Outcomes: Results indicate that radiographers were reluctant to comment on abdominal, chest, axial skeleton and paediatric images. Reasons given were: lack of time, confidence and level of training. 42.9% would not offer indication of abnormality if they were unsure regarding confidence in their opinion. 42.9% would still offer comment if unsure and 14.2% would offer a red dot. 50% stated they preferred the commenting system to the red dot system and 71.4% agreed that the commenting system is beneficial for patient care.

Discussion: It appears that level of training may not be perceived as adequate and this may affect confidence and participation. Recommendation is that further training and updates may improve confidence and improve level of participation, with audit of participation after 6 months.

P-131 Audit of the quality of DATIX incident reporting for contrast extravasation

Sophia Sakellariou; Giles Roditi

Department of Radiology, Glasgow Royal Infirmary

Background: Iodinated contrast media are the most commonly used injectables in Radiology today. Extravasations can occur during hand or power injection in 0.1%–0.9% of cases but is more common in the latter. Small extravasations of contrast result in minor or no effect to the patient, but occasionally effects are severe with subsequent requirements for tissue debridement and/or surgical intervention.

Extravasation incidents are reported in the DATIX system and analysed. Most of the information relating to the incident is electronically inserted by the incident reporting person in free text format. The authors hypothesised that this method of data input is inconsistent and unreliable for accurate incident reporting.

Method/Results: Based on previous experimental computational fluid dynamics (CFD) results relating contrast media parameters with probability of extravasation, nine items of information were considered essential for inclusion in the free text section of the incident reports for accurate documentation of extravasation incidents.

A retrospective audit of the records demonstrates a vast divergenge in the quality of information reported on DATIX with an average of 4 items reported per record and a range of 1-9 items per record. Most records have limited documented evidence of actions being taken in response to the adverse event.

Rationale for inclusion: It is proposed that the introduction of a pro-forma will improve the documentation of information and allow for better data collection leading to improvement in the service and patient management as well as provide data that will further inform research and audit.

Errors and discrepancies

P-132 Disagreement in chest x-ray interpretation: comparative analysis between consultant radiologists and a reporting radiographer

Nicholas Woznitza; Stephen Burke; Suvarna Amin; Kamini Patel; Kathryn Grayson; Keith Piper

Homerton University Hospital; Statistics by Design; Canterbury Christ Church University

Aims: Accurate image interpretation is crucial to enable correct patient management by clinicians. Image interpretation is a subjective task, and studies demonstrate significant observer variation in x-ray interpretation. There is little work examining the agreement between consultant radiologists and reporting radiographers in chest x-ray (CXR) interpretation.

Methods: A random sample of cases (n=100) was selected from a consecutive series of 1,000 CXR reports produced by the reporting radiographer in clinical practice. Fifty images were reviewed by each radiologist who examined the radiographer report for accuracy and agreement, including 50% duplication of cases between radiologists to determine inter-radiologist variation. The radiologist's evaluation was independent, blinded to the proportion of cases receiving multiple radiologist opinions. Inter-observer agreement analysis using Kappa was performed.

Results: Eight discrepancies were produced between the radiologist and radiographer interpretation; four of these occurred in cases which received two radiologist opinions. Only one discrepancy was confirmed by both radiologists; three cases produced findings in which a radiologist was in disagreement with the other radiologist and radiographer. Only one major discrepancy was identified. This case was deemed normal, in agreement with the

radiographer report, by one radiologist. CT confirmed small volume lymphadenopathy and tuberculosis diagnosed. Inter-observer agreement (Kappa, K) between the radiographer and the three radiologists was found to be almost perfect, K=0.91, 95% Confidence Intervals (0.79,1.0), K=0.91 (0.79,1.0) and K=0.83 (0.68,0.99) respectively. Inter-radiologist agreement was found to be K=0.82 (0.52,1.0) and K=0.91 (0.75,1.0).

Conclusions: The level of inter-observer agreement between radiologist and radiographer reports compares favorably to inter-radiologist variation.

P-133 Are we getting the message across? An audit of radiology reports

Jawad Naqvi; Richard Sawyer

University Hospital of South Manchester

Purpose: Poor structure and use of ambiguous "hedge" terminology in radiology reports may hold significant medico-legal implications. This audit was undertaken to assess the quality of the conclusion provided and the use of "hedge" vocabulary in radiology reports.

Materials/methods: 44 radiology reports (20 plain film, 11 CT, 13 MR) were randomly chosen from the PACS in a major teaching hospital trust, including both in-house (28) and teleradiology (16) reports. Standards were: 100% of report conclusions answer the clinical question posed (derived from RCR Reporting Skills audit) and with ≤1 "hedge" per sentence (derived from Hall et al 1990). A medically qualified non-radiologist graded the answer provided in report conclusions using a subjective iterative scale ranked from 1-5. Reports met the standard if scored ≥4/5. "Hedge" terms were defined using the literature (Wallis et al 2011).

Results: 37/44 requests provided an explicit question. 32/37 (86%) reports adequately answered the question (score ≥4/5, 76% in-house, 100% teleradiology). Average grade of answer was 4.14/5 (3.96 in-house, 4.46 tele-radiology). 36/44 (82%) reports avoided hedging (≤1 hedge per sentence, 81% in-house, 88% teleradiology). Average number of hedges was 1.3 (1.64 in-house, 0.7 teleradiology).

Conclusion: Standards were not met; 86% of reports answered the question and 82% avoided "hedging". Results suggest teleradiology outperforms in-house reporting and may reflect the greater complexity of cases reported in-house. Further work is planned to expand the sample size, increase the number of observers and clarify the grading scale before providing recommendations to radiology trainees on reporting syntax.

P-134 Wrong site surgery - how well does radiology prevent this?

Tracy Au Yong; Shahid Hussain

Heart of England NHS Foundation Trust

Aims/Objectives: This year a never event occurred in this author's trust where a patient underwent wrong site surgery. The root cause analysis identified multiple contributing factors, in particular the wrong information given on the radiology request form and the subsequent radiology report not identifying the side of the lesion. This sparked an interest as to whether reporters were reporting laterality of abnormalities on the imaging as routine practice.

Content: This retrospective audit looked at reports from different reporters; modalities (33% magnetic resonance imaging, 33% ultrasound, 33% computed tomography) and anatomy (pelvis, brain, spine, abdomen, chest) over a time period before the never event was discussed at a departmental discrepancy meeting.

Relevance/Impact: The National Patient Safety Agency estimates that wrong site surgery occurs between one in 4,550 and one in 780 cases. The incidence of wrong site surgery related to unreported side of pathology in diagnostic imaging is small, but has significant impact on patient outcome.

Outcomes: We found that all reports across the modalities done during this time had correctly reported laterality in abnormalities. In addition, 83% of referral requests specified side of symptoms where applicable.

Discussion: All the reports reviewed in this audit identified the side of any abnormality, suggesting that this occurrence was a one-off incident. Whilst such occurrences are thankfully rare, this sentinel event has reminded us of the importance of ensuring our radiological reports contain the anatomical site and side of abnormalities.

P-135 "Is that your final answer?" an audit of provisional versus final reports of on-call CT imaging

Mubeen Chaudhry; Sudha Muly; Ravi Adapala

Wirral University Hospitals Trust

Aims/Objectives: The on-call CT reporting service is generally provided by a two-tier rota, consisting of a registrar with indirect supervision by an on-call consultant. Provisional reports are issued at the time of scanning and a final report issued later when reviewed by a senior colleague.

The aim of this study is to ensure that a high standard of accuracy is provided by the Radiology registrars on call.

Content: No defined standard of discrepancy rates is set. The literature suggests discrepancy rates of between 2.6 – 5.4 %. The local target used was 5 % for non-significant discrepancies and 2.0 % for significant discrepancies. Five registrars were included in this study with retrospective data collection performed.

A total of 70 studies were analysed with 4 discrepancies noted. Discrepancies were noted in a total of 4 cases. Of these, 1 was deemed to be significant and 3 non-significant, giving an overall discrepancy rate of 1.4% for significant findings and 4.3% for non-significant findings.

Outcomes: Discrepancy rates of the on call reporting registrars falls within those noted in studies performed in other centres. With more experience, confidence and judgment improves thus ensuring prompt and accurate reports are issued.

Discussion: Consultant-led supervision during an on-call period ensures real-time rectification of potential reporting errors. It is important to document in the report if discussion with the on-call Consultant has been performed. If a particular CT examination is noted to have higher discrepancy rates, targeted training or supervision to improve reporting accuracy may be performed.

P-136 Errors in final radiology reports generated using voice recognition software

Caroline Parkin; Vandan Arora; Paul Hulse

North Western Deanery School of Radiology

Objective: Audit the frequency and spectrum of errors in radiology reports generated using voice recognition software in a single Radiology Department.

Content: 160 radiology reports from December 2011 - February 2012 were selected according to grade of reporter and imaging modality to reflect the typical workload of 16 Radiologists (14 Consultants, 2 trainees). Errors were categorised and results presented to the reporters. The process was subsequently repeated in June 2012. This poster presents results of the completed audit cycle.

Relevance: Voice recognition software can shorten report turnaround but is associated with transcription errors that can alter the meaning of reports. Published error rates vary between 4.8% and 23%. Awareness facilitates vigilance and avoidance of these errors.

Outcome: Initially 16% of reports (26/160) contained errors, word substitution being the most common error type, with one very significant error that changed the meaning of the report. Re-audit results demonstrated 12% of reports (19/160) were erroneous, extra words being the most common error type, but no very significant errors were identified.

Discussion: Completion of the audit cycle demonstrated an interval reduction in errors. Both audits highlight a spectrum of errors, with word substitution and extra words being the most common. Errors are more common in longer reports (specifically CT reports) and reports authorised later in the day (after midday). Extra vigilance with these reports and the use of preset macros is recommended. We advocate reflection on the potential causes of errors, action to minimise these and regular audit to facilitate continual improvement.

P-137 The Radiology Events Register (RaER): incident reporting in radiology

Catherine Mandel; Natalie Hannaford; Jane Grimm; Tim Schultz

Peter Maccallum Cancer Centre; Australian Patient Safety Foundation; The Royal Australian and New Zealand College of Radiologists

Aims/ Objectives : To describe the process of developing a radiology-specific incident reporting system, the benefits and challenges.

Content: Incident reporting has a central role in improving safety in high-risk industries. Adoption in healthcare is patchy and lags behind other industries.

The Radiology Events Register (RaER) started in 2006 as the first dedicated radiology incident reporting database. It accepts reports of adverse events and near misses from anyone working in, or interacting with, medical imaging.

Encouraging the reporting of incidents is challenging: a variety of educational tools and incentives have been used. Feedback to the profession has included case studies, peer-reviewed journal articles, conference presentations, workshops and a biennial conference. The database has been used for research into radiology safety issues.

Surveys of attitudes to the database and reporting have been conducted.

Relevance/Impact: Incident reporting that is relevant to radiology and applied within a just culture has great potential to improve patient safety.

Outcomes: Establishing a dedicated incident reporting system is not difficult if experienced partners are used. Encouraging healthcare practitioners to use the system, and extracting system learnings, are more difficult and require constant promotion, incentives and engagement.

Discussion: Incident reporting is a key tool in the quest to improve safety in healthcare. The use of specialty-specific reporting systems is useful as the content and analysis can more accurately detect and address issues within the specialty. Until a just culture is established and reporting becomes second nature, there are ongoing challenges in getting incident reports entered.

P-138 When it all goes wrong – what should we tell the patient?

Ann Pinder

Plymouth Hospitals NHS Trust

We have had many debates in our radiology department about whether to, and how to inform the patient if they have been involved in an untoward incident involving radiation.

The relaunch of the 'Being Open' policy by NPSA in 2009, and questions from the CQC in relation to a reported incident prompted us to finalise a many times drafted policy in 2012. We took data from the Health Protection Agency report HPA-CRCE-028 which categorised the radiation induced cancer risk to the patient as low, very low, minimal or negligible, and used the highest level (low) to be that at which we would inform the patient. These incidents would also be reported to the CQC or HSE.

This poster will outline the main points of our policy:

- At what level of risk do we inform the patient
- When do we, and who informs the patient
- How this is documented
- Any follow up documentation.

To date we have only informed one patient and that has been a recent event – by the time the poster is produced we hope to have an update on how this was dealt with and received by the patient.

The poster will also include pros and cons of giving patients information regarding errors with radiation.

P-139 MRI-induced soft tissue pain: Incidental finding of a 15 year old foreign body

Theofilos El Sayed Omar; Ussamah El-Khani

Keele University Medical School; Department of Plastics, Reconstructive and Aesthetic Surgery, St Thomas' Hospital, London

Aims: To highlight the importance of past medical history when screening for MRI contraindications, and the importance of plain imaging referral for patients suspected of having metallic foreign body embedment/injury.

Content: We present the case of an 82 year old female who developed right middle finger pain during MRI. Prior to the scan, the patient filled out a routine MRI patient safety questionnaire which did not reveal any apparent contraindication to MRI.

Relevance: The presence of foreign body in the gastrointestinal tract, foot and eye through ingestion or trauma is well reported in the literature. Foreign body in the digits without the patient being aware of it appears to be much rarer.

Outcomes: Examination confirmed no obvious sensory-motor deficit, and no soft tissue or joint pathology was palpable. A plain radiograph of the right hand revealed a 2cm metallic spike on the radial aspect of the right middle finger distal phalanx.

Discussion: Strong magnetic fields encountered in MRI may cause the object to migrate in an unpredictable manner. Previously reported incidents of undetected foreign bodies during MRI have proven fatal. Screening questionnaires rely on the patient/carer's knowledge, but this is not always reliable. This becomes more problematic when considering groups of patients who may not be fully compliant with the screening process. This case report is a reminder that the responsible clinician should be vigilant when screening for metallic foreign bodies on completion of the MRI checklist, and should adopt a low threshold for plain imaging prior to MRI.

P-140 Cardio-respiratory radiology discrepancies

Praveen Varra; Indrani Venkatadasari; Shahid Hussain

Birmingham Heartlands Hospital, Birmingham

Aims: To report commonly missed cardiovascular and respiratory lesions on radiological imaging at our institution, identified via the discrepancy meeting and suggest tips on how to prevent future misses.

Content: We present a pictorial review of cardiovascular/respiratory errors identified at the quarterly discrepancy meetings at our institution. We suggest a checklist of reviews to ensure that errors do not happen again.

Relevance: In spite of the prolonged training; series of exams/assessments, radiology trainees/consultants occasionally miss/misinterpret lesions on radiological imaging with variable patient consequences. The purpose of the discrepancy meetings is to revisit these misses/misdiagnoses and learn from them, as per the RCR guidelines - Standards for Radiology Discrepancy meetings 2007.

Outcomes: 64 discrepancies reviewed over 18 months.

Cardiovascular discrepancies - RCA to coronary sinus shunt, ASD, PEs and an AVM.

Respiratory discrepancies - lung cancers, lung metastases, retro-cardiac and a hamartoma.

Discussion: CXRs are common and complex - contributed to majority of the discrepancies; lung cancers, predominantly tricky retro-cardiac nodules due to composite heart shadow. The AVM miss on CXR is a rare pathology, was present on the old images.

The misses of shunts on CTPA were uncommon pathologies, not commonly looked for by general radiologists and registrars. However, missing multiple PEs on CT is a serious discrepancy.

What can we learn from these mistakes?

1) If you don’t look for it, you won’t pick it up plus review old images.

2) Systematic review of CXRs- Lung apices, hila, retro-cardiac, bones and soft tissue lesions (Breasts/axillae).

3) Always review and comment on the heart on CT/CTPAs.

4) Remember CXR/CT limitations.

P-141 Pictorial review CT head soft tissue normal variant pitfalls

Paul Lockwood

Canterbury Christ Church University

Intended learning outcomes - To recognise the varied neurological appearances of soft tissue normal variants with the brain. Highlighting the importance of differentiation of normal and variant anatomy from the pitfalls of misdiagnosing a pathological condition

Content -Pictorial review of 12 common examples of neuroradiological normal variant conditions of the brain, including cerebellum, ventricles, and calvarium.Relevance -There are an increase of radiographers taking up CT Head Reporting courses throughout the country due to the increased workload of CT departments and NHS funding of stroke units in district general hospitals

Outcomes - To increase reporting radiographers and CT radiographers knowledge and learning of cerebral anatomy and variants.

Discussion - The differentiation of a normal anatomical variant tends to come from experienced recognition of established patterns of variation from either empirical visual assessment or evidence based research material that allow the reduction of false-positive findings and reduce unnecessary additional diagnostic imaging.

Patient dose measurement and management

P-142 The incidence of contrast induced nephropathy in EVAR procedures

Gulraiz Ahmad; John Overton; Jawad Naqvi; Abysinia Sibanda; Taohid Oshodi

The Royal Oldham Hospital; University Hospital South Manchester

Contrast media is often used in imaging and non-invasive procedures such as endovascular aneurysmal repair to enhance an image profile. The most commonly used contrast media have previously been gadolinium and iodinated contrast media.

Contrast induced nephropathy is the most frequently used term to describe kidney injury seen after exposure to iodinated contrast media. It has been defined as increase in serum creatinine by 44micromols or >25% serum creatinine rise above baseline within 48 hours after contrast administration. (ESUR guidelines 2007)

Aim: To assess the comorbidities of each patient and to find the optimal amount of contrast that should be administered to a patient to prevent contrast induced nephropathy, whilst also providing an adequate image.

Method: We have carried out a retrospective audit of 50 EVAR procedures carried out from April 2012 to February 2013, assessing how much contrast media was used in each patient. We have also collected data for the pre-procedure and post-procedure eGFR and serum creatinine levels to assess whether any of the patients suffered from acute contrast induced nephropathy. Results showed that people with existing comorbidities were more prone to developing CIN.

P-143 Audit of radiation dose from CT KUB examinations at Nottingham University Hospitals

Christopher Clarke; Rosemina Ahmad

Nottingham University Hospitals

There has been an exponential increase in the use of CT KUB over the past decade. This is of particular concern in the population scanned as patients are generally young and often repeated stone formers requiring multiple scans. This study compares the radiation dose of locally performed adult CT KUB examinations with the national standard, with an aim to optimising patient dose.

A prospective analysis was undertaken of all adult CT KUB doses performed over a two month period at Nottingham University Hospitals (NUH). Five CT scanners were included and the dose length product (DLP) obtained for each patient scanned. The mean DLP for each scanner was calculated and converted to an effective dose to compare to the national standard.