Background and targets: According to NICE guidelines HSG is the first line investigation for tubal patency in women with no comorbidities. The Health Protection Agency has strict criteria to reduce unnecessary radiation doses in women of child baring age.

Current targets are set at 100% for: Radiation dose (DAP) must not exceed 4 Gycm2, fluoroscopy time should not exceed 60s, 4 key images should be obtained (early uterine filling, late uterine/early tubal filling, late tubal filling, and free intra-peritoneal spill of contrast) and examinations should be reported within 7 days.

Method: A retrospective study was conducted of Trust wide HSG's over 2014. The above targets were analysed to determine if examinations were within National guideline limits.

Results: 307 patients analysed. 97% were within the dose limit of 4 Gycm2. 94% had an exposure time of equal or less than 60 seconds, of the remainder of cases 94% had over 4 images taken accounting for increased exposure time. 95% had at least 4 keys images and 97% of examinations were reported within 7 days of the investigation.

Outcome: These results are very promising and show an effective and efficient service. This will be fed back to the radiology department. To insure that all targets are met (100%), radiographers will be asked to note any cases which exceed limits for further analysis and re-audited next year.

Paediatrics

P-158 Renal scintigraphy in children – is the posterior view sufficient for accurate interpretation?

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Introduction: Renal scintigraphy using DMSA is commonly used for detection of renal cortical abnormalities related to urinary tract infections in children. Current guidelines recommend posterior and posterior oblique views for image acquisition. However, performing renal scintigraphy on restless children can be challenging and is a practical problem for our nuclear medicine technicians. The purpose of this study was to evaluate the usefulness of posterior oblique views in image interpretation.

Method: Retrospective analysis of all paediatric DMSA renal studies performed during a 6-month period. All abnromal studies were evaluated by two experienced observers who recorded whether two views were required to make an accurate interpretation or whether a single posterior view would have been sufficient.

Results: Although 41 abnormal studies were identified on PACS, images were available for only 35. Both observers agreed that the second view (posterior oblique) was not required in any of the 35 patients.

Conclusion: Despite the small number of patients, our results indicate that a single posterior view is sufficient for accurate interpretation of renal DMSA studies in children. Obtaining two good quality views in restless children can sometimes be difficult and stressful for the patient, parents and staff involved. The results of our study suggest that all efforts should be made to obtain good posterior views even if the posterior oblique views cannot be obtained. This however, does not mean that posterior views should not be obtained when possible.

P-159 Paediatric renal cortical (DMSA) scans: Quality vs quantity?

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Aims: Evaluate local paediatric DMSA scan quality/protocol.

Content: Audit of our DMSA renograms against those from other sites using same protocol apart from dose, to evaluate local scan quality, scan times and assess if current ARSAC doses are too high.

Relevance: A recent CQC audit highlighted local DMSA injected doses for paediatric population DMSA renograms at our institution were lower than ARSAC recommendations. Although our doses were in line with ARSAC 1999 guidance and manufacturer summary of product characteristics, the CQC suggested these doses may produce inferior quality scans with increased scan times and increased patient discomfort levels. We were prompted to undertake a formal review of our procedures including scan protocol, injected doses and image quality and compared these with DMSA renograms from other sites.

Procedure and outcomes: 30 local and 30 external imported scans audited. Scan times and injected doses were looked at. The image quality was graded against a 4-level image quality template taken from previous IAEA/IPEM project. 2 radiologists and 3 radiographers independently reviewed non-blinded images.

Discussion: Obvious bias of knowing source of the images could not be avoided for technical reasons. There was good scan quality correlation between our lower dose protocol and those using higher/ARSAC recommendations. We were able to cease acquiring anterior (as well as posterior) images for DMSA scans as a way to reduce scan times following this audit. It never-the-less still suggests, using ALARP principle, that current ARSAC doses could be reduced back to 1999 levels.

P-160 Where has my kidney gone to? - A rare case of solitary pseudo-crossed renal ectopia

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Renal ectopia is a rare anomaly of the urinary tract, usually presenting after infancy. It is often diagnosed during an autopsy or incidentally with evaluation for other associated abnormalities. Pseudo-crossed renal ectopia is an exceptionally rare entity where an initially normal positioned kidney is found to be displaced to an abnormal location in subsequent radiological investigations. Causative factor tends to point towards mass effect, congenital diaphragmatic hernia or more commonly, ureteropelvic junction obstruction with varying levels of vesicoureteric reflux. We report a case of solitary pseudo-crossed renal ectopia diagnosed in infancy without an apparent secondary cause.

It was red-flagged to the department that a routine antenatal anomaly scan showed a dilated upper portion of the right kidney. The newborn baby check, done in January confirmed no gross abnormalities. An organised post-natal KUB USS in February that showed a duplex right kidney and a normal left kidney in acceptable positions. A follow up scan in May exhibited a normally positioned left kidney with migration of the right kidney; lying behind the liver, no longer duplex in nature. An MRI was organised, showing the same presentation without additional surrounding abnormalities. A diagnosis of congenital diaphragmatic hernia was queried and the case referred to the tertiary renal unit for further discussion and management.

Mechanism of migration is still unknown. The kidney albiet abnormal in position, has normal function demonstrated by the ensuing DMSA scan. The infant continues to thrive, yet documentation should be available for future reference.

P-161 Intussusception; ultrasound diagnosis and management of small vs large bowel

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Intussusception is defined as the telescoping of one segment of the bowel into an adjacent one. These occur in children of 3 months to 3 years of age with male dominance. A classic triad of acute abdominal pain, currant-jelly stools or haematochezia and a palpable abdominal mass is present in less than 50% of children with intussusception. Ultrasound is the best imaging tool to diagnose their location and extent. Intussusception can occur both in small and large bowel, more common in later which is usually an ileo-cecal rather than a large into large bowel. Ultrasound is the best imaging tool for its diagnosis, can give the extent of involvement and be able to differ between small and large bowel. This is important as the management of both is different. We present the imaging appearance of small and large bowel intussusception, technique of ultrasound examination and its management.

P-162 Evaluation of the SpineAnalyser software programme on radiographic images for children

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Purpose: There is significant inter and intraobserver variability in diagnosing vertebral fractures (VF) in children, with a need to develop more objective methods. Semi-automatic software programmes such as SpineAnalyser may be the solution.

Methods: VF diagnosis was performed independently by five observers using the SpineAnalyser software from T4 through to L4 from the lateral spine radiographs of 137 children and adolescents with a median age of 12 years

(range 5-15). A previous consensus read by 3 paediatric radiologists using a simplified ABQ technique (i.e. no software involved) served as the reference standard.

Results: Of a total of 1781 vertebrae, 1187 (66.64%) were adequately visualised by 3 or more observers. T5 was the most unreadable level 37.22% (51/137) and the two highest visualised levels were L2 and L4 (82.48%, 113/137 and 81.02% 111/137 respectively). Diagnostic accuracy (sensitivity, specificity and 95% confidence intervals) and inter observer reliability (Cohen's kappa) calculations of SpineAnalyser are on-going.

Conclusion: There was relatively good readability of vertebral bodies of mid thoracic and lumbar spine. However visibility was somewhat limited in the upper thoracic spine. Reasons included the summation caused by intrathoracic tissues and shoulders; poor image quality; and patient positioning. Once data analysis has been completed, we will present sensitivity, specificity and observer reliability of a software tool compared to routine qualitative radiographic analysis for VF diagnosis in children.

P-163 Imaging evaluation of the limping child

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Aims: To illustrate the wide spectrum of causes of childhood limp, discussing the role of imaging in establishing diagnosis.

Content: We present a pictorial essay illustrating the varied causes of childhood limp. Including: trauma; transient synovitis; sacro-ileitis: bone, joint and soft tissue infections; slipped upper femoral epiphysis (SUFE); Perthes disease; developmental dysplasia of the hip and rare conditions including tumours and idiopathic chondrolysis.

Relevence: A limping child is a common clinical presentation, 1.5-3.6/1000, usually a mild, self-limiting event. However, it can indicate significant, even life-threatening illness. York Hospital catchment population is 350, 000 with 56, 000 <16 years. Sepsis is most important atraumatic cause to diagnose promptly as delayed treatment can cause devastating long term consequences. Imaging evaluation is common, the diagnostic challenge to establish causality and ensure prompt diagnosis.

Outcomes: Plain radiography and ultrasound are the main imaging techniques with MRI and CT used on a selective basis. Combined with clinical evaluation and laboratory tests these imaging techniques can ensure a prompt diagnosis is reached. We present our imaging strategy for investigation of the limping child.

Discussion: Imaging is important in the diagnosis of a limping child. The limp is a symptom, the diagnostic challenge to establish causality and to ensure prompt diagnosis of sepsis and other conditions with significant long term and potentially devastating consequences.

P-164 Evaluating primary care referrals for ultrasound of soft tissue lumps in children and young adults. How does it correlate with NICE guidelines?

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Following the updated 2015 NICE guidance for the investigation of suspected soft tissue sarcoma in children and young adults, we reviewed our service for Primary care ultrasound (US) referrals for investigation of soft tissue lumps. We collected data from the preceding 12 months, looking at paediatric and young adult referrals; which under new guidance should have ultrasound imaging within 48 hours for suspected soft tissue sarcoma. In our review, we found 99 patients were referred for US investigation of soft tissue lumps, of which 8 requests were marked urgent. Most of the patients were in their late teens (mean 16.0 years old, IQR 11-22 years old). The average time from referral to scan was 25 days, with a maximum wait of 60 days. There was 1 case of lymphoma; otherwise all scans were normal or showed benign pathology. Only 2% of patients were scanned within 48 hours; however 96% were scanned within locally agreed time limits. 8 patients required referral to other services and 3 patients needed additional scanning. Serious pathology was detected in only 1 of the 99 patients, with no cases of sarcoma detected. The 2015 NICE guidance is vague about what constitutes a suspected sarcoma (unexplained lump that is increasing in size). From our experience, we suggest that recommendation for a scan within 48 hours would only be appropriate for individually discussed patients in whom there was a very high level of clinician concern, as we have confirmed that most lumps are benign.

P-165 Pre gestational and paediatric mobile chest imaging

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Throughout the UK, most of the neonatal chest X-rays are performed in non-specialist hospitals. Within our district general hospital we have performed on average around 227 portable neonatal chest X-rays each year on the Neonatal Unit (NNU). The quality of these X-rays has been an international issue for over 20 years. Most are performed AP Supine with a small percentage being performed decubitus or prone. There is very little guidance aimed at radiographers who undertake these examinations.

An audit was undertaken within our Trust that looked at pre-gestational chest imaging. This looked at the previous 12 months chest images performed and the quality of these X-rays. When assessing quality the positioning, use of lead protection, collimation, radiation dose and exposure will all be evaluated.

As a result, this poster aims to assist the radiographers when undertaking these examinations and ways to improve their technique which in turn will improve image quality.

P-166 Imaging patterns of hypoxic ischemic encephalopathy (hie)

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Neonatal encephalopathy when caused by diffuse hypoxic-ischemic brain injury is called hypoxic-ischemic encephalopathy (HIE).

Severe HIE to the premature brain typically injure the thalamus, anterior part of the vermis, and dorsal brainstem . In mild to moderate ischemia the most common location for injury to premature brain is periventricular white matter. Thalami, brainstem, and cerebellum in the immature brain have high metabolic activity, they are susceptible to injury in severe hypotension, seen as hyperechogenicity of the injured brain at US, hypoattenuation at CT, and restricted diffusion at MR.

The primary locations of ischemic injury in the term neonatal brain are the watershed territory. In severe ischemia metabolically active tissues in the brain are most susceptible to injury and include the lateral thalami, posterior putamina, hippocampi, brainstem, corticospinal tracts, and the sensorimotor cortex. US findings may include hyperechogenicity of involved structures .Changes on CT scans include mild hypoattenuation of the thalami and basal ganglia.

Multisystem disorders

P-167 Venous thromboembolism and investigations for cancer

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Aims: The incidence of new cancers in patients with idiopathic venous thromboembolic disease (VTE) is approximately 4-10%. NICE have recently released new guidance regarding the investigation for occult cancer in patients with a first unprovoked VTE. It recommends that these patients who are not known to have cancer should be offered a physical examination, chest radiograph, blood tests and urinalysis. Those aged over 40 years, further investigation with abdominopelvic computed tomography (CT) should be considered. The aim was to audit compliance with NICE guidance and to determine the overall cancer detection rate.

Methods: Retrospective review of patients diagnosed with VTE attending anticoagulation clinic over a 3month period. Evaluation of the patient demographics, clinical details and subsequent investigations for cancer was performed. Discrepant cases were reviewed by two operators.

Outcomes: 110 patients over a 3 month period were identified. 15 patients did not meet the inclusion criteria. 95 were included into the analysis. 50/95 were aged over 40 years and presented with a first unprovoked VTE. 37/50 (74%) underwent chest radiography. 21/50 (42%) underwent abdominopelvic CT. Cancer was detected in 2/50 (4%).

Discussion: Our findings show that there is an inconsistent approach to the subsequent investigation of patients diagnosed with VTE. The overall prevalence of occult cancer is low, and given the known risks of exposure to ionising