR sequences minus the time pauses between the scans. In IEC 60601-2-33(1995):Ed.1 the averaging times for the SAR of the patient of 15 min for the whole body, reduced in (2002):Ed.2 and Ed.3(2010) to 6 min. MR scanning time for device testing in ASTM is specified as 15 min. duration. Different tissues can handle different temperature rises, whereby also the duration of temperature stress/dose is critical to determine, if (permanent) tissue damage will occur. This is expressed via the value of Cumulative Equivalent Minutes at 43°C (CEM43)<sup>[5,6,7]</sup>.

**Summary:** Safety limitations have been set for MR examination time and exposure level for MR scanners and MR implant scanning, up until today discussing thermal dose concepts.

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## P251 Intra orbital foreign body screening prior to MRI. Is it reliable? A case study

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X-ray screening for metallic intra orbital foreign bodies (IOFB) is sometimes necessary as part of an MRI safety previously and answered yes to metal splinters/shrapnel to the skin and eyes and no previous imaging or medical examination which could clear patient. IOFB films performed, hot reported and cleared for MRI however the MRI examination showed multiple image void / distortions consistent with metallic artefacts. The patient did not report any adverse effect either during or after the examination.

The review will investigate computed and digital radiography and the particulate size used in fireworks in the context of this particular case to question the reliability of CR and DR for screening patients with this type of injury and the others with metallic foreign bodies below a certain size.

## P252 What does patient centred care look like in diagnostic radiography?

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**Background:** Patient Centred Care (PCC) is a term used within policy, professional and practice documentation<sup>[1,2,3]</sup>. Based predominately on the nursing philosophy of care, it is unclear whether common interpretation of the term is translatable to diagnostic radiography practice or whether understanding of the term is consistent across radiography service practice sub groups (managers, practitioners, educators and students) and radiography service users<sup>[4,5,6]</sup>. Further, it is unclear what PCC looks like from the perspective of these groups and how it might be observed and measured.

**Methods:** This is a 2 stage mixed methods study using survey and focus group data collection methods. An attitudinal survey will provide a baseline measure of knowledge, understanding and attitudes to PCC. Attitudinal statements will be paired (negative and positive phrasing) and cross group responses analysed using Kruskal-Wallis one-way analysis of variance for non-parametric data. Focus groups will explore perceptions of PCC using situational vignettes developed from survey responses to prompt discussion and reflection. Focus group interviews will be digitally recorded, transcribed verbatim, and analysed using framework analysis to confirm and expand survey response themes and identify observable measures of PCC<sup>[8]</sup>.

**Results:** This national study is ongoing and initial findings including cross group variations in perceptions and attitudes to PCC will be presented.

**Conclusion:** PCC is a central component of health policy but no robust data on what this means and looks like within diagnostic radiography exists. This study begins to fill this gap, suggesting observable measures of PCC as indicators of service quality.

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