



Results show some correlation between %SeHCAT retention and response to sequestrants, although a number of patients did not respond as predicted (either improving with sequestrants despite 'normal' SeHCAT retention, or failing to improve with sequestrants despite 'abnormal' SeHCAT retention).

SeHCAT testing is a useful tool in the investigation of suspected bile salt malabsorption but, as in many clinical situations, results and expected response to treatment may be confounded by a variety of factors.

Clinical: Paediatrics

P104 Assessing practice and timing of neonatal cranial ultrasound in a district hospital

[Emily Hurst](#); [Rubaraj Jayarajasingam](#)

Mid Yorkshire Hospitals NHS Trust

Background: Cranial ultrasound is used widely in neonates for detection and monitoring of pathology. The indications are diverse, and the frequency and timing of follow-up scans can be difficult. Within our unit we are guided by a regional modification of the British Society for Paediatric Radiology Guidelines, 'Technical Standards - Neonatal Cranial Ultrasound Scans'. We sought to establish our current practice relating to technical quality and timing of scans in order to guide departmental process.

Methodology: Retrospective analysis of all cranial ultrasounds performed over a 6-month period (n=147) within our district hospital. Each examination was assessed with reference to the information labelled on the scans, and technical quality of images. All premature (<33 weeks gestation) infants having their first cranial ultrasound within a 6-month period (n=23) were assessed in relation to the timing and frequency of scans.

Results: The technical quality of scans performed within our unit was excellent; the majority of examinations contained the recommended information (86-100%) and imaging views (88%). Most first cranial ultrasound examinations were undertaken at the recommended time, however 96% of patients did not follow the recommended plan for subsequent studies and only 50% had the recommended 36-week scan. The cause is multifactorial; appropriately trained staff not always available, and incorrectly timed clinical referrals.

Outcomes:

- Results presented locally.
- Further sonographers trained to perform cranial ultrasound to improve the service.
- Consideration of use of a proforma to guide scan timings and referrals.
- Encouragement of clinician scanning.

P105 Paediatric head injuries and computed tomography: are we following NICE guidelines?

[Ryan Connolly](#); [Robert Spence](#)

Altnagelvin Hospital

Introduction: Head injuries are a leading cause of mortality, accounting for 15% of deaths in children aged 1-15. Computed tomography has been documented as the primary investigation for clinically significant head injuries. However several studies have attributed higher rates of lifetime cancer risk to patients who receive irradiation at a young age. Recently NICE published updated guidelines for management of paediatric head injuries, emphasising risk stratification of high risk children requiring imaging whilst minimising radiation exposure in lower risk patients. We aim to assess adherence to this guidance within the hospital.

Method: This retrospective audit reviewed all paediatric patients admitted over a consecutive three month period with head injuries. Case notes and electronic records were analysed, assessing documentation of clinical findings and indications for CT brain. We subsequently evaluated adherence with NICE guidance CG176.

Outcomes: 27 patients were admitted for neurological observation over a three month period. 14 patients (52%) received a CT brain however 6 patients (22%) met NICE criteria for CT. One scan out of 14 showed a significant abnormality. Interestingly, 9/27 patients (34%) had no initial GCS score documented on admission notes.



Discussion: Our findings suggest a lack of compliance with NICE guidance and subsequent over-reliance on radiological investigations. To reduce unnecessary radiation exposure, we have increased educational awareness amongst clinical staff and distributed copies of NICE guideline algorithms. Following implementation of this PDSA cycle, it is hoped that our re-audit will show evidence of significant quality improvement.

P106 What is the value of a full skeletal survey in diagnosing child abuse?

[Jessica Smith¹](#); [Alan Sprigg²](#); [Isla Lang²](#); [Amaka Offiah²](#)

The University of Sheffield¹; Sheffield Children's NHS Foundation Trust²

Objectives:

- To determine the yield of hand, foot and spine fractures from initial skeletal survey and follow-up images
- Ascertain whether radiographs of these sites can be omitted
- Provide recommendations for an imaging protocol that provides sufficient diagnostic evidence whilst minimising radiation exposure.

Materials/methods: For this single centre retrospective study, the radiographs of 120 patients, under the age of three who had a full skeletal survey and follow-up imaging performed for suspected physical abuse were selected and anonymised.

Three consultant radiologists independently answered questions regarding presence of fractures or other abnormalities, first on the initial survey, and then from both initial and follow up images together.

Results:

- Interim results for the first 40 patients are presented;
- No hand, foot or vertebral fractures were reported by any of the radiologists;
- Readers 1 and 3 had 100% agreement, identifying no fractures in 23/40 (57.5%) patients;
- Reader 2 reported no fractures in 24/40 (%), reporting one false positive tibial corner fracture.

Conclusion: Yield of fractures of hand, foot and spine is low, suggesting that images of these sites may only be indicated in selected cases. Comparison with children with fractures at these sites may identify clinical indicators.

P107 Peer review exercise of paediatric skeletal survey reporting in suspected non-accidental injury

[Thomas Peachey](#); [Iwan Roberts](#); [Alan Sprigg](#)

Sheffield Children's Hospital NHS Trust

Objectives:

1. Present findings of a non-accidental injury (NAI) skeletal survey peer review exercise.
2. Summarise specific and general learning points.
3. Encourage interest and participation in peer review.

Content: Imaging staff were invited to report a series of eight anonymous skeletal surveys performed for possible NAI. The skeletal surveys provided a mix of pertinent learning points, common findings and normals. There were eight respondents. A highly experienced NAI expert witness provided a gold standard against which reports were evaluated. Individualised feedback was provided to participants.

Relevance: Up to 7% of children suffer serious physical abuse during their childhood. Radiologists play an essential role in the care and protection of children through reporting radiographic skeletal surveys. A standard set of radiographs is taken for suspected NAI, forming a skeletal survey. It is vital that reporting is correct and consistent.

Outcomes: Most reporters noticed when surveys were incomplete. Respondents performed well at spotting and aging most fractures, especially of the ribs and a variety of extremity fractures. Vertebral fractures and some subtle extremity fractures were poorly identified. There were some overcalls. The cohort was divided on whether a periosteal reaction was pathological or physiological. There was also disagreement on appropriate further imaging.



Discussion: Participation was voluntary and anecdotally reporters were keen to participate, valuing the opportunity for learning and practice validation. The cases were reviewed and discussed at an audit meeting, providing a further platform for reflection and peer learning.

P108 Completion of head CT request forms in cases of suspected infant abuse

[Jessica Smith¹](#); [Amaka Offiah²](#)

The University of Sheffield¹; Sheffield Children's NHS Foundation Trust²

Aims/objectives: To determine quality of head CT request forms in cases of suspected abuse in children under the age of 1.

Relevance/impact: According to 'Standards for radiological investigations of suspected non-accidental injury', neuroimaging should be performed in any child under the age of one where there is evidence of physical abuse.

The guidelines are currently being revised.

Radiation dose from head CT is significant. It is important that indications for the investigation are clearly conveyed. The quality of the radiological report (which is a legal document) is enhanced when a clinical history is available.

Material/methods: A search of PACS for children under the age of 1, who had a CT head scan performed in cases of suspected 'non-accidental injury' between 09/10/2012-10/10/2014 at one hospital. Each request form was assessed and scored out of 12 for several parameters including legibility of forms.

Outcomes: The mean score was 10.6 (range 9-12), 16% (11/70) scored a maximum 12 points. The average score for legibility was 1.5/2; 39 (56%) scored 2/2.

The section of the request form with the lowest completion rate was the bleep number of the requesting physician, with 29% (20/70) not being filled in.

All request forms gave a clinical indication, however, less than half, 32/70 (46%), mentioned suspicion for abuse.

Discussion: Overall request forms are filled out to a good level but there is room for improvement. In particular the need for legibility and avoidance of unusual acronyms should be emphasised.

P109 Sticks and stones but not broken bones: An audit of paediatric bone age radiographs and a review of alternative techniques

[Victoria Jackson](#); [Suraj Amonkar](#)

Pennine Acute Hospitals NHS Trust

Purpose: At our trust the Greulich and Pyle method is used to assess paediatric bone age. We wanted to assess whether radiographs taken for paediatric bone age assessment were of adequate quality for diagnosis and whether the radiology report contained adequate information to aid the clinician in diagnosis and treatment. We also wanted to review potential alternative and newer methods for assessing bone age.

Method: The last 50 bone age examinations performed at the trust were identified. These were re-reviewed and the radiographic adequacy and quality were assessed according to local protocols including labelling and projection. The content of the radiology reports was assessed according to RSNA template recommendations.

Results: The correct projection was performed in only 88% radiographs. The correct side was labelled in 100% radiographs, however, gender was only labelled in 26%. There was great variation in the standard of the radiology reports with only 34% reports containing a conclusion/impression. Bone age was not included in all reports

Conclusion: A small number of radiographs were not of diagnostic quality. Radiology reports sometimes ambiguous and open to interpretation. A different method of evaluating bone age such as an online digital atlas may prove to be more accurate and reliable. Regardless of the method used to assess bone age, diagnostic quality films and standardised radiology reports would be the ideal standard.



P110 The value of the oblique paediatric wrist radiograph

[Rosalind Joseph](#); [Dina Hikmat](#); [Farokh Setna](#); [Rajeev Ravi](#); [Ursula Hughes](#)

Arrowe Park Hospital, Wirral University Teaching Hospital

In conventional radiography, a 3-view radiograph is usually advised in wrist trauma. However in the paediatric patient group, obtaining a third view potentially prolongs discomfort and increases radiation dose. Our local departmental practice sees 2 or 3 views performed with no formal protocol pertaining to the number of projections. The poster aims to examine the benefit of the oblique view in the paediatric trauma wrist.

Our findings will be presented from a retrospective study of 3 view wrist radiographs in the paediatric age group. The radiographs were analysed independently by a paediatric radiologist and a general radiologist, firstly with the oblique views obscured. A report was provided based on the AP and lateral views as either Normal, Abnormal or Equivocal. The oblique view was then reported in the same way.

The results showed that the oblique view of the semi pronated wrist did not provide any additional benefit in confirming or excluding a fracture. The study results suggests and recommends that only 2 views (AP and lateral) are sufficient for assessment of traumatic wrist injury in the paediatric population, importantly reducing radiation dose and increasing compliance. This was presented locally and has been put into practice. We hope this has contributed to a safer diagnostic pathway for a vulnerable patient group.

P111 Review of paediatric radiography of the elbow

[Sabah Awan](#)

Warrington and Halton Hospitals NHS Foundation Trust

Elbow fractures are the most common injuries in children and are therefore most commonly imaged by radiographers. The evaluation of a paediatric elbow radiograph can be challenging and this is usually due to the complexity and variability of the physal anatomy and development and also in the patterns of injury a paediatric experiences compared to an adult.

It is therefore important to understand the anatomy of a paediatric elbow because it helps to ensure that normal ossification centres are not misinterpreted as fracture fragments. It also helps in identification of an injury when the pattern is altered.

This poster will review the basic anatomy and provide an overview of radiographic technique. It will primarily enhance and develop the radiographers' image interpretation skills by providing a methodical review and thus the types of injury and their radiographic appearances.

P113 Paediatric dysfunctional voiding and the use of ultrasounds

[Kunal Patel](#); [James Green](#)

Barts Health NHS Trust

Our audit was to see whether imaging in children who have suffered a UTI is being performed according to the NICE guidelines. The key message from the NICE guidelines state that infants and children six months or older with a first-time UTI that responds to treatment, routine ultrasound is not recommended unless the infant or child has atypical UTI.

Data analysis involved a database search of patient records from an NHS District General Hospital, an NHS community clinics and private practice clinics covering the population of 350,000. The database search were for letters containing the words "infrequent voiding" and "voiding by the clock" of patients seen in secondary care between 2005 and 2014 at Whipps Cross Hospital, Waltham Forest community and Holly House and The Roding Hospital. Analysing data from 2009-13, we found that 1,562 children under the age of 18 were seen in the outpatients department. Of these, n=227 (6.9%) patients had dysfunctional voiding symptoms. This total was from a mixture of community clinics, private patients as well as from OPD in secondary care. 227 Patients were categorized into the following groups in order of their primary presenting complaint: UTI n=75 (39.6%), Enuresis n=70 (37%), Daytime Wetting n=36 (19%), Abdominal pain n=12 (6.35%), Penile pain n=11 (5.82%), Urgency n=7 (3.70%), Frequency n=7 (3.70%) and Haematuria n=5 (2.65%). Out of the 75 patients identified, 52 (69%) abdominal



ultrasounds were undertaken. On further analysis, only 1/52 (1.9%) had an abnormality. We had looked carefully at the scans performed for the 75 patients who presented with UTI's by looking through the request forms. It was clear that there were only 3 requests from the 52 found that were adhering to the NICE guidance.

These results show a low true positive rate. We proposed that an accurate history coupled with knowledge of the NICE guidelines for investigation of UTI could safely lead to a decrease in ultrasound investigations of children. This will not only relieve the pressures of scanning, but will inevitably reduce costs and valuable resources for the hospital.

P114 Gastrointestinal tract obstruction in the neonate - a pictorial review

[Cheng Fang](#); [Pamela Allen](#)

King's College Hospital NHS Foundation Trust

Aims/objectives: We present an overview of the key radiological features of various causes of gastrointestinal tract obstruction in a neonate. We aim to raise awareness to assist rapid diagnosis of these conditions which may lead to significant complications if undiagnosed in the new born period.

Content: This review contains a range of cases of gastrointestinal obstruction from the oesophagus to the anus. We include common cases such as pyloric stenosis, malrotation and Hirschsprung's disease as well as rare atresias. The key diagnostic features of the initial imaging will be highlighted through plain radiograph, ultrasound and fluoroscopic studies.

Relevance and impact: Unrecognized or delayed diagnosis of gastrointestinal obstruction may lead to rapid deterioration in neonates, with narrow physiological reserves, leading to increased complications, morbidity and mortality. Clinical history and examination are helpful but often non-specific and diagnostic imaging becomes the cornerstone in making an early definitive diagnosis.

Outcomes: This review will demonstrate key radiological signs for diagnosing various causes for gastrointestinal tract obstruction in neonates. Correct interpretation of initial imaging allows timely referral for surgical management or prompt further investigations to aid diagnosis and avoid unnecessary morbidity and mortality.

Discussion: Correct diagnosis of the cause of gastrointestinal obstruction in neonates remains challenging. There is a short time window to avoid complications and often the initial interpretation of the plain radiograph falls onto a non-paediatric trained radiologist. We aim to improve confidence of the DGH radiologists to allow prompt diagnosis and referral of cases of neonatal gastrointestinal obstruction.

Clinical: Multisystem disorders

P115 Imaging features of abdominal tuberculosis

[John Adu](#); [Huai Ming Phen](#); [Khawaja Shahabuddin](#)

Barts Health NHS Trust

Aims: Abdominal tuberculosis mimics many conditions both clinically and radiologically, and can result in significant morbidity. Familiarity with the imaging features and complications of the disease is essential in order to allow early diagnosis, initiation of appropriate treatment and to ensure a favourable outcome. The aim of this poster is to provide a pictorial review of the imaging findings of abdominal TB and to explore the features that will help the reporting radiologist to differentiate this condition from those of its mimics.

Content: We provide a pictorial review of ultrasound, CT and MRI appearances of:

- Tuberculous lymphadenitis
- Urinary tract tuberculosis
- Tuberculous peritonitis
- Gastrointestinal tract tuberculosis
- Hepatosplenic tuberculosis