

using the Monte Carlo simulations in the PCXMC software program. Each radiograph will be analysed independently by two specialist MSK radiology consultants and two consultant spinal surgeons for image quality using European guidelines. Any difference in effective dose and image quality will be assessed statistically. Results Data collection is ongoing and expected to be completed by March 2017.

**Conclusion** We believe the outcome of this study will be of general interest to radiology departments nationally with implications for best practice in benefiting patient outcomes.

1. Hart D, Health Protection Agency (Great Britain). *Frequency and collective dose for medical and dental X-ray examination in the UK, 2008*. Didcot: Health Protection Agency, 2010. 2. Young KJ. *Should plain films of the lumbar spine be taken in the posterior-to-anterior or anterior-to-posterior position? A study using decision analysis*. *J Manipulative Physiol Ther* 2007;30(3):200–205. 3. Heriart JB, Terry JA & Arnold AL. *Achieving dose reduction in lumbar spine radiography*. *Radiol Technol* 1993;65(2):97–103 4. Mekiš N, Mc Entee MF, & Stegnar P. *PA positioning significantly reduces testicular dose during sacroiliac joint radiography*. *Radiography* 2010;16(4):333–338.

### p178 **AP pelvis X-ray imaging on a trolley: Impact of trolley design, mattress design and radiographer practices on image quality and dose to patient**

Jenna Tugwell-Allsup<sup>1</sup>; Peter Hogg<sup>2</sup>

<sup>1</sup>Betsi Cadwaladr University Health Board, Wales; <sup>2</sup>Salford Univeristy

**Background:** Physical and technical differences exist between imaging on an X-ray tabletop to imaging a trolley-bound patient. This study evaluates how these differences impact s on image quality and radiation dose for AP pelvis imaging on a trolley in order to optimise this imaging examination.

**Materials and Method:** An anthropomorphic pelvis phantom was imaged on a commercially available trolley under various imaging conditions. Variables explored were two mattresses, two image receptor holder positions, three source to image distances (SIDs) and four mAs increments. Image quality was visually evaluated using a 2 alternative forced choice (2AFC) method with the reference image acquired on the X-ray tabletop. Contrast to noise ratio (CNR) was also calculated for comparison. Effective dose was established by using Monte Carlo simulation software. Optimisation scores were derived as a figure of merit by dividing effective dose with visual image quality scores.

**Results:** Visual image quality significantly reduced by 13 % ( $p < 0.05$ ) whilst effective dose significantly increased by 56% ( $p < 0.05$ ) for the images acquired on the trolley using identical acquisition parameters to the reference image. The trolley image with the highest optimisation score was acquired using 130cm SID, 20mAs, the standard mattress and platform not elevated. A difference of 12.8mm was found between the image with the the lowest and highest magnification factor (18%).

**Conclusion:** The acquisition parameters used for AP pelvis on the X-ray tabletop are not transferable to trolley imaging and should be modified accordingly to compensate for the differences that exist

### p179 **The impact of a single site trauma centre status on interventional radiology**

Stephanie Pennington

Aintree University Hospital, Liverpool

Until recently we have been part of a trauma collaborative working with various healthcare trusts in the area. We have recently become a single site centre for trauma care, this has meant we have changed the way we work with regards to trauma patients. This change has affected the way that Interventional Radiology works and has an impact upon the staff and the way we deliver healthcare in this setting. These changes have been brought in to ensure that the patients who are in need of the most complex and quick care receive it in a safe and appropriate manner, provided by staff who are best trained to ensure this care is given. (RCR: Standards of practice and guidance for trauma radiology in severely injured patients)

Royal College of Radiologists (2011). *Standards of practice and guidance for trauma radiology in severely injured patients*. [https://www.rcr.ac.uk/sites/default/files/BFCR%2811%293\\_trauma.pdf](https://www.rcr.ac.uk/sites/default/files/BFCR%2811%293_trauma.pdf)

## SERVICE INNOVATION & OPTIMISATION

### p180 **Edit series: Saving you time and money**

Andrew Macallister; Anthony George; Naomi Fenton; Toby Hall

Royal United Hospitals Bath NHS Trust

**Background:** It was noted that many plain radiographs were reported after patients had a reported CT scan of the same body part. Many are privately outsourced costing £4.95 per radiograph. Our RIS system allows reports to be combined using the 'edit series' function.

**Aim:** To assess the number of privately outsourced radiographs for patients who have already had a reported CT scan of the same body part.

**Method:** Our RIS system was used to identify all patients with a locally reported inpatient CT scan and a plain radiograph of the same body part within the preceding 3 days. Reporting method and several other data items were collected over a 2 week period.

**Results:** 123 events were identified, 28 were excluded as the radiograph was reported before the CT scan or not reported at all. Of the 95 radiograph reports generated after the CT report 61 (64%) were privately outsourced, 29 (31%) were reported locally and 5 (5%) used the 'edit series' function. Private outsourcing cost £301.95, extrapolated to £7,850.70 annually. The opportunity cost of a locally reported radiograph is an outsourced radiograph, costing £3,732.30 annually with a total cost of £11,583.

**Conclusion:** Many plain radiographs are needlessly privately outsourced or reported in retrospect which can easily be avoided by using the RIS 'edit series' function to combine reports. There is the potential for a significant financial saving.

p181 **An economic evaluation of CT head reporting radiographers in clinical practice**

Paul Lockwood

*Canterbury Christ Church University*

**Background** Current NHS England and Royal College of Radiologist (RCR) reports estimate the year on year increase of CT examinations to be 10%, with the designated workforce of radiologists disproportionate to the increase in demand of imaging reporting.

**Purpose:** The aim of this poster is to enable conference participants to review a PICO framework study to evaluate the patient work flow demand from retrospective audit data (n=7,266) at an acute NHS district general hospital (DGH) over 12 months. Reviewing potential outcome risk data (diagnostic thresholds), and feasibility (workforce capacity) of both interventions. The economic evaluation calculated hourly unit costs for comparison estimation of consultant radiologists and reporting radiographers Royal College of Radiologists (RCR), Centre for Workforce Intelligence (CfWI) and Department of Health (DoH) estimates for both interventions. The intended learning outcomes for readers by the end of this poster should be able to:

1. Understand the clinical demand of CT reporting at a DGH hospital and appreciate service development and innovation of a skills mix workforce to report CT head examinations.
2. Begin to evaluate the level of reported diagnostic accuracy of radiographer CT head reporting to reflect level of potential risk of implementation of this service. To start to reflect afterwards on the various costs involved in current provision and the potential for savings in this time of austerity.

p182 **An audit of CT requests for major trauma at a UK level 1 trauma centre**

James Davies; Biju Thomas

*University Hospital of North Midlands*

**Background** Our hospital is a major trauma centre admitting around 1,000 patients with serious injuries yearly, with CT playing a vital role in management. Knowledge of injury mechanism and physiological status is vital for providing informed reports, and in planning further investigations. IR(ME)R mandates all investigations be justified, and trauma is no exception. In our hospital a provisional registrar report is provided, that is checked by a consultant. Anecdotally there is suggestion that clinical information is often lacking. This audit was conducted to address the validity of this claim.

**Methods** A one-month retrospective audit was conducted using July 2016 cases. Patients undergoing whole body CT for major trauma were identified by manual search of CRIS database. Clinical information in the provisional report, and request documents was analysed.

**Results** 45 cases identified. M:F 38:7; age 18-90yrs(48.4). Mechanism; Fall 25%;RTC 73%;Crush 2%. A dedicated trauma form was used in 67%(30) cases and in 9%(4) no form was retrievable. Information was scored by mechanism detail, areas of concern, and physiology ('MAP' score). 11 (26.8%) requests scored fully in all areas. Mechanism was deemed sufficient in 22 (53.6%), areas of concern in 33 (80.4%), and physiology in 21 (51.2%).

**Conclusion** Significant variation exists in information provided. Retrieval of scans was time-consuming owing to manually searching. Changes were made in referrer and radiologist practice, and a trauma-specific CRIS code for easier retrospective identification of cases was created. Noticeable change is already occurring, however prospective re-audit data is awaited in early 2017 to fully assess this.

p183 **Changing perceptions in CT**Genevieve Sandon*Birmingham City University*

**Background** The role of the radiographer in CT scanning has evolved dramatically over years: resulting in innovative changes which enable optimisation of service improvement within the imaging modality of computerised tomography.

**Purpose:** The poster aims to identify the key areas of change within the working day of the CT radiographer over the last 30 years and reflect on the progression of the radiographer's role up to the level of Advanced Practitioner. Recognition of the ability of radiographers to be versatile and adapt to change can lead to improved patient service and radiographer career enhancement.

**Summary:** The key categories of change are evaluated: Technical developments in CT Working conditions Education Role extension and advanced practice Improvements for the patient.

p184 **Reporting of staging and treatment response in cancer imaging**Sarah Hudson; Yvette Griffin*University Hospitals of Leicester*

**Background:** Imaging to stage cancer and assess treatment response are essential for timely patient management. TNM staging and classification of response into partial response, progressive disease or stable disease are recommended by the RCR, modified RECIST criteria and WHO (1, 3, 4). Aims: 1. Staging scans should be assigned a stage. 2. Post treatment scans should have a response documented.

**Method:** Retrospective review of staging/response assessment reports on CRIS. Consecutive cases from 9 MDTs. Minimum of CT chest, abdomen and pelvis included. Speciality and seniority of reporter noted.

**Results:** 255 cases. All by consultant radiologists except 3 by post FRCR SpRs. CT (63%), MRI with CT (13%) and PET-CT (24%). Of 182 baseline staging scans 77 (42%) gave TNM staging. Of 73 response scans, 57 (78%) gave a treatment response statement. 48 cases by non-speciality reporter, only 9 (19%) had an assigned stage/treatment response.

**Conclusion:** Whilst there was a full description of lesions, a high proportion of radiology reports lacked explicit TNM staging and response. Oncology and GI radiologists were the most likely to give a statement on staging. In 33%, reasonable mitigating factors were given:- when staging and response assessment was not the primary reason for the scan, uncertainty if findings malignant or benign, unknown or ambiguous primary and indeterminate/mixed response. Ensuring reports are issued from speciality radiologist and introducing a report proforma or a checklist could improve documentation of staging and disease response. The latter is in routine use in pathology (2).

1. Eisenhauer, E.A. et al. (2009) New response evaluation criteria in solid tumours: Revised RECIST guideline (version 1.1). *45(2):228-47* 2. Gormly, K.L. (2009) Standardised tumour, node and metastasis reporting of oncology CT scans. *J Med Imaging Radiat Oncol. 53(4):345-52*. 3. Royal College of Radiologists. (2014) RCR Recommendations for cross-sectional imaging in cancer management, second edition. *Imaging in the Evaluation of cancer. Faculty of Radiology, Royal College of Radiologists, 63 Lincoln's Inn Fields, London, UK* 4. World Health Organization. (1979) WHO handbook for reporting results of cancer treatment: offset publication no. 48. World Health Organization, Geneva, Switzerland.

p185 **Radiographer reporting: A peer review audit**Sophie Cheshire; Carol Swift; James Murphy; Syed Ali*Royal Preston Hospital, Lancashire*

**Background:** Reporting radiographers have played an important role in our major trauma DGH for the last 13 years. We have 8 reporting radiographers within the trust who have undertaken specialist post graduate training to assist with the increasing demand of reporting appendicular and axial X-rays. The aim of this audit is to determine the accuracy of radiographer reports. The audit involved peer review of reports in order to enhance learning and development.

**Method:** One month retrospective peer reviewed audit with the final quality check performed by a consultant MSK radiologist. The standard was to achieve 95% accuracy, this is a historical benchmark figure.

**Results:** A total of 673 examinations were peer reviewed. Within this sample 75% were true negatives and 23% true positives. Only 1% each were either false positive or false negative.

**Conclusion:** Accuracy can be utilised as a measure of the quality of reporting and this audit demonstrates that radiographer reporting exceeded the 95% benchmark. It is accurate and cost effective. It reduces reporting turnaround times and helps manage the increasing demand for X-ray reporting. Other benefits from this audit have included the education of general radiographers on labelling of X-rays and how to improve image quality as well as the implementation of a new reporting

template for ankle X-rays. This audit has enabled self development and feedback for the radiographers and released radiologists for more complex tasks.

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p186 **Developing a radiographer practitioner role within a minor injury unit**

Siobhan Edwards-Bannon

*St Mary's Treatment Centre, Portsmouth*

**Background** The development of AHPs to assist with a variety of clinical roles within the NHS is crucial to the delivery of safe healthcare in an environment of growing workload and limited resource. AHPs bring specialist skills that can be further developed to support medical practitioners in a number of clinical fields to improve patient experience and waiting times. Previous initiatives within the Southern region to develop Radiographers via a MINTs thereby facilitating early discharge from MIU had been unsuccessful due to lack of consistency in training and engagement of departments.

**Learning Outcomes** To understand how the creation of a Radiographer Practitioner Role can be effectively developed and implemented into a busy MIU. This poster will outline the process by which the role was researched, developed and introduced to the MIU. In particular it will look at Radiographer education and the competencies required to develop an effective MIU practitioner.

**Content** Briefly explaining background for initiating role. What is Radiographer Practitioner -- Description of the role and how it works within the MIU setting. Challenges in implementation -- Education, Proving competency, Patient and Professional acceptance. Benefit of the Radiographer Practitioner -- Patients, Professionals, Departments and for the NHS including patient pathway statistics, feedback from patients and professionals.

**Discussion** Review of what has been achieved. Further Development of the role -- proposed introduction of reporting and audit of accuracy and outcomes.

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p187 **Referring physiotherapist and emergency nurse practitioner satisfaction with plain image radiological reports**

Ruth Easton; Jonathan McConnell

*NHS Greater Glasgow and Clyde*

**Background:** Professional bodies within radiology recommend that all imaging procedures have a written report [1,2]. Emergency Nurse Practitioners (ENPs) and Physiotherapists request plain radiographic musculoskeletal trauma examinations. To date no-one has asked about the degree of satisfaction of reports received, is the clinical question answered, is there a preferred style to report content and any difference between reporting radiographers (RRs) and radiologists [3]?

**Method:** ENPs and Physiotherapists from a major receiving hospital received 30 RR and radiologists reports/images from hand, knee or shoulder examinations. A mixed methods approach established report satisfaction and style preference scores using a likert scale for three styles, namely: free text (style A); bullet point listed (style B) and Yes/No to abnormality present (style C). Participants were asked if the clinical question was answered. Responses were examined to establish preferred style or content according to professional group reporting the image. A paired t-test calculated significance for satisfaction, style and answering the clinical question and an independent samples t-test compared professions.

**Results:** No statistically significant difference between report styles A and B was detected though style C was widely rejected. Answering the clinical question produced similar results. No statistically significant difference was indicated between professions for either report style A or B ( $p=0.386$ ).

**Conclusions:** Referrers prefer reports using either free text or as a listed approach. A simple binary response is not valued by the referrer. No significant difference in text based styles is seen between the RRs and radiologists, indicating satisfaction from both reporting professions.

[1] Robinson P. Radiology's Achilles' heel: error and variation in the interpretation of the Rontgen image. *The British Journal of Radiology* 1997; 70: 1085-1098 [2] Robinson P, Wilson D, Coral A, Murphy A, Verow P. Variation between experienced observers in the interpretation of accident and emergency radiographs. *The British Journal of Radiology* 1999; 72: 323-330 [3] Grieve F, Plumb A, Khan S. Radiology Reporting: a general practitioner's perspective. *The British Journal of Radiology* 2010; 83: 17-22

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p188 **Review of a network CT head out-of-hours service delivered by radiology registrars**

Darren Chan; Nicholas Hollings

*Royal Cornwall Hospitals NHS Trust*

**Aim:** To assess the performance of pre-FRCR registrars in CT head interpretation under a new, regionalised on call system.

**Background:** In- and out-of-hours NHS reporting networks are beginning to evolve in the UK. Prior studies have established that registrars are competent in their interpretation of CT head scans<sup>1-2</sup>, but governance arrangements surrounding networked reporting are largely untested. The SW Peninsula Radiology Network, covering 4 acute trusts, now sees registrars reporting on-call scans at sites remote from their physical location. These shifts can be busy, challenging for more junior registrars and divorce them from face-to-face interaction with local radiographers and referring clinicians.

**Method:** A retrospective study of 250 consecutive CT head reports performed between 18.00 and 07.00. All reports second read by three consultants with subspecialty interest in neuroradiology.

Reports were categorized as: no change, minor or major discrepancy. Minor discrepancy implied no change to outcome or clinical plan, major discrepancy implied potential for adverse patient outcome.

**Results:** 19 registrars' reports were analysed (8 ST2, 6 ST3 & 5 ST4) from 1/12/15 to 19/3/16: only 1 major discrepancy was found, in one ST2 report (0.4%); 23.6% reports had minor discrepancies, the rest (76%) none.

**Conclusion:** Report accuracy is good across all grades. More senior registrars make fewer errors. Formal assessment of report accuracy was not performed prior to networked service commencement but it is reassuring to know that post inception report quality is high.

1. Erly, W.K., Berger, W.G., Krupinski, E., Seeger, J.F. and Guisto, J.A., 2002. Radiology resident evaluation of head CT scan orders in the emergency department. *American journal of neuroradiology*, 23(1), pp.103-107. 2. Patel, M., Ginat, D., Katzman, G., Collins, J., Lee, S., 2015. Radiology resident interpretation of overnight emergency head CT: Accuracy and clinical impact of misinterpretation. Annual Meeting 2015 – American College of Radiology. Available: [https://www.acr.org/~media/ACR/Documents/PDF/Annual%20Meeting/Abstracts/076/ePoster\\_076.pdf](https://www.acr.org/~media/ACR/Documents/PDF/Annual%20Meeting/Abstracts/076/ePoster_076.pdf)

#### p189 Action research into implementing an open access service in X-ray: Baseline evaluation phase

Nicholas Barlow

Mid Yorks NHS Trust

**Introduction** Current drivers for reducing waiting times in X-ray include the NHS cancer plan (NHS England 2016) and government targets (Department of Health 2013). Trusts have implemented open access services to reduce waits (Care UK 2011), however their effectiveness is currently unknown. This study forms the baseline evaluation for wider participatory action research that will investigate effectiveness of the current local general practitioner musculoskeletal X-ray appointments service and identify barriers/enablers to open access

**Methods** This study employs both qualitative and quantitative methods. Quantitative waiting time data was sought from the Trust's radiology information system. Qualitative data was obtained via three semi-structured interviews with key informants and two (cross-site) staff focus groups. A patient survey was then undertaken to measure satisfaction. Quantitative analysis was achieved via descriptive statistics, whereas qualitative analysis was undertaken via template analysis.

**Results** Survey results indicated an average waiting time from referral to X-ray of 11.81 days, with 91% of patients finding this time to be 'adequate' or better. 45% however stated only a maximum wait of 1 week was acceptable. Several drivers for change were identified including external influences (government targets) and delays in the appointments process. Barriers/enablers to open access identified included low staff levels, departmental layout and inadequate communication.

Although most patients are happy with the current service, a preference for appointments within 1 week, including the varying identified managerial drivers support the need for change. Results will inform the next phase of the PAR which will look to implement open access via addressing the barriers/enablers identified.

1. CareUK (2011). Walk-in X-ray service launched for Leeds and Bradford patients. CareUK. <http://www.careuk.com/news/walk-X-ray-service-launched-leeds-bradford-patients-0> Accessed 18 March 2016. 2. Department of Health (2013) *The Handbook to the NHS Constitution (Cm18892, 2013)*. The Stationary office. <http://www.nhs.uk/choiceinthenhs/rightsandpledges/nhsconstitution/documents/2013/handbook-to-the-nhs-constitution.pdf> Accessed: 5 March 2016. 3. NHS England (2016). *Achieving World Class Cancer Outcomes: Taking the Strategy Forward (2016)*. NHS England. <https://www.england.nhs.uk/wp-content/uploads/2016/05/cancer-strategy.pdf> Accessed 6 April 2016.

#### p190 CT productivity 8am to 9am: Can we do better?

Elizabeth Barclay; Anna Sharman

University Hospital of South Manchester

**Background:** There has been speculation within our radiology department that the rate of CT scanning between 8am and 9am is lower than expected. Anecdotally, a slow start to the day causes a backlog of scans and increased pressure on the department throughout the day. Delayed scanning and reporting can lead to a knock-on effect on patient flow throughout the hospital, with many patient discharges being dependent on CT scan results. Therefore, we have assessed the productivity of CT scanning between 8am and 9am in order to identify areas for improvement. Relevance: other hospitals are likely to have similar problems and therefore may benefit from our study findings and recommendations to improve patient flow.

**Purpose:** To demonstrate our findings and recommendations, and provide valuable information for other hospitals. The poster will comprise results of the study, including CT productivity 8am-9am compared with the rest of the working day, and reasons for low scanning rates inferred from our data. Recommendations following multidisciplinary team discussion at the departmental clinical governance meeting will be outlined. Improvements in our service will be demonstrated using the subsequent data collected two months after changes had been implemented.

**Summary:** Changes agreed and implemented. Results of second data collection. Further recommendations. Will include factors affecting rate of CT scanning and therefore rate of patient flow (for those awaiting a 'discharge-dependent' scan) -- likely to be similar factors in other hospitals, therefore transferrable recommendations.

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p191 **Are the models of care championed by the NHS constitution fully applicable within radiology?**

Rachael Forton; Maryann Hardy; Anita Sargeant

*University of Bradford*

**Background:** The NHS constitution details the principles, values, rights and responsibilities of the NHS, making explicit to the public, patients and staff what can be expected with regards to quality care and service provision. Underpinned by professional and regulatory body documentation, the principles of care defined in the constitution aim to inform the care culture within the NHS. However, it is unclear what impact this document has on societal expectations of care and the patient-radiographer relationships or whether the principles, as described, are fully applicable within high technology imaging departments.

**Method:** Using Critical Discourse Analysis, guided by the work of Fairclough (2015), a qualitative analytical framework was developed to systematically review the language and phrasing of the NHS constitution, explanatory documents and relevant professional and regulatory body documentation. Extracted data were explored in depth to derive explanatory themes.

**Results:** High quality care, as defined by the NHS constitution, focuses on three interrelated elements: valuing patients as individuals; autonomous professional practice; and the generation of positive working environments. However, these are derived from generic and perhaps idealistic nursing models of care that may have limited application within radiology.

**Conclusion:** Whilst aiming to raise standards, the NHS constitution may be generating unachievable, idealistic models of care when application is considered within radiology. Consequently, failure to meet defined care expectations may result in staff demoralisation and sub-optimal patient-radiographer relationships. Radiography, as a profession, needs to challenge nursing models of care championed by the NHS constitution and develop a more relevant care evidence base.

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p192 **Strategic planning for the radiology department of the future**

Simon Rickaby<sup>1</sup>; Vin Majuran<sup>2</sup>; Jim Weir<sup>2</sup>

<sup>1</sup>Kingston University; <sup>2</sup>Kingston Hospital NHS Foundation Trust

**Rational:** In response to ever increasing business pressures, many radiology departments have adopted unsustainable reactive approaches to service management. However, the authors assert that there is a critical need to develop and employ principled scientific approaches to radiology service management in order to plan for the radiology department of the future.

**Methods:** The authors adapt De Geus's (1997) four key traits of successful companies to the context of a modern radiology department, by proposing four overarching concepts that can guide strategic service management. Each of these concepts is further explored with the use of a SWOT analysis and a local case study.

**Results:** The following are the derived business concepts, with De Geus's original traits in brackets:

- Evidence Based Management (Sensitivity to the business environment)
- In practice - Business analytics via Informatics, research, and local audit.
- Culture & Environment (Cohesion and identity)
- In practice -- Strategic planning, MES, recruitment and retention, professional development, quality.
- Consultation (The ability to build relationships) In practice -- Reflective needs based dialog with stakeholders, patients and staff.
- Financial Resilience (Conservative financing)
- In practice -- sustainable ten year budgetary development, through the use of comprehensive business analytics.

**Conclusion:** The authors adapt De Geus's four key traits of successful companies to the context of the modern radiology department, by proposing four key concepts that can be used when planning the radiology department of the future. It is proposed that a focus on: Evidence based management, Culture & Environment, Consultation and Financial Resilience, can provide sustainable development.

1. Geus, Arie De. *The Living Company*. Boston, MA: Harvard Business School, 1997. ISBN 978-0-87584-782-5.

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p193 **Inside the Trailblazer - Development of apprenticeship standards**

Denise Baker

*University of Derby*

The introduction of the apprenticeship levy in spring 2017 will potentially see employers set aside large sums of money which can only be spent on apprenticeships. This has seen a flurry of activity in developing apprenticeships and there is a very real possibility that there will be an apprentice radiographer in departments by 2018. This poster will give information on the development of apprenticeships and aim to dispel some myths about the quality of the training apprentices will need to undertake. The author was privileged to be part of the nursing trailblazer group and has had first hand experience of the development of an apprenticeship standard. The poster will cover: What is a trailblazer? Who can be part of a trailblazer? What is an apprenticeship standard? What is the role of the professional body and regulator? What is end point assessment and why do we need it? What is the Government's role?

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p194 **MRI in a specialist emergency setting: Early findings**

Rebecca Simmons; Darren Hudson

*InHealth Group, London*

**Background:** Northumbria Specialist Emergency Care Hospital opened in June 2015, providing specialist emergency care for seriously ill and injured patients from across Northumberland and North Tyneside. Included in the hospital is the MRI unit which is solely used to scan inpatients and emergency cases, and operates seven days a week from 8am-midnight. Referrals are generated from a variety of specialties including, Accident and Emergency, stroke unit, GI and orthopedics.

**Purpose:** After 12 months into service delivery a review of the workload and case mix being provided by MRI was conducted. This showed a steady number of examinations performed each month. Of the 4015 scans performed, 28% and 35% were head and spine respectively, with the next two significant examination areas being abdominal (20%) and MRA Carotids (3%), and the remaining examinations being a mixture of other body areas.

**Summary:** Whilst neurological assessment for cauda equina, cord compression and stroke were expected to form a significant part of the case mix, it wasn't expected that so much abdominal exams would be requested. It is felt that the availability and accessibility to MRI as a first line test has helped this, with many patients presenting with abdominal pain receiving MRCP. The use of MR supports a reduction in radiation dose and utilises the superior soft tissue contrast in improving diagnostic confidence and outcomes. However, along with the benefits and increased utilization of MRI in the emergency setting there are always the considerations over managing patient safety and patient tolerance to factor in.

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p196 **Managing scan related anxiety in MRI: Applying an 8C's approach**

Darren Hudson

*InHealth Group, London*

**Background:** Scan related anxiety is a common occurrence within MRI, being one of the main reasons for scan failure or premature termination. This in turn has an impact on providing a diagnosis for patients that can therefore delay treatment, and cost implications for the business in terms of inhibited efficiency and wasted scanner use.

**Purpose:** The most anxiety inducing part of the exam process is positioning on the scan table and placement of surface coils, and to a lesser degree the initial perception when entering the scan room itself. Whilst much around the nature of the beast can't be changed, it is important to remember there are certain aspects of human interaction that may help alleviate scan related anxiety and make having a scan more tolerable for patients.

**Summary:** Improving patient experience is paramount in facilitating successful scan outcomes for patients and resulting in high levels of satisfaction, which in turn help maintain business reputation and department throughput. To be able to provide personalised imaging experiences, the human interaction between patient and staff member is important, and should be focused around acknowledging and actively responding to any patient fears or anxieties so that care can be tailored to their specific needs. It hinges on developing trust which has been shown to reduce anxiety levels, which leads to less failed scans and in turn increased productivity. An 8C's summary approach was developed to help support staff in their interaction and management of patients; consider, communication, compassion, control, comfort, calming, confidence and

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p197 **Success rates at cervical catheterisation in a sonographer-led HyCoSy service: A retrospective baseline audit**

Amanda Marland; Gareth Bolton; Paul Miller

*University of Cumbria*

**Background:** HyCoSy (Hysterosalpingo-contrast sonography) is the investigation of choice for the evaluation of tubal patency as recommended by the National Institute for Health and Clinical Excellence (NICE) (2004) - now the National Institute of Health and Care Excellence. Role extension and development in Ultrasound has led to sonographer performed HyCoSy being undertaken in many UK centres in recent years. However, published audit surrounding sonographer-performed HyCoSy is limited.

**Objective:** The aim of the study was to evaluate success/failure rates at cervical catheterisation in women referred for HyCoSy examination in a sonographer-led service and to explore the methods and techniques identified in the literature for improving success.

**Methods:** A baseline audit was undertaken for the purpose of evaluating current service provision. Data were analysed retrospectively for all women undergoing HyCoSy examination over a twelve-month period.

**Findings:** Over the study period, 143 women underwent HyCoSy examination. Cervical catheterisation was successful in 86% of women (unsuccessful in 14%) at first attempt, and in 79% of women (unsuccessful in 21%) at second attempt. Overall, a success rate of 96% was reported (4% failure rate). Failure rates of up to 8% were reported in the literature.

**Conclusions:** The overall failure rate in the current service is acceptable when reviewed alongside rates described in the literature. However, there is a clear need to improve first time success at cervical catheterisation. Management techniques for improving success have been identified and recommendations made to improve the quality of the current service.

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p198 **What matters to you? Exploring what's important to patients in a diagnostic radiology department**

Paula Evans; Louise Harding

*Warrington and Halton Hospitals NHS Foundation Trust*

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. 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 involvement/interaction/satisfaction being undertaken within Radiology departments.

This poster will help raise awareness of this process and encourage change about the way we approach our patients and their needs. It will also show how we have developed 'What matters to you?' within our department and demonstrate the outcomes that we have achieved and any difficulties encountered.

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p199 **Using Safety Culture Organisational Reliability and Engagement (SCORE) survey to evaluate safety culture in radiology**

Julie Mills<sup>1</sup>; Christine Heales<sup>2</sup>; Colin Stuckey<sup>2</sup>; Diane Nicholson<sup>2</sup>

<sup>1</sup>*University of Exeter*; <sup>2</sup>*Plymouth Hospitals NHS Trust*

**Background** The culture of an organisation/department is important in ensuring delivery of high quality patient care. One way to evaluate this is to use the Safety Culture Organisational Reliability and Engagement (SCORE) survey

**Purpose:** To disseminate the use of SCORE survey as a valuable tool in evaluating radiology departments. Results from the SCORE survey can help form the basis of current and future initiatives within organisations. The survey also asks questions around Learning Environment Local Leadership/Management \* Resilience/ Burnout Teamwork Safety Climate Work / Life Balance

**Summary:** Evaluation of how to access and run the SCORE survey and results and discussion from 2 radiology departments CT and MRI within an acute NHS trust

1. *Safe and reliable healthcare (2014) The Integrated SCORE (Safety, Communication, Operational Reliability & Engagement Survey) available online at <https://www.safeandreliablecare.com>*

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p200 **Introducing preliminary clinical evaluation of nasogastric tube position on adult chest radiographs and removal of incorrectly placed nasogastric tubes by diagnostic radiographers**

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*The Christie NHS Foundation Trust*

Use of misplaced nasogastric (NG) tubes was recognised as a patient safety issue by the National Patient Safety Agency (NPSA) in 2005 and four further alerts were issued between 2011 and 2016. Introducing fluids or medication into the respiratory tract via a misplaced NG tube is a 'Never Event' (1). At this hospital, the majority of NG tubes placed are checked by pH testing of aspirate but a number still require X-ray imaging to confirm NG tube tip position. Of these, a few per year are misplaced into a bronchus or lung. Although such cases are few in number, there is often a delay before the formal written radiology report is available, with subsequent risk of the NG tube being inadvertently used by the clinical team when the patient returns to the ward. The radiology department is currently training general radiographers: (i) In preliminary clinical evaluation of adult chest radiographs for NG tube position (ii) The subsequent removal of any NG tubes misplaced within the respiratory tract before the patient leaves the radiology department. By implementing radiographers removing these misplaced NG tubes, the risk of a patient having medication/fluids through an incorrectly placed NG tube is reduced. The poster will demonstrate the process taken to introduce this new practice, including training, competency and issues encountered.

(1) NHS Improvement (2016). Patient Safety Alert - Nasogastric tube misplacement: continuing risk of death and severe harm. Alert reference number NHS/PSA/RE/2016/006.

p201 **Repeat chest radiographs for consolidation: Do GPs follow advice?**

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**Background:** Consolidation on a chest radiograph has a variety of causes including infection and malignancy. Current RCR and BTS guidance advises a repeat radiograph in films with consolidation after 6-12 weeks if a patient is > 50 years, heavy smoker, persistent signs and symptoms and at risk of malignancy. Failure of resolution on follow-up should prompt further investigation by the respiratory services and / or further imaging with a CT chest.

**Method:** 2 months of GP outpatient films (3588) were filtered to include only studies where the report suggested radiographic follow-up (294). RIS was then used to determine whether a follow-up film or CT had been performed.

**Results:** 85% of GP films were followed-up as advised. 4% of the cohort was subsequently diagnosed with a bronchogenic carcinoma. Only 6 films of the 15% not followed-up had concerning radiographic abnormalities that warranted further follow-up. The mean time to repeat imaging was 8 weeks. No patient < 50 years old was diagnosed with cancer. Repeat imaging was requested in 8% of all GP chest films performed.

**Conclusion:** GP initiated follow-up proved robust. However, there was a high radiology-initiated repeat rate for follow up of small abnormalities such as bronchial wall thickening and tiny areas of atelectasis. The audit provided reassurance that adherence to guidelines should not lead to missed cancer diagnoses. Re-enforcement of guidelines should reduce unnecessary imaging and cost whilst maintaining standards.

1. Bhaludin, B.N. et al. (2014). Delays and errors in abnormal chest radiograph follow-up: a systems approach to promoting patient safety in radiology. *J Eval Clin Pract.* 20:453-459. 2. Cliffe, H. et al. Follow-up of consolidation on chest radiographs before and after the introduction of radiology initiated follow-up. [https://www.rcr.ac.uk/sites/default/files/8\\_Walsh\\_SECURED.pdf](https://www.rcr.ac.uk/sites/default/files/8_Walsh_SECURED.pdf). 3. Harvey et al. (2014). Recommendations for Chest CT Prompted by Outpatient Chest Radiographic Findings. *Radiology* 275 (1). 4. Lim, W.S. et al. (2009). BTS guidelines for the management of community acquired pneumonia in adults: update 2009. *Thorax* 2009; 64(suppl 3):iii1-iii55. 5. Little, B.P. et al. (2014). Outcome of Recommendations for Radiographic Follow-Up of Pneumonia on Outpatient Chest Radiography. *AJR* 202:54-59. 6. NPSA Safer Practice Notice 16 (2007). Early identification of failure to act on radiological imaging reports. <http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59817> 7. Royal College of Radiology. Standards for the communication of critical, urgent and unexpected significant radiological findings, 2nd edition. London: The Royal College of Radiologists, 2012. [https://www.rcr.ac.uk/sites/default/files/publication/BFCR\(12\)11\\_urgent.pdf](https://www.rcr.ac.uk/sites/default/files/publication/BFCR(12)11_urgent.pdf) 8. Sistrom CL, Dreyer KJ, Dang PP, et al. (2009). Recommendations for additional imaging in radiology reports: multifactorial analysis of 5.9 million examinations. *Radiology.* 253(2):453-461. 9. Wacogne, I. and Negrine, R.J.S. (2003) Are follow up chest X-ray examinations helpful in the management of children recovering from pneumonia? *Arch Dis Child* 88:457-8.

p202 **A pilot single-centre single-blinded randomised controlled trial study to compare the use of video demonstration or telephone interview verses routine intervention to alleviate anxiety in patients prior to MRI**

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**Background:** Patients undergoing MRI often experience anxiety prior and during scanning. Anxious patients can cause early termination of scan but also cause movement artefacts and exacerbate swallowing reflex and peristalsis, increases heart rate/respiration and blood flow; all potentially having a detrimental effect on image quality. The aims of this study was to explore two simple, cheap and easily implemented interventions to reduce anxiety pre MRI scanning by addressing the diverse

informational needs of patients. The majority of interventions previously explored are not routinely practiced due to questions over their cost-effectiveness.

**Method:** Ninety first time attending patient for MRI head, spine or cardiac scan were randomised into one of three interventions; DVD, telephone conversation with a radiographer or routine appointment letter. The State-Trait Anxiety Inventory (STAI) questionnaire was used to measure anxiety levels pre and post intervention. Motion artefacts were visually assessed by 2 observers and a post scan survey was also used to capture patient satisfaction. A convenience sample of six patients had post scan interview.

**Results:** The study has ten more participants to recruit which will take approximately six weeks. Data analysis will then be undertaken promptly by a senior statistician. Data from the STAI questionnaires will be analysed using ANCOVA and image quality analysed using ANOVA. Intra class coefficient (ICC) will be used to compare image quality scores between the two observers. A thematic approach will be used for the interviews and opened ended questions on the survey.

## SIMULATED LEARNING

### p203 Simulated CT learning: The perils and pleasures of remote access education for radiography students

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**Background:** Background: Simulated learning is vital to translating theoretical and early practical experiences into safe clinical practice. Simulation in medical imaging has common limitations of replicating errors around image quality and radiation dose to the patients.<sup>1</sup> The NETRAD CT facility at the University of Sydney comprises of a Toshiba 16-slice CT scanner which students use to scan a range of phantoms in real time via remote-share labs internet access.

**Methods:** Students engage with extensive learning resources in patient preparation, scanning procedures, dose modification techniques and 3D reconstruction when using NETRAD within their undergraduate curriculum. In this study, we surveyed the experiences of Australian students who have availed of this remote access scanner (Phase 1, n=28) and their attitudes about CT simulation for preparation for clinical placement (Phase 2, n=80).

**Results:** Phase 1 results showed that students valued opportunities to repeat and refine CT skills and appreciated the strong relevance to future roles (87% Strongly Agree (SA)). However, students made the clear distinction that remote access was different to real life scenarios (70% SA), with minor frustrations about remote access login and lack of educator facilitation. Phase 2 data collection is currently ongoing and preliminary results indicate that CT simulation is most valuable for pre-clinical skills and reduces in effectiveness after dedicated CT placement.

**Conclusion:** The acceptance of simulation to enhance and replace current clinical education rotations needs further exploration from education and professional perspectives. However it is clear that CT simulation promotes student engagement and provides mastery of CT skills.

1. Bridge, P., Gunn, T., Kastanis, L., Pack, D., Rowntree, P., Starkley, D., Wilson-Stewart, K. (2014). *The development and evaluation of a medical imaging training immersive environment. Journal of Medical Radiation Sciences*, (61), 159-165. Doi: 10.1002/jmrs.60

### p204 Student radiographer attitudes towards the older patient - A longitudinal study

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**Background:** The ageing population is creating greater pressure on health care services; radiology is no exception. Care of the older population has been reported as inadequate and as a consequence of the Mid-Staffordshire enquiry, care of the older patient has become a central feature of education and training. However little evidence exists as to the effectiveness of this education in the radiography arena.

**Method:** This longitudinal study evaluated student radiographer attitudes towards older people. In the first phase an educational intervention, aimed at improving student radiographer attitudes towards the older person was designed and implemented. Attitudes were measured pre and post intervention using Kogan's attitudes towards older people scale (KoP). Students were then followed throughout their training to determine any changes in attitudes.

**Results:** Students held positive attitudes towards older people pre intervention, which increased significantly post intervention (p=0.01). This significance was not noted at 6 and 12 months' post intervention; here average scores reduced to an almost identical level to those found pre-intervention. At 24 months' post intervention attitudinal scores increased, though this was not found to be significant.