O-179 DEVELOPMENT OF SIMULATION TRAINING FOR LEVEL 1 SPECIALITY TRAINEES IN PAEDIATRICS – A GENTLE INTRODUCTION TO THE REAL DEAL

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Introduction Paediatric simulation is gaining stature in medical training. It addresses many clinical, managerial and communication problems, resulting in proven educational benefits and safety improvements. Courses must be pitched at an appropriate level with a mix of skills training, scenarios, communication and debriefing.

The aim is to provide new paediatric trainees practice in management of common paediatric problems with emphasis on team working, communication and scientific knowledge.

Methods 2 simulation-based study days for new Paediatrics ST1s were conducted, 6 months apart, involving skills practice in areas including airway management and introsseous access. Groups rotated around simulation scenarios including status asthmaticus, status epilepticus, DKA, safeguarding, sepsis, anaphylaxis and cardiac arrest, all mapped to the ST1 curriculum.

Debriefing took place after each scenario, involving both participants and observers, followed by a lecture and 3 take-home messages formulated by the group.

Pre-course and post-course questionnaires were completed.

Results 17 and 16 ST1s participated in course 1 and 2 respectively, both groups giving positive feedback overall. Pre-course objectives were achieved, however constructive feedback highlighted the need for more practice scenarios and more positive feedback especially regarding human factors.

The course was subsequently improved with introduction of more team-building exercises and emphasis on SBAR communication.

Conclusion Simulation training is effective but must be designed to suit learners' needs. Course content may need to include skills stations, communication and team-building sessions, and curriculum-mapped scenarios. Our experience has shown that gentle introduction within a supportive environment is more beneficial for trainees than running simulation scenarios alone.

Immunology and Infection

O-180 AVIDITY OF ANTI-PERTUSSIS TOXIN (PT) IGG-ANTIBODIES AFTER PRIMARY AND BOOSTER PERTUSSIS VACCINATION AND THEIR ASSOCIATION WITH IL-17A GENE POLYMORPHISM

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Background and aims High levels of antibodies and avidity indicates good protection after vaccination. However, there are only a few studies measuring avidity of PT-antibodies in children. Recent studies suggest that Th17 specific immunity acquired from Diphtheria-Tetanus-acellular-Pertussis (DTaP) vaccination may provide efficient protection against pertussis. In this study, we aimed to investigate concentration and avidity of anti-PT-IgG antibodies (PT-Abs) after primary and booster vaccination and their association with gene polymorphism of IL-17A.

Methods Altogether, 325 serum samples were included. From these, 72 were collected from unvaccinated infants at 2.6 months of age, 203 from primary vaccinated 13-month-old children, and 50 from DTaP vaccinated adults. Concentration and avidity of PT-Abs were measured by ELISA. SNP detection of IL-17A was performed using Sequenom iPlex Gold system.

Results Quantity of PT-Abs showed significant increase after primary vaccination in infants. When primary and booster vaccinations were compared, significantly higher levels of PT-Abs were observed after booster vaccination, whereas higher levels of avidity were found after primary vaccination. Frequencies of three IL-17A genotypes identified was 33% (G/G), 47% (G/A) and 20% (A/A) in 203 infants. Subjects with IL-17A G/G genotype had significantly lower avidity of PT-Abs than those with the other two genotypes. However, there was no significant difference in levels of PT-antibodies between these genotypes.

Conclusions Our results indicate that avidity of PT-Abs is higher after primary vaccination than after booster vaccination. This study also suggests that gene polymorphism of IL-17A may influence quality of PT-Abs after primary vaccination in infants.

O-181 VACCINE-PREVENTABLE DISEASE SUSCEPTIBILITY IN A BRITISH PAEDIATRIC ASSESSMENT UNIT

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Background Although international policy advocates opportunistic immunisation in every clinical setting it is not common practice. Inpatients have lower levels of cover against vaccine-preventable diseases (VPDs) than the community population.

Aims To evaluate secondary-care practice before and after introducing simple interventions to improve identification of under-immunised children and facilitate catch-up immunisations.

Methods The population-based child health database was used to check immunisation status for two cohorts of 200 consecutive admissions before and after routine printing of immunisation histories from the database and raising staff awareness. VPD susceptibility burdens were calculated for each child. Case notes were assessed for accuracy and documentation of ward-based interventions.

Results Fourteen per cent of all (400) children were under-immunised on admission and 27% of these were more than 5 years behind schedule. Under-immunised children's VPD susceptibility burdens ranged from 0 – 40,858 days and in 59% exceeded 1,000 days. Over one month the paediatric admission unit saw children with a combined VPD susceptibility burden of 1,323 child-years. Positive identification of under-immunised children increased by 40% (95% CI; 12–62, p = 0.002) following the introduction of routine database printouts. This corresponded with a 20% increase in documented actions to encourage catch-up immunisation (95% CI; -1–27, p = 0.026). Catch-up immunisation rates remained low: 0% pre-discharge and 35% in the community at 5 months.

Conclusion Children presenting to British secondary care unit have large VPD susceptibility burdens. Positive identification of under-immunised children substantially improved following the introduction of routine database printouts but catch-up immunisation rates did not increase.

Nephrology II

O-182 HNF1B MUTATIONS IN PATIENTS WITH CONGENITAL ABNORMALITIES OF KIDNEY AND URINARY TRACT (CAKUT): ARE WE SCREENING TOO MUCH?

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Background and aims Hepatocyte nuclear factor 1 beta (HNF1B) is involved in the development of kidneys, liver, pancreas and urogenital tract. Disorders have an extremely high heterogeneity in phenotype. We aim to define accurate criteria for screening in a prospective cohort of patients.

Methods Based on the phenotypic characteristics described in literature, we defined major, minor and extra-renal selection criteria. Major criteria were defined as fetal bilateral hyperechogenic kidneys; multicystic dysplastic kidney or renal agenesis; hypoplastic or dysplastic kidneys or cysts from unknown origin. Minor criteria were defined as ectopic kidney; vesico-ureteral reflux; hydronephrosis and extrarenal criteria as diabetes; hypomagnesemia; hyperuricemia; hypokalemia; liver function abnormalities or positive familial history.

We included all patients from our paediatric and adult nephrology department from January 2010 till April 2013 presenting with at least one major or one minor criterion with extra-renal manifestations in the personal or familial history.

Results We screened a prospective cohort of 252 patients fitting the criteria mentioned above and detected HNF1B mutations in 10% (n = 20), with a complete deletion being the most common (n = 10), besides duplication or sequence abnormalities. In our cohort the best predictors for finding HNF1B mutations were bilateral renal abnormalities (p < . 001) and cysts from unknown origin (p = . 03).

Conclusions Based on a prospective single centre cohort, we demonstrated that HNF1B-mutations are responsible for approximately 10% of CAKUT cases. Nonetheless, bilateral renal anomalies or cysts from unknown origin were the best predictors. These criteria might be useful for a more restricted screening protocol, but should be reaffirmed in a larger multicenter cohort.

O-183 VOIDING UROSONOGRAPHY WITH A SECOND GENERATION ULTRASOUND CONTRAST-AGENT IN VESICOURETERAL REFLUX DETECTION AND GRADING IN CHILDREN: HOW RELIABLE IS IT?

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Purpose The diagnostic accuracy of contrast-enhanced voiding urosonography (ce-VUS) in diagnosing vesicoureteral reflux (VUR) is high compared with voiding cystourethrography. However, its reliability has not been yet adequately evaluated. The purpose of this study is to assess the reliability of ce-VUS in VUR detection and grading by estimating the inter- and intra-observer agreement of two radiologists.

Patients and methods Two hundred ten children (86 boys/124 girls, mean-age 2.7y) with 421 pelvi-ureteral-units underwent ce-VUS examination with a second-generation contrast-agent to detect possible (180) or follow-up known (30) VUR. The video-clips of all ce-VUS examinations were twice independently assessed by two paediatric radiologists 4–6 weeks apart. The inter- and intra-observer agreement was estimated by kappa statistic.

Results The inter- and intra-observer agreement of both radiologists regarding the presence or grading of VUR was perfect (k=0.90–0.94). There were only two disagreements regarding the presence of VUR (grade I and II false-negative and false-positive respectively). There were 5 cases of disagreement in VUR grading: three cases of VUR grade II-III and two cases grade III--IV. VUR was detected in 123(29%) pelvi-ureteral-units of 87 (41.4%) children and it was more common in completely duplicated ureters (6/7) than in single ones (p = 0.03). The rate of VUR was independent of sex/age/presence of hydronephrosis (p > 0.05).

Conclusions The reliability of ce-VUS in VUR detection and grading is high. VUS with a second generation ultrasound contrast-agent could be used as a radiation-free alternative.

Obesity

O-184 OBESITY LEVEL RELATED TO CLUSTERING OF RISK FACTORS FOR CVD

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Background and aims Obesity is associated with increased risk of cardiovascular disease (CVD) in adults. We assessed if body fat and abdominal fat are related to clustering of risk factors for CVD in younger children.

Methods Cross-sectional study of 170 (92 boys and 78 girls) children aged 8–11 years, recruited from a population-based cohort. Total fat mass (TBF) and abdominal fat (AFM) were measured by DXA. Total body fat was expressed as TBFs percentage of total body mass (BF%). Maximal oxygen uptake (VO_{2PEAK})was measured by indirect calorimetry. Blood was sampled and blood pressure (BP), and resting heart rate (HR) were measured and pulse pressure (PP) was calculated. Echocardiography was performed and left atrial diameter (LA) was measured, and left ventricular mass (LVM) and relative wall thickness (RWT) were calculated. Z-scores (Value for the individual-mean value for group)/SD) were calculated. Sum of z-scores for triglycerides and lipoprotein concentrations, systolic and diastolic BP, PP, HR, LVM, LA, RWT and -VO_{2PEAK} were calculated in boys and girls, separately, and used as an indices of clustered risk.

Results Pearson correlations between ln BF% and ln AFM versus indices of clustered risk were in boys (r = 0.58 and 0.59, p < 0.05), and in girls (r = 0.58 and 0.64, p < 0.05). One-way ANOVA analysis indicated significant differences between different tertiles of BF% and AFM. Higher BF% and AFM were associated with higher clustered risk for CVD in both genders (p < 0.001).