

***Presentation time: 08.50-09.00 – Friday 8<sup>th</sup> December***

**CHOICE (CARBOHYDRATE AND INSULIN COLLABORATIVE EDUCATION) PROGRAMME IMPROVES GLYCAEMIC CONTROL IN PAEDIATRIC TYPE 1 DIABETES MELLITUS PATIENTS.**

**ST LUKE'S HOSPITAL KILKENNY, PAEDIATRIC DEPARTMENT.**

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**AIMS:** In Ireland there are approximately 2,750 children living with Type I Diabetes Mellitus (T1DM). Suboptimal management of T1DM can have devastating effects on the lives of young people and results in ongoing sequela throughout adult life. Educating children with T1DM and their carers regarding glycaemic control is crucial in preventing this condition from negatively impacting on their quality of life (QOL). The CHOICE (Carbohydrate and Insulin Collaborative Education) programme was developed by University of Ulster as a standardised education and support programme aiming to give children and their carers the knowledge and skills needed to manage their condition. CHOICE programme involves T1DM patients and carers attending 3 hour group education sessions over a four week period.

**METHODS:** Cellma (Electronic Diabetes Database) and chart reviews were performed to retrospectively collect data on demographics, anthropometrics, insulin treatment, HbA1c levels and enrolment in CHOICE programme. Our multidisciplinary team commenced offering the CHOICE programme in January 2017, comparisons were made between HbA1c levels pre and post programme administration.

**RESULTS:** 75 children and adolescents attend our Paediatric Diabetes Service with a mean age 12.7±4.1yrs (male n=43, female n= 32) and average HbA1c 66.2±11.6 mmol/mol. Insulin pump therapy is the mode of treatment in 51% of patients (n=38). 15 patients with a mean age of 13.2±2.8yrs successfully completed the CHOICE programme.

There was a significant reduction in HbA1c pre and post CHOICE programme completion (HbA1C 71.2±13 vs. 63.4±8.5 mmol/mol, p value=.001). Each patient successfully transitioned to pump therapy after programme and there were no diabetes related hospital admissions.

**CONCLUSION:** This structured diabetes education programme can significantly improve glycaemic control and can be successfully used as platform for transition to insulin pump therapy. Ongoing structured education programmes should be offered to every T1DM patient and their family to optimise their control and improve quality of life.

***Presentation time: 09.00-09.10 – Friday 8 December***

**AN AUDIT OF COMPLIANCE TO GUIDELINES FOR CHILDREN ADMITTED WITH PARACETAMOL OVERDOSE**

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**Aims:** To evaluate compliance of paracetamol overdose guidelines in paediatric department of St. Luke's General Hospital, Kilkenny.

**Methods:** Retrospective chart review was conducted after identification of patients via HIPE, data for demographics, dose and time of paracetamol ingestion, symptoms, investigation and treatment was extracted.

**Results:** Total patient n=17 were included in audit. 4 (23.5%) presented with accidental ingestion and 13 with deliberate ingestion. 76% were females 24% were male, 3 patients presented within 1 hour of ingestion and were candidates of activated charcoal, 1 of them (33.3%) received it. Paracetamol levels were checked on all of them at an appropriate time. 13 (76%) patients were candidates of N-acetylcysteine and 10(76.9%) of them received this treatment. Discharge and monitoring investigations were performed on all the patients who required it. 13 patients who had deliberate ingestion were referred to child and adolescent mental health services(CAMHS).

**Conclusion:** 100% patients did have appropriate investigations and referral to CAMHS, 66.7% did not receive activated charcoal, 23% patients did not receive N-acetylcysteine. It can be concluded from above results that guidelines are being followed partially.

Recommendations:

1. Staff should be educated and made aware of these result audit.
2. An algorithm should be available at acute assessment unit.
3. A re-audit will be done next year to evaluate progress.

Reference: [www.toxbase.org](http://www.toxbase.org) NICE Guidelines for Paracetamol overdose in children

***Presentation time: 09.10–09.20 – Friday 8 December***

### **WORKING TO IMPLEMENT GUIDELINES FOR UTI ASSESSMENT AND MANAGEMENT: THE “WIGUAM” QUALITY IMPROVEMENT INITIATIVE**

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#### **Aims**

A national paediatric guideline for the management of first febrile urinary tract infections (UTIs) was launched in Autumn 2016; however, local adoption has presented some challenges. We aimed to improve guideline compliance and reduce variation in how first UTIs were investigated and managed by our service over a six-month period.

#### **Methods**

A project team was formed from relevant stakeholders involved in the assessment and management of UTI. We adopted a Quality Improvement approach, using iterative Plan-Do-Study-Act (PDSA) cycles to implement changes and monitor their impact. First, the process was mapped to identify potential failure points. Key steps were agreed, and data were collected in a prospective manner. Interventions were designed based on current findings.

#### **Results**

Our initial PDSA cycle highlighted a number of pitfalls in the assessment and management process. These deficits were addressed through a series of interventions. On-going data collection has revealed the following improvements to date:

- Examination of the genitalia for evidence of vulvitis or balanitis has increased from 33% to 82%
- Acknowledgement of the presence or absence of epithelial cells in the urine sample has risen from 29% to 73%
- Documentation of the choice of antibiotic treatment at discharge has risen from 71% to 91%, with an increase from 83% to 100% of children being treated for the recommended duration of ten days
- Follow-up ultrasound to assess for interval renal growth is now requested in 80% of cases, up from only 57% at baseline
- Requests for micturating cystourethrograms (MCUGs) have dropped from 43% to 0%

#### **Conclusion**

The PDSA approach can provide a more dynamic way for quality improvements to be achieved when compared to the traditional method of annual audits. In this case, sustained increases in adherence to a national guideline have been demonstrated following a number of simple interventions.

**Presentation time: 09.20-09.30 – Friday 8 December**

**DO WE STILL ULTRASOUND SIMPLE SACRAL DIMPLES? CURRENT PRACTICE AND HOW TO IMPROVE IT**  
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**Aim:** This review aimed to assess the number of spinal ultrasounds performed on babies under two months of age in our regional neonatal centre, to assess the indications for performing these investigations and to investigate the frequency of abnormal results. We noted anecdotally that we were performing many spinal ultrasounds, with resultant visits to clinics for the results, and wished to investigate our current practice as recent evidence suggests that simple sacral dimples are not an indication for spinal ultrasound.

**Methods:** This was a retrospective review of cases of spinal ultrasound performed on infants aged less than six months in our centre. The radiology imaging management system was interrogated to provide these cases. Anonymised data was recorded, including infants age at time of scanning, indication provided on the request form and the result of the ultrasound scan.

**Results:** 32 spinal ultrasounds were performed in the previous 12 month period. The ages of the infants ranged from 3 days to 6 months. The most common indication for requesting the ultrasound scan was a sacral dimple with 65.6% (n=21) performed for this reason, with 6.3% (n=2) performed for a hair tuft in the sacral region. A spinal haemangioma was the reason for performing 12.5% (n=4) scans. Just over 81% (n=26) of scans were entirely normal. Three (9.4%) scans were abnormal, with all three having cord tethering: none of these infants had only a sacral dimple or a tuft of hair. All three babies were referred for neurosurgical review and as of yet no baby has had intervention.

**Conclusions:** Simple sacral dimples are still the most common reason for requesting spinal ultrasounds in our regional paediatric and neonatal centre and all ultrasounds performed for this reason were normal. We plan to create a local guideline to prevent unnecessary imaging of babies with simple sacral dimples.

**Presentation time: 09.30-09.40 – Friday 8 December**

**The Impact of Road Safety Interventions on Child and Adolescent Mortality: a Population Based Review.**

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**Aim:** Road traffic collisions (RTCs) are a leading cause of mortality in children post-infancy. We aimed to establish the burden of transport fatalities in the Irish paediatric population and evaluate the potential impact of national intervention strategies.

**Methods:** Retrospective review of national death registration details (0-19yrs) over a twenty-six year period (1990 to 2015). Trends in mortality rates were investigated using average annual percent change (APC) and Poisson regression analysis.

**Results:** The proportion of child deaths attributable to land transport collisions increased with age, ranging from <1% of infant mortality, to 8.1% (1-14yrs) and 17% (15-19yrs). An overall reduction of 79.9% (4.01 to 0.86 per 100, 000;) and 69.7% (15.6 to 4.7 per 100, 000) in transport fatalities in 1-14yrs and 15-19yrs categories respectively, resulted in 417 fewer child deaths (1-19yrs) over the period 1996-2015. The rate of decline was greatest during periods coinciding with introduction of targeted interventions; -19.8% APC in 2001-2005 (1-14yrs) and -14.5% APC in 2006-2010 (15-19yrs). Risk of death in children 1-14yrs was significantly lower in the period after 2002 (IRR 0.46, P<0.001) while in 15-19yr olds a significantly lower risk was evident after 2006 (IRR 0.52, P<0.001). A male preponderance of deaths was evident throughout with an improvement in the M:F ratio over time; 4:1 in 1991-1995 vs 2:1 in 2011-2015.

**Conclusion:** Child mortality from transport collisions has declined dramatically in Ireland, with rates in children 1-14yrs approaching those of best performing EU countries. Additional effort is required to reduce the number of deaths further, particularly among adolescent males.

**Presentation time: 09.40-09.50 – Friday 8 December**

**SUSPECTED NON-ACCIDENTAL INJURY IN A PERIPHERAL CENTRE; PRESENTATION, WORK UP AND SENTINEL INJURIES**

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**Aims:** This study proposes to investigate the number of cases of suspected NAI presenting to a peripheral Irish paediatric unit, to assess the features of their presentation, the findings on radiological assessment and whether these cases had a history of sentinel injury in the Emergency Department(ED).

**Methods:** Data was gathered on children, <2 years, from 2013-2016, presenting to the ED at University Hospital Limerick, with concerns for physical abuse. Patients were identified via the electronic radiological record as those who underwent CT brain and/or skeletal surveys. Exclusion criteria included congenital malformation, known seizure disorder or VP shunt in-situ. Data collected included patient's age, sex, presenting complaint and any features of the history concerning for abuse such as, delay in presentation, inconsistent histories etc. Evidence of sentinel injuries on previous attendances was also recorded. Radiological images were reviewed for any positive findings for abuse on skeletal survey and CT brain.

**Results:** Thirty-three children had features concerning for physical abuse. Twenty-three patients underwent a CT brain, 5 had subdural haemorrhages, 4 had skull fractures, 4 had multiple pathologies and 4 had another finding. Twenty patients had a skeletal survey, 7 of which showed a fracture at a single site and 1 of which showed fractures at multiple sites. Only 10 patients with a concern for physical abuse underwent both a CT brain and a skeletal survey. No child with a suspicion of physical abuse had previously documented evidence of sentinel injury.

**Conclusions:** We feel that the absence of sentinel injury may relate to poor documentation of minor injuries such as bruising and intra-oral injuries. There was inconsistent completion of the radiological investigations deemed appropriate by RCPCH guidelines. This study highlights the need for improved education of staff around the assessment and investigation of NAI.

**Presentation time: 09.50-10.00 – Friday 8 December**

**DOES A REMINDER LETTER IMPROVE COMPLIANCE IN CARRYING ADRENALINE AUTOINJECTORS? CLOSING THE AUDIT LOOP**

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**Aim:** We recently audited quality of allergy emergency readiness amongst those previously trained in our clinic. Unacceptable numbers of patients were found not to be carrying adrenaline autoinjector devices (AAIs) when attending clinic. There was an association noted between length of time since receiving training and carrying AAIs. Lack of awareness of AAI expiry date and brand name was also noted. Based on these results, we hypothesised that a reminder letter, reinforcing the importance of carrying AAIs, would improve compliance. We assessed the effect of the letter in this audit to close the audit loop.

**Method:** 114 reminder letters were sent to patients previously prescribed AAIs. On return to clinic, the doctor completed an amended version of the questionnaire used in the first audit.

**Results:** 72 patients completed the questionnaire. 5 had not received the letter. The remainder did not attend clinic (n=12), clinic appointment cancelled (n=13), did not complete the questionnaire (n=10). 80.5% stated that receiving the letter reinforced the importance of carrying AAIs. 55/72 were carrying at least 1 device in clinic with 52/72 carrying 2 AAIs. This compares with 35/50 and 32/50 respectively in the first audit cycle (p=0.43). 50% reported the letter motivated them to check their devices expiry date. 63/72 correctly reported the expiry date of their device compared with 31/50 in the first audit cycle p<0.1. A significantly higher number of parents could name their device (69/72 v 35/50 p<0.01).

**Conclusion:** A reminder letter has limited effect on improving anaphylaxis readiness by prompting increased familiarity with the device. Despite many claims that receipt of a letter reinforced the importance of carrying at all times, this did not translate into practice for all patients. Further strategies are needed to improve the compliance of patients carrying AAIs at all times as per international guidelines.

**Presentation time: 10.00-10.10 – Friday 8 December**

### **CROHN'S DISEASE PRESENTING AS ISOLATED GENITAL LYMPHOEDEMA**

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**Introduction:** Crohn's disease is a chronic inflammatory disease of the gastrointestinal tract characterised by granulomas of the bowel. Its etiology is unknown. Crohn's patients typically present with symptoms that include fever, fatigue, abdominal pain, chronic diarrhoea, weight loss, mouth ulcers, and perianal disease. Isolated cutaneous orofacial or anogenital granulomatosis are a rare presenting feature.

#### **Case report:**

A previously healthy 15 year old boy presented with cellulitis and worsening genital swelling for one week. There was no weight loss, diarrhoea or bloody stools. There was no foreign travel. He was a well-nourished 66 kg adolescent with normal examination save for marked penile and scrotal swelling with cellulitis and tinea cruris. Investigations revealed: normal full blood count; and CRP,133. Blood culture was positive for *Group B streptococcus* and mixed skin flora. Skin infections responded well to antibiotics (Ceftriaxone and clindamycin) and antifungals (Terbinafine). However, marked genital oedema persisted. Additional history suggested the genital swelling was present for the previous 2 years. Scrotal skin biopsy demonstrated granulomatosis suggestive of Crohn's disease. Upper and lower bowel endoscopy are awaited.

**Conclusion:** Genital Lymphedema is an unusual presentation in childhood and should prompt investigation for underlying Crohn's disease.

**Presentation time: 11.10-11.20 – Friday 8 December**

### **THE GREAT IMITATOR PAEDIATRIC SARCOIDOSIS, VARIABLE PRESENTATIONS OF A MULTISYSTEM DISORDER TO THE PAEDIATRIC RHEUMATOLOGY SERVICE.**

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2. Department of Paediatrics, St. Luke's General Hospital, Kilkenny.

**Aims:** Sarcoidosis is a multisystem disease of uncertain aetiology characterised by noncaseating granulomas. Our aim is to describe the variable clinical features of this rare autoimmune disease in children.

**Methods:** A retrospective chart review was performed on four patients who were diagnosed with sarcoidosis over a six month period.

**Results:** Patient A, 8 year old boy presented with 6 month history of fevers, fatigue and jaundice. He had a liver biopsy which showed noncaseating granulomas. He had bilateral lung infiltrates. Serum ACE level was elevated at 160 U/l (8-65 U/l). He was treated with steroids initially and commenced on Abalimumab.

Patient B, a 2.5 year old girl, presented with failure to thrive and widespread diffuse boggy polyarthropathy. She was found to have hypercalcaemia, lymphadenopathy and skin lesions which showed noncaseating granulomas. Serum ACE levels were normal. She was treated with steroids, methotrexate and subsequently Abalimumab.

Patient C, a 14 year boy, presented with pulmonary and lymph node biopsy confirming granulomas and autoimmune haemolytic anaemia. He had normal serum ACE levels. He required high dose steroids to control his anaemia and is being worked up for a biological agent.

Patient D, a 15 year boy, presented with 2 year history of progressive bone swelling, fatigue, papules, and nasal congestion. He had multisystem involvement of bone, lungs, and liver. Biopsies of nasal turbinates and skin lesions showed granulomas. Serum ACE were elevated at >164 U/l (8-65U/l). He was treated with steroids and subsequently Abalimumab with excellent clinical response.

**Conclusion:** This case series of four patients highlights the multisystem nature of sarcoidosis. All were extensively investigated and required multispeciality input, given the wide differential diagnosis with such multisystem involvement. They all had excellent clinical response to immunosuppressive therapies including biologic agents such as Adalimumab.

**Presentation Time: 11.20-11.30 – Friday 8 December**

**Allergic rhinitis in children with asthma is under recognised and under treated.**

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**Aims:** We observed an under recognition of allergic rhinitis (AR) in asthmatic patients presenting to our paediatric respiratory department. This prompted us to review the pattern of presentation, diagnosis and treatment AR in children with asthma.

**Methods:** Data was collected prospectively on successive asthmatic patients with AR attending the respiratory clinic in Temple St Children's hospital (TSH) using a questionnaire modified from the Allergic rhinitis in Asthma (ARIA) questionnaire between March and May 2017. SPSS™ software package was used in data analysis.

**Results:** Data was collected on 89 consecutive patients with AR and asthma. Table 1 reports the clinical characteristics.

Median age (upper quartile, lower quartile)	7.5 years ( 5.5, 9)
<b>Symptoms</b>	
Nasal discharge	83 (93%)
Sneezing	57 (72%)
Nasal obstruction	83 (93%)
Nasal itching	70 (78%)
Watery itchy eyes	56 (63%)
<b>Diagnosis: Aeroallergen sensitisation</b>	
SPT done	68 (76%)
1 or more positive SPT	60 (88%)
Specific IgE done	45 (50%)
SPT or specific IgE done	76 (85%)
<b>Classification of AR</b>	
<i>Intermittent</i>	29 (33%)
Mild	20 (69%)
Moderate-severe	9 (31%)
<i>Persistent</i>	60 (67%)
Mild	28 (47%)
Moderate-severe	32 (53%)
<b>Asthma management (GINA stage)</b>	
Stage 1	3 (4%)
Stage 2	24 (27%)
Stage 3	43 (48%)
Stage 4/5	18 (20%)
<b>AR treatment</b>	
No treatment	20 (23%)
Intermittent treatment	55 (61%)
Regular treatment	14 (16%)
<b>Abbreviations:</b> HDM: house dust mite; SPT: skin prick test; IgE: immunoglobulin E; AR: allergic rhinitis;	

44 (49%) did not have a diagnosis of AR in their medical notes but met the criteria for diagnosis on completion of the questionnaire. 73% were commenced on new AR medication after completion of the questionnaire (15 antihistamine, 22 intranasal corticosteroid, 60 nasal douching).

**Conclusion:** Many children with asthma and AR have persistent AR symptoms and 23% are not taking any AR medication. Almost half of this cohort did not previously have a diagnosis of AR and 73% were prescribed new medication after completion of the audit questionnaire. This highlights a lack of awareness of AR among both patients and healthcare professionals. Since this audit was completed, we have designed an algorithm for the management AR in the clinic and will re-audit later in 2017. We recommend regularly looking for AR in asthmatic patients, especially in those with uncontrolled asthma symptoms.

**Presentation Time: 11.30-11.40 – Friday 8 December**

## **THE DEVELOPMENT OF A SYMPTOM ASSESSMENT SERVICE AT A CHILDRENS HOSPICE**

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### **Background and Aims**

High symptom burden has been recognised in children with life-limiting conditions (LLC) <sup>1,2</sup> and symptom assessment and management is a core component of children's palliative care (CPC)<sup>3,4</sup>.

A previous audit <sup>5</sup> highlighted a high prevalence of problematic symptoms in children accessing the hospice service prompting the development a symptom management team led by a paediatric consultant and CNS in CPC in spring 2016.

This report aims to describe the development of the service and provide data from the first year's activity.

**Methods:** A record of all referrals to the team has been maintained since its inception. A retrospective chart review was performed and data was collected and recorded on an excel spreadsheet. Data recorded included description of problematic symptoms, team members involved and intervention required.

### **Results**

Referrals to the team are accepted from nursing and healthcare staff involved in the care of the child. A care pathway, symptom assessment tools and symptoms management plans have been developed.

To date 39 children have received support from the team, 7 of the children have died since referral. The CNS, wider nursing and multi-disciplinary team have supported all children referred. Medical assessment has been provided to 30 children. 25 children were offered a short break in the hospice to allow careful evaluation of symptoms using formal symptom assessment tools.

All children were provided with a symptom management plan and on-going support, at home, in the hospice or by telephone, individualized according to identified need. Parental and healthcare professional feedback has been positive.

**Conclusion:** This report describes the initial establishment of a symptom assessment service in a children's hospice. It is anticipated that the service will continue to develop to meet the increasing needs of children with LLCs.

1.Malcolm C, Forbat L, Anderson G, Gibson F, Hain R. Challenging symptom profiles of life-limiting conditions in children: a survey of care professionals and families. Palliative medicine. 2011;25(4):357-64. 2.Heath JA, Clarke NE, Donath SM, McCarthy M, Anderson VA, Wolfe J. Symptoms and suffering at the end of life in children with cancer: an Australian perspective. The Medical journal of Australia. 2010;192(2):71-5. 3. WHO. Cancer pain relief and palliative care in children. 1998. 4. EAPC. IMPaCCT:standards for paediatric palliative care in Europe. European Journal of Palliative Care 2007;14(3):109-14. 5. Balfe J, Booth A and Ritchie B. Problematic symptoms in children attending for short breaks at a children's hospice; are we missing an opportunity for symptom assessment and management? ArchDisChild 2017 Vol 102 Supp Issue 1

**Presentation time: 11.40-11.50 – Friday 8 December**

**CHARACTERISTICS AND OUTCOMES OF PATIENTS PRESENTING WITH HYPERTROPHIC CARDIOMYOPATHY IN INFANCY: A NATIONAL COHORT STUDY**

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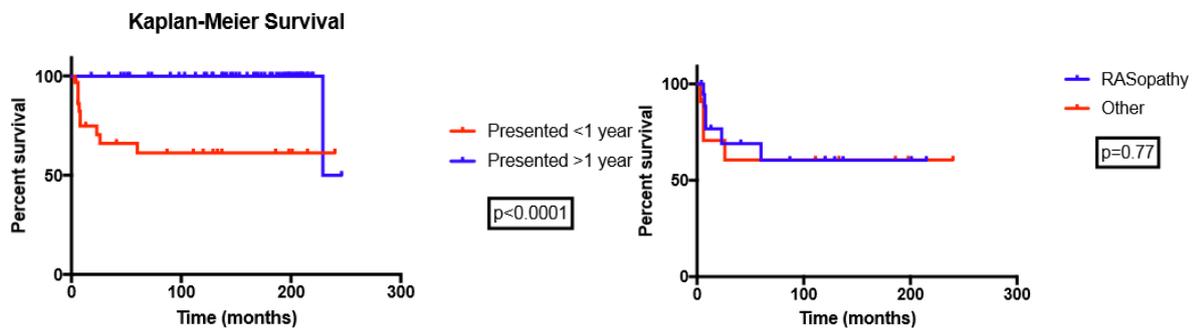
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**Aims:** Hypertrophic cardiomyopathy (HCM) presenting in infancy is a rare event with a guarded prognosis. The aetiology at this age of presentation is distinctly different to adolescent onset disease. Our primary aim was to evaluate the characteristics and outcomes of patients with HCM presenting in infancy. Our secondary aim was to define prognostic risk factors for transplant-free survival in our cohort.

**Methods:** We identified all paediatric patients with a diagnosis of HCM who presented to the national paediatric cardiology centre in the Republic of Ireland between 1996 and 2017. Clinical data were reviewed. We compared transplant-free survival in the subset presenting under one year of age to the older cohort. Kaplan-Meier curves were calculated using GraphPad Prism 7.

**Results:** 31 patients with HCM presented in infancy, representing one third of our total cohort (n=92). Median gestation and weight at birth were 39 weeks and 3.56kg, respectively. There was an approximately equal sex distribution (54% male). Over half (55%) had an associated congenital heart defect. Ten percent had a first degree relative with a diagnosis of HCM. An underlying aetiology was identified in 74% of patients; 68% had a RASopathy (13 Noonan syndrome; 6 LEOPARD syndrome, 1 Costello syndrome, 1 cardiofaciocutaneous syndrome).

Intervention was attempted in 22% of infants: myectomy in 6; balloon dilation of pulmonary valve in one. Median follow-up time was 41months. At last follow-up, 32% of the infant cohort had died (n=8) or underwent orthotic heart transplantation (n=2). Five-year transplant-free survival in our infant cohort was 70%. Diagnosis of a RASopathy did not correlate with worse transplant-free survival (p=0.77).



**Conclusion**

Presentation with HCM in infancy portends a significantly worse transplant-free survival compared to patients who present later in life ( $p < 0.0001$ ). Presence of a RASopathy did not significantly affect survival within our infant cohort ( $p < 0.77$ ).

**Presentation Time: 11.50-12.00 – Friday 8 December**

## **MANAGEMENT OF CONGENITAL PULMONARY AIRWAY MALFORMATIONS (CPAM) IN A TERTIARY HOSPITAL IN IRELAND – ARE WE FOLLOWING THE RULES?**

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**Aim:** To review the current management of CPAM in a tertiary hospital in Ireland.

**Methods:** Retrospective review of cases of CPAM attending the respiratory outpatients department over the last 4 years(2013-2017).Data was collected from electronic outpatient letters and hospital radiology system. Data was reviewed against best practice guidelines<sup>1,2,3</sup>, and analyzed using descriptive methods.

**Results:** In total 16 cases of CPAM attended the respiratory department between 2013-2017. Diagnosis was either made antenatally, in 10 cases(63%),postnatally in 3 cases and unknown in 3 cases. Evidence suggests a chest x-ray should be performed in the postnatal period, followed by a CT Thorax in the following months. In our cohort, 11(69%)cases had a CXR in the postnatal period, 3 of which were reported normal. 14/16 cases were asymptomatic, the most common symptom being recurrent infections.All cases had a CT Thorax performed- mean timing was 11 weeks(1-56 weeks).8 cases had a repeat CT Thorax prior to surgery. Surgery was planned in 11(69%)cases. The mean time to surgery was 18 months(2-31 months).2 cases are being followed up medically by the respiratory team with repeated imaging at scheduled intervals and 2 further cases are awaiting surgical review.

**Conclusions:** The management in 9(56%)cases of CPAM in this tertiary hospital met the suggested guidelines in the current literature. It is recommended that children with CPAM are operated on at an early stage, ideally before 2 years of age. This was achieved in just over half of our cohort(55%). Of note,73% of children who underwent surgery had at least two CT scans prior to surgery.

### **Recommendations:**

Close follow-up in the postnatal period and early referral to tertiary surgical services for management of their lesion, given the potential future risk for infection and malignancy<sup>2</sup>.

Education of staff and family regarding the radiation risk of repeated CT imaging in young children<sup>4</sup>.

**References:** 1. Neonatal Clinical Advisory Group. Congenital Cystic Adenomatoid Malformations. 2015. HSE.

<http://www.hse.ie/eng/services/publications/Clinical-Strategy-and-Programmes/Congenital-Cystic-Adenomatoid-Malformation.pdf>

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3. Laberge et al. The management of asymptomatic congenital lung malformations. Paediatric Respiratory Reviews. 2004

4. Frush D, Donnelly L, Rosen N. Computed tomography and radiation risks: what paediatric healthcare providers should know.

Paediatrics. 2003; 112(4):951-957

**Presentation Time: 12.00-12.10 – Friday 8 December**

## **NEONATAL CONGENITAL HEART DISEASE: MODES OF PRESENTATION AND PRENATAL DETECTION OVER A 5 YEAR PERIOD IN IRELAND**

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<sup>1</sup>National Children's Heart Centre, Our Lady's Children's Hospital, Crumlin, Dublin 12, Ireland.

**Aims:** This audit aimed to assess the incidence of new cases of severe congenital heart disease in infants in Ireland, and to determine changes in prenatal detection rates by comparing findings to a national audit of prenatal diagnosis in 2009. Furthermore, we aimed to evaluate timing and point of presentation of all infants in Ireland diagnosed postnatally with severe CHD.

**Methods:** This was a single centre retrospective cohort study. All patients born between May 1st 2015 and May 1st 2016 and admitted to the National Children's Heart Centre in Our Lady's Children's Hospital(OLCHC) Crumlin in the first 6 weeks of life with a diagnosis of severe structural CHD were eligible for inclusion. Severe structural congenital heart disease was defined as an abnormality requiring catheter or surgical intervention within the first six months of life.

**Results:** 184 infants satisfied study criteria. The incidence of severe structural CHD in the study period was 2.8/1000 live births. Within this group the prenatal detection rate was 53%. This compares to a prenatal detection rate of 22% in a corresponding period in 2009. 27% of infants with postnatally detected CHD and were transferred from maternity hospital in the early neonatal period.The remaining 20% re-presented from home.

When compared to EUROCAT cases over a similar period, we can see that severe lesions are disproportionately represented in the Irish population with a prevalence of 2.4/1000 live births overall.

**Conclusion:** This study shows a significant improvement in prenatal detection of structural CHD in Ireland. This is likely attributable to dedicated training and education of sonographers in fetal detection of CHD. The introduction of pre-discharge oxygen saturations checks in the majority of neonatal units has also improved postnatal detection, reducing the number of children discharged from hospital with severe structural congenital heart disease.

**Presentation Time: 12.10-12.20 – Friday 8 December**

**CLINICAL RELEVANCE AND UTILITY OF MOG AND AQP4 ANTIBODIES IN CHILDREN WITH AN ACQUIRED DEMYELINATING SYNDROME**

S Duignan<sup>1</sup>, S Wright<sup>2</sup>, T Rosser<sup>3</sup>, O Ciccarelli<sup>4,5</sup>, E Wassmer<sup>4</sup>, M Lim<sup>3</sup>, C Hemingway<sup>1</sup>, Y Hachohen<sup>1,4</sup>

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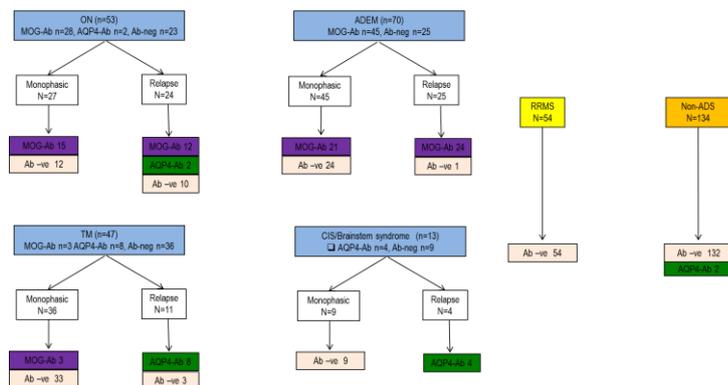
<sup>4</sup>Department of Neuroinflammation, Queen Square MS Centre, UCL Institute of Neurology, London, UK

<sup>5</sup>National Institute for Health Research (NIHR) University College London Hospitals (UCLH) Biomedical Research Centre (BRC), UK

**Aims:** The association of Aquaporin-4 (AQP4) and Myelin oligodendrocyte glycoprotein (MOG) antibodies to specific acquired demyelination syndromes (ADS) is now well-established. Our objectives were to evaluate the frequencies and associated clinical phenotypes of MOG and AQP4-Abs in a large cohort of children with ADS and to analyse serial measurements of seropositivity.

**Methods** Between 2012-2017, 371 serum samples were sent from 3 tertiary centres for MOG-Ab and AQP4-Ab testing. Medical notes were retrospectively reviewed and clinical data compiled. We also analysed patients who had an antibody sample taken acutely and repeated at 3-6 months follow-up.

**Results:** 237/371 patients were diagnosed with ADS. MOG-Ab were identified in 76/237 (32.1%) and AQP4-Ab in 14/237 (5.9%), all with non-MS phenotypes. None were positive for both autoantibodies. Of the 134 patients with non-ADS diagnoses, all were negative for MOG-Ab but 2 patients with SLE and no evidence of CNS demyelination were AQP4-Ab positive. MOG-Ab were identified in 45/70 (64.3%) of patients presenting with ADEM, 28/53 (52.8%) with optic neuritis(ON) and only 3/47(6.3%) transverse myelitis. 36/75 MOG-Ab positive patients relapsed and were diagnosed with MDEM, ADEM-ON, NMOSD and relapsing ON. Of the 33 children with NMOSD; 14 (42.4%) were AQP4-Ab positive, 13 (39.4%) were MOG-Ab positive and 6 were seronegative. Of the children with longitudinal samples, 8/13 (61.5%) AQP4-Ab remained positive during the disease course compared to 35/43 (81.4%) MOG-Ab (13/16 monophasic and 22/27 relapsing). There was no correlation between converting to negative MOG-Ab status at 6 months post an acute episode and monophasic disease.



**Conclusion:**

MOG-Ab were identified in a third of children with ADS, but not in children with non-ADS or MS; half relapsed. The majority of patients remain antibody positive over time. Seroconversion to negative antibody status cannot be reliably used to predict disease course.

**Presentation Time: 14.30-14.35 – Friday 8 December**

**THE CLINICAL SPECTRUM OF PAEDIATRIC LYME DISEASE IN THE REPUBLIC OF IRELAND 2012-2016**

**KM Forde<sup>1</sup>, B Cryan<sup>2</sup>, D Keady<sup>3</sup>, B Hanahoe<sup>3</sup>, L Power<sup>4</sup>, C McDonnell<sup>4</sup>, P Gavin<sup>5,6</sup>, J O'Gorman<sup>7</sup>, S Kelly<sup>8</sup>, M Dryden<sup>9</sup>, MJ O'Grady<sup>1</sup>**

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<sup>8</sup>Department of Microbiology, Eurofins Biomnis, Dublin, Ireland

<sup>9</sup>Department of Rare and Imported Pathogens, Public Health England, Porton, England

**Aims:** To identify the prevalence and clinical presentation of Lyme disease in patients under 18 years over a 5 year period

**Methods:** A cross sectional survey was conducted across four laboratories in Ireland who perform in-house ELISA testing for *Borrelia spp.* Between 2012-2016, all patients under 18 years who were ELISA positive underwent confirmatory Western Blot testing through the Lyme Reference laboratory in the UK. Those who were two-tier (ELISA & Western Blot) positive were deemed to have serological evidence of Lyme disease. An anonymous proforma was distributed by the respective laboratories to the requesting clinicians to collect clinical details regarding their patient's presentation, treatment and outcome.

**Results:** Sixty patients under 18 years with two-tier positive *Borrelia* serology were identified across four centres (Galway 24, Limerick 7, Cork 10, National Virus Reference Laboratory 19). Forty-eight completed proformas have been returned to date. Of these, 45.8% are female with an average age at presentation of 9.3 years. Twenty-six children were managed by general practitioners, 16 by general paediatricians and 7 by subspecialists. Forty-two (87.5%) presented in Summer or Autumn. Twenty-one (43.4%) recalled a tick bite and 24 (50%) had erythema migrans, most commonly involving the head and neck. Twenty-six cases (54%) were reportedly contracted in Ireland, predominantly in the west. Facial palsies were common in our cohort (31%) and flu-like symptoms were frequently reported. Four children had CSF findings confirmatory of neuroborreliosis. Forty-three (89.5%) had documented antibiotic treatment, for a mean duration of 3.7 weeks. Of the 43 children with follow up, 39 had complete symptom resolution at the time of surveillance.

**Conclusions:** Lyme disease in children presents across primary and secondary care in Ireland. Clinical presentation was variable, but importantly, the majority of children recovered with no long-term sequelae.

**Presentation Time: 14.35-14.40 – Friday 8 December**

**'WRITE IT RIGHT!': IMPROVING WRITTEN COMMUNICATION IN PAEDIATRIC OPD**

**M Smyth<sup>1</sup>, JJ Fitzsimons<sup>2</sup>**

<sup>1</sup>Paediatric Department , Our Lady of Lourdes Hospital Drogheda , Drogheda, Co. Louth, Ireland

**Aims:** This is a quality improvement initiative aimed at improving the quality of paediatric out-patient department (OPD) letters in a non-tertiary centre, by assessing adherence to a pre-designed layout. Clinic letters are the main form of communication between hospital and primary care doctors. The Sheffield Assessment Instrument for Letters (SAIL) is an assessment tool that gauges written communication performance in the OPD setting.

**Method:** 258 letters from consultant-led general paediatric outpatient clinics over a four-weeks were retrospectively analysed via the hospital database. A checklist based on SAIL assessment tool was designed. This modified checklist included; word count, NCHD grade, paragraphs, problem list and medication list.

Results of the initial data collection were presented to involved staff, as well as an education session outlining the letter template available in clinic rooms.

One week later 121 letters were reviewed with the same method to assess knowledge and adherence to the pre-existing template and efficacy of the presentation.

**Results:** A questionnaire performed the day of the presentation revealed 28% (n=7 ) of NCHDs were aware of the letter template visible in clinic rooms.

Initial audit: 51% (n=132) of the letters included problem lists. 19.3% (n=50) included medication lists. Registrars had the highest word count. Most letters had paragraphs.

Post-intervention: 77% (n=94) had problem lists and 47% (n=57) had medication lists. Registrars still had the highest average word count. All letters included paragraphs.

**Conclusion:** Effective communication is an integral part of safe clinical medicine. According to the modified SAIL assessment tool letters were not effectively communicating clinic details to primary care physicians posing a threat to patient care at the interface of paediatric primary and secondary care. After an education session, performance significantly improved. Education should be given regularly to ensure continued improvement in this area.

Fox AT, Palmer RD, Crossley JG, Sekaran D, Trewavas ES, Davies HA. 'Improving the quality of outpatient clinic letters using the Sheffield Assessment Instrument for Letters (SAIL). Med Educ. 2004 Aug;38(8):852-8. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/15271046>

**Presentation Time: 14.40-14.45 – Friday 8 December**

**BREAKING THE PAPER CHAINS: SHAPING THE FUTURE OF ELECTRONIC PATIENT RECORDS IN A PAEDIATRIC EMERGENCY DEPARTMENT**

**D Breslin, S Koe, H Kiernan**

<sup>1</sup>Paediatric Emergency Medicine, Tallaght Hospital, Dublin, Ireland

**Aims:** The Paediatric Emergency Department (PED) in Tallaght Hospital has used electronic tracking since 1996, when the attendance was approximately 15000 patients per annum. Since 2002, notes have been scanned into Electronic Patient Records (EPRs). In 2013, attendance had doubled to 34000 and the department switched to a paper-light system. The aim of this study is to compare our note-keeping pre- and post-paper-light, using standards set out by the Royal College of Physicians, and to suggest methods for ongoing quality improvement.

**Methods:** This study employed the 'Standards for the Clinical Structure and Content of Patient Records' (RCP, July 2013). 25 record headings were selected for inclusion, as they were relevant to our emergency department setting. The *Symphony* EPR System was used for acquisition of patient data. January 2011 and 2016 were chosen to represent pre- and post-paper-light, respectively. 100 patient

episodes were randomly chosen from each and their clinical notes were reviewed to calculate percentage compliance with each heading.

**Results:** There were 2904 PED attendances in January 2011 and 2928 in January 2016. Average Patient Experience Time (PET) was approximately 3 hours. In 2011, compliance was as follows: Date 71.42%, Time 59.18%, Doctor's name printed 72.45%, Doctor's MCRN 71.42%, Doctor's Grade 83.67%. In 2016, due to electronic time stamping, these features were present in all notes. In terms of history and examination, record keeping was similar pre-and post-paper-light, though it was noted that documentation of patient's regular medication (31.63%/43.16%), drug allergies (39.8%/33.68%) and social history (3.06%/16.84%) was poor in both cases.

**Conclusion:** The introduction of paper-light has improved clinical note keeping, legibility and traceability within our department, without impacting on PET. We are currently trialling the use of portable electronic devices for patient consultations, and hope to see an improvement in PET and record keeping with the implementation of these devices.

**Presentation Time: 14.45-14.50 – Friday 8 December**

**GLYCEMIC CONTROL IMPROVES AFTER SUBCUTANEOUS INSULIN INFUSION THERAPY: RESULTS FROM AN IRISH REGIONAL CENTER FOR PAEDIATRIC TYPE 1 DIABETES MELLITUS**

**K AHMED**, J Saunders, A Quinn, M Norris, M Conroy-Kelly, T Dunne, O Neylon, CS O'Gorman MB BCH BAO MSc MD FRCPI FPPAEDS FRCPC

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**Objectives:** The use of continuous subcutaneous insulin infusion therapy (CSII) in the management of paediatric patients with type 1 diabetes mellitus (T1DM) has increased with in the last decades, and is thought to play a role in improved glycaemic control. The aim of this study was to evaluate glycaemic control in a population of patients two years after commencing CSII, compared to their pre-CSII glycaemic control.

**Methods:** Retrospective study of prospectively collected data, including 45 eligible paediatric patients with T1DM commenced on CSII during the study period. Factors compared pre and post CSII included glycosylated haemoglobin (HbA1c), body mass index, insulin dose and severe hypoglycaemia. Parameters were compared in the 6 months prior to CSII to two years post CSII, with data collected in each 6 months period. Complete data were available on 34/45 patients (13 male, 21 female), thus comprising the study group.

**Results:** Mean HbA1c 6 months pre-CSII was 8.66(71 mmol/mol), compared with 7.66(60.2 mmol/mol) within 6 months post CSII ( $p < 0.001$ ), 7.86(62.4 mmol/mol) at 7-12 months CSII ( $p = 0.001$ ), 7.80(61.7 mmol/mol) at 13-18 months CSII ( $p = 0.002$ ), 7.87 (7.87 mmol/mol) at 19-24 months CSII ( $p = 0.001$ ).

When gender, age, time since diagnosis and time on pump are added as factors and covariates to the repeated measures model the trend became non-significant and age appears to have a significant influence on the values ( $p = 0.03$ ). Time since diagnosis ( $p = 0.061$ , almost significant) and gender ( $p = 0.096$ , almost significant) appear to be having an effect on the values seen. For BMI after adjustment for multiple comparisons only the difference between the 0-6m pre distribution and the 13-18 m distribution post was significant ( $p = 0.024$ ).

**Conclusion:** The use of CSII has significant overall improvement within the first 2 years with a trend of quick reduction in first 6 months, then transient increase followed by slow reduction over the second year. The reduction of HbA1C following CSII is influenced by age, gender and time since diagnosis. No effect on BMI seen in the first year after CSII.

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***Presentation Time: 14.50-14.55 – Friday 8 December***

**A STUDY ON THE USEFULNESS OF PEWS IN THE EMERGENCY DEPARTMENT- IS THERE A ROLE?**

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<sup>1</sup>Paediatric Emergency Department , NCH Tallaght , Dublin , Ireland

**Aim:** Irish Children's Triage System (ICTS) is the current tool used in prioritisation and assessment of Paediatric patients presenting to Emergency Departments (EDs). Paediatric Early Warning Systems (PEWS) are being implemented across inpatient paediatric units in Ireland. The audit investigated if the allocated PEWS and ICTS score were indicative of the escalation of care and speed of response. The goal was to discover if either system was superior in production of appropriate response time and escalation of care in relation to the severity of illness in paediatric population presenting to ED.

**Method:** A retrospective PEWS score was calculated for all children under the age of 5 years who were admitted through the Emergency department between 19/08/17 and 18/09/17. The time till doctor review was recorded.

**Results;** 196 children were admitted. Average age was 22 months. The average time till doctor review was 49 minutes.

3% were assigned triage category 1, average time to doctor review was 4 minutes. 67% to category 2, average time to doctor review 33 minutes. 26% to category 3, average time to review 1 hour 30 minutes and 4% to category 4, average review time 1 hour 14 minutes.

28% had a PEWS of 7, average time to doctor review 29 minutes. 20% had PEWS of 1, average review time 58 minutes.

35% of triage category 3 had a PEWS of 7 (n=46), average time till doctor 21 minutes. 8% of category 3 with PEWS of 7 (n=4), average till review 1 hour 50 minutes. 14% of category 4 with PEWS of 7, reviewed at 2 hours 23 minutes.

**Conclusion:** Triage categorisation was very successful in differentiating the sickest children in the ED. When looking at the children in triage categories 3 and 4, some of these children with a simultaneous high PEWS score had to wait longer for medical review. This is an argument for the routine use of PEWS in Emergency Department setting.

***Presentation Time: 15.00-15.05 – Friday 8 December***

**THE ROLE OF MICROARRAY IN THE DIAGNOSTIC EVALUATION OF CHILDREN WITH INTELLECTUAL/ DEVELOPMENTAL DISABILITY AND AUTISTIC SPECTRUM DISORDER**

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<sup>1</sup>Paediatrics Department, The Adelaide and Meath Hospital, Dublin, incorporating the National Children's Hospital, Tallaght, Dublin, Ireland

**Aim:** We conducted this audit to describe our experience with this technique and its results in the last 5 years. To evaluate the clinical relevance of performing genetic testing in children with intellectual/developmental disability and autistic spectrum disorder and to identify any new findings in this cohort of patients. to support published guidelines for best practice protocol regarding investigation of children with Intellectual/developmental disability and Autistic spectrum disorder

**Methods:** We collected data on children attending the National Children Hospital At Tallaght with developmental delay or intellectual disability, between March 2011 and December 2014 who had genetic investigation done.

We used retrospective approach using health care records looking at their presentation, clinical picture and genetic results.

**Results:** In total 233 children with developmental delay or intellectual disability, between March 2011 and December 2014 had genetic investigation done. Out Of the 233 children, 65 (27%) had an abnormal microarray result, 29 (44%) of them were thought to be benign copy number variant

Conclusion:

27% of the total children with developmental delay or intellectual disability, who had genetic investigation done between March 2011 and December 2014 had a positive or abnormal microarray result and almost half of those significantly contributed to the diagnosis of the underlying cause.

It is important to set a National policy and guidelines re the investigation of children with Intellectual/developmental disability and Autistic spectrum disorder, our result here supports the guidelines for best practice published in 2015<sup>1</sup>; microarray should be considered the first-line procedure in the diagnostic evaluation of ID and/or developmental delay

O'Byrne JJ1, Lynch SA2, Treacy EP3, King MD4, Betts DR2, Mayne PD5, Sharif F6 Unexplained developmental delay/learning disability: guidelines for best practice protocol for first line assessment and genetic/metabolic/radiological investigations. *Ir J Med Sci.* 2016 Feb;185(1):241-8. doi: 10.1007/s11845-015-1284-7. Epub 2015 Apr 21

**Presentation Time: 15.05-15.10 – Friday 8 December**

**TRANSIENT PSEUDOHYPOALDOSTERONISM IN INFANCY :RESULTS OF TWO YEAR SURVEILLANCE THROUGH THE IRISH AND ULSTER PAEDIATRIC SURVEILLANCE UNIT (IPSU/UPSU)**

**A T KANINDE<sup>1</sup>, ML GRACE<sup>2</sup>, C JOYCE<sup>3</sup>, NF TAYLOR<sup>4</sup>, M RIORDAN<sup>5</sup>, MJ O'GRADY<sup>6</sup>, SM O'CONNELL<sup>2</sup>**

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<sup>2</sup>Paediatrics And Child Health , Cork University Hospital , Cork, Ireland

<sup>3</sup>Biochemistry, Cork University Hospital, Cork, Ireland

<sup>4</sup>Biochemistry, Kings College , London, United Kingdom

<sup>5</sup>Paediatric Nephrology, Our Ladies Childrens Hospital ,Crumlin, Dublin, Ireland

<sup>6</sup>Paediatrics , Regional Hospital, Mullingar, Ireland

**Aim:** To review the clinical features, presentation, investigations undertaken, and outcome of infantile salt-wasting presenting in the setting of urinary tract infection (UTI) and/or urinary tract malformation (UTM) over a two-year surveillance period on the island of Ireland. To estimate a population incidence based on the results and to make recommendations on the approach to management of this condition.

**Methods:** A two-year (2013-14) prospective surveillance undertaken for the island of Ireland via the Irish and Ulster Paediatric Surveillance Units. Monthly-prepaid postcards were circulated to Consultant Paediatricians (n = 260) at all Paediatric Units on the island of Ireland.

Infants under one year of age presenting for the first time with hyponatraemia (serum sodium < 130mmol/L) and/or hyperkalaemia (serum potassium > 5.0mmol/L) associated with urosepsis/UTM were included.

**Results:** Seven patients (six male), all aged younger than five months( 3 weeks to 20 weeks ) were reported during the study period. All had culture proven UTI and five (71%) also had an underlying UTM (one diagnosed antenatally). Four (57%) patients had a documented elevated serum aldosterone supporting secondary pseudohypoaldosteronism (PHA) as the underlying diagnosis. Data on aldosterone was not reported in the other three patients but clinical features were suggestive of secondary PHA. All had an excellent outcome with full resolution of the electrolyte disturbance. The estimated incidence for the Irish population of transient pseudohypoaldosteronism was 1 per 13,200 live births per year for the study duration.

**Conclusions:** Salt-wasting is a rare complication of UTI, especially if associated with underlying UTM. There is a similar annual incidence rate to the previous reported incidence of congenital adrenal hyperplasia in Ireland. Boys appear to be at particular risk. Prognosis is good if the condition is recognised and managed promptly.

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***Presentation Time: 15.10-15.15 – Friday 8 December***

**AN EVALUATION INTO THE EFFECTIVENESS OF AN ART THERAPY PROGRAMME FOR PAEDIATRIC PATIENTS WITH TYPE 1 DIABETES.**

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<sup>2</sup>Arts Department, St Luke's General Hospital, Freshford Rd, Kilkenny, Ireland

<sup>3</sup>Art Therapy Department, CIT, Crawford College of Art and Design, Cork, Ireland

**Aims:** To provide a psychological intervention to support Paediatric Patients with their diabetes diagnosis and illness management with a view to improve adherence and compliance. The study examines how art therapy can be used as a non-pharmacological treatment in a medical setting to improve diabetes care.

**Methods:** The inclusion criteria: Patients aged 10-18 that displayed poor glycaemic control and emotional distress. 12 individuals were referred to the service, 10 of the sample were selected and their scores compared to a control group of 10 (random sampling) of non-attendees to art therapy. Analysis of the programme: A quantitative analysis measured the HbA1c scores pre and post attendance to the art therapy sessions. A qualitative analysis by means of a semi-structured interview with diabetic nurse specialists evaluated the service. The following programme of treatment was delivered:

1. An 8-week 2-hour art therapy group facilitated by an art therapist.
2. Weekly individual sessions (n 1-19) were facilitated. Brief therapy (1-6) or long-term therapy were on offer to facilitate the presenting needs of the client.

**Results:** The HbA1c scores reduced significantly for the participants that received art therapy compared to the control group. These preliminary results show an increase in adherence and compliance to their Diabetes management. Observations from case study method (observed benefits/clinical outcomes) showed an increase in levels of emotional expression, an increase in self-confidence in managing their diabetes care and an overall increase in self-esteem.

**Conclusion:** Our results demonstrated that art therapy can facilitate improved glycaemic control as evidenced by improved HbA1c scores post therapy. The findings of the evaluation carried out through a semi-structured interview suggested the service was integral as a part of the paediatric patients care and treatment of diabetes. It provided more engagement to the overall diabetes service and supported staff in providing treatment.

***Presentation Time: 15.15-15.20 – Friday 8 December***

**THE INTRODUCTION OF THE LOW RISK ANKLE RULE TO A PAEDIATRIC ED: A QUALITY IMPROVEMENT INITIATIVE**

**P Tormey<sup>1</sup>, O Callender<sup>1</sup>, R McNamara<sup>1</sup>, N Kandamany<sup>1</sup>, I Okafor<sup>1</sup>, P Fitzpatrick<sup>1</sup>, T McCrudden<sup>2</sup>**

<sup>1</sup>Emergency Department, Temple Street Hospital

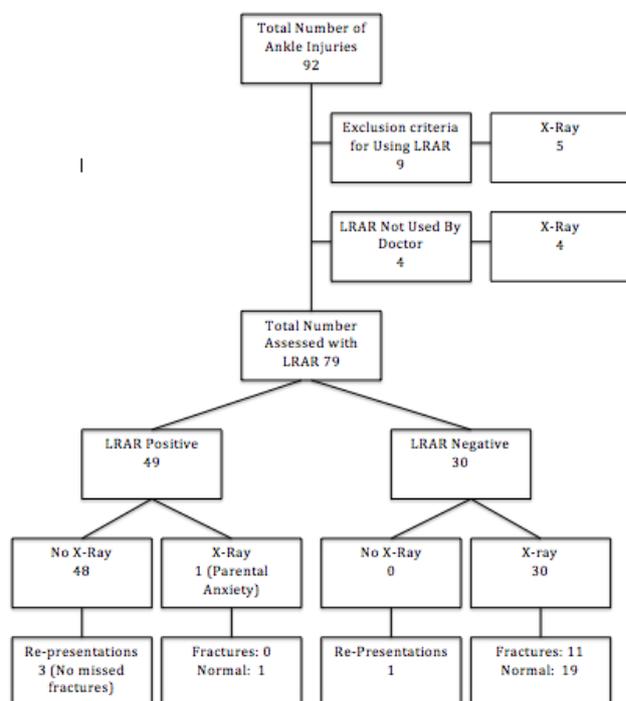
<sup>2</sup>Radiology Department, Temple Street Hospital

**INTRODUCTION:** Ankle injuries are a common presentation to PEDs, accounting for approximately 2% of presentations. 1 X-rays are ordered for 85-95% of patients but only 12% of x-rays reveal a fracture. 1 Clinical prediction rules, such as The Low Risk Ankle Rule (LRAR) exist to help clinicians safely reduce the frequency of radiography in these injuries.

**AIMS:** We sought to introduce The LRAR into our department and study its effects on our radiography rate and length of stay (LOS).

**METHODS:** We conducted an audit of x-ray rates in ankle injuries in 2016 to provide us with our baseline rate of radiography and LOS. We then conducted education sessions and created x-ray ordering prompts to encourage clinicians to use The LRAR. We introduced The LRAR, with a pilot period initially, and gathered data on its effect on our rate of radiography and LOS.

**RESULTS:** We collected data on 969 patients who presented in 2016 with an ankle injury, 90.7% of these patients had an x-ray. The average LOS was 132 minutes. We collected data on 92 patients who presented during the LRAR implementation period with an ankle injury. Nine patients had exclusion criteria from using The LRAR and the attending physician did not use the LRAR in four patients. Of the remaining 79 patients, 49 had a LRAR positive, 'low-risk' exam. Only one of these patients went on to have an x-ray. The 30 patients with a LRAR negative exam all had an x-ray. Overall, our x-ray rate during the study period was 40/92 (43.4%), a reduction of 47.3%. Our average LOS during the study was 126 minutes. No clinically significant fractures were missed.



## CONCLUSION

The LRAR can safely and effectively reduce the rate of radiography in ankle injuries, without missing any clinically significant fractures.

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## **Presentation Time: 15.20- 15.25 – Friday 8 December**

### **A REVIEW OF INVASIVE LONG-TERM VENTILATION IN IRISH CHILDREN**

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<sup>1</sup>Department of Paediatric Respiratory Medicine, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland

**Aims:** There has been a rapid increase in the use of mechanical long-term ventilation (LTV) in children over the past 20 years with no study to date on an Irish paediatric population. This study aims to describe the paediatric LTV population in Ireland over the last 12 years.

**Methods:** A review was carried out of all children who had tracheostomies inserted and were placed on mechanical LTV at Our Lady's Children's Hospital, Crumlin (OLCHC) over the past twelve years.

**Results:** 47 patients were identified from hospital records. Two were excluded due to missing data. 19 were female. The majority of tracheostomies were inserted before 12 months of age (median = four months). Congenital causes (inc. syndromes) and their sequelae were the most frequent indication for tracheostomy insertion (n=30). Median length of hospital stay was 486 days with most patients (n=29) being discharged home directly with ongoing ventilation. The median duration of ventilation was 955 days and the median duration of the tracheostomy cannulation period was 1134 days.

**Conclusion:** These data show that most children commenced on mechanical LTV require prolonged hospital in-patient stays and require ongoing LTV support for an extended period of time once discharged home. The reasons for these patient's protracted hospital and LTV courses are multifactorial. Improved processes for discharge planning and homecare package applications would assist in improving these delays.

**Presentation Time: 16.00-16.10 – Friday 8 December**

**PROMOTING PATIENT SAFETY: IMPLEMENTING AND SUSTAINING PAEDIATRIC PROTECTED HANDOVER IN DISTRICT GENERAL HOSPITAL**

**P Mallett<sup>1</sup>, S Shah<sup>1</sup>**

<sup>1</sup>Department of Paediatrics & Child Health, Craigavon Area Hospital, Southern Health & Social Care Trust, Craigavon, N. Ireland

**Aim:** There are many potential barriers to effective handover including poor communication, inadequate physical environment, lack of senior representation, and many other variables. Effective communication is fundamental for good patient care.<sup>1</sup> Failure in this process can play a significant role in risk to patients.<sup>2</sup> During Handover periods; we identified repeated interruptions by non-urgent bleeps as a significant barrier to effective handover. We aimed to introduce a new protected Handover scheme to limit the number of non-urgent interruptions, and hence improve communication, handover and promote patient safety.

**Methods:** A daily log of in-hospital bleeps was recorded during the handover periods over a two week period. Subsequently, information was circulated about our new 'Non-Urgent Bleep Free' handover policy at set handover times. This included poster design (displayed on wards and Trust computers) and engagement with Maternity and Emergency Department colleagues reminding to contact the Paediatric team only with an urgent issue during handover times. Following this we re-audited over a two week period via the same method.

**Results:** Total number of bleeps received reduced significantly from 28 to 8 bleeps in the initial audit. Non-urgent bleeps decreased from 25 to 6 bleeps. Six months later, we re-audited via the same method. 7 out of total 7 bleeps were non-urgent, highlighting the need for continued education and promotion.

**Conclusions:** Whilst a significant improvement was made from our initial results, there remains substantial work to do. The merits of effective handover not only include significant benefits to the patient, but also are educationally of better value to the team involved. An organised, protected handover has been shown to reduce stress levels, aid professional protection and improve job satisfaction.<sup>2</sup>

The next chapter leads onto extending to a regional basis. It is hoped a successful regional implementation will aid promoting the goal of patient-centred, safety conscious, protected Handover periods.

**References:** 1-Communication, partnership and teamwork. Good Medical Practice. 2013. [www.gmc-uk.org](http://www.gmc-uk.org) 2-Currie J (2002) Improving the efficacy of patient handover. Emergency Nurse 10: 24-7.

**Presentation Time: 16.10-16.20 – Friday 8 December**

## **SENIOR SAFETY WALKS IN A PAEDIATRIC DEPARTMENT- A QUALITY & SAFETY INITIATIVE**

**A Khan<sup>1</sup>, G Maguire<sup>2</sup>, P Morgan<sup>2</sup>**

<sup>1</sup>Department of Paediatrics, Daisy Hill Hospital, SHSCT, Newry, <sup>2</sup>CYPD, SHSCT, Newry, NI

### **Background:**

Senior Safety Walk (SSW) is a structured process to bring senior managers and front line staff together to have quality and safety conversations to prevent, detect and mitigate service user/staff harm.

### **Aims:**

To Introduce Senior Safety Walk-rounds in Paediatric Department:

- a) To demonstrate senior managers' commitment to quality and safety for service users, staff and the public.
- b) To Increase staff engagement and develop a culture of open communication & share good practice

### **Method:**

- PDSA Cycle used as QI methodology.
- A literature search was carried out.
- SSW team members included: A senior operation manager, a senior clinical leader and an admin person.
- SSW toolkit was developed including:
  - MDT Communication framework
  - Guide for SSW discussion
  - Data collection & Feedback templates
  - Role and responsibilities of SSW Team
- Monthly SSWs scheduled in various clinical areas with advance notification.
- Dedicated time for SSW: 1 hour per week.
- **Impact Measurements:**
  - Number of safety Issues identified & addressed within certain time period.
  - Number of safety-based changes made during this period.
  - Number of compliments & complaints received (outcome measure),
  - Response to staff safety culture survey (process measure)

### **Results:**

- SSW started in February 2017, initially for 6 months
- SSW Themes: 1)Leadership, 2)Communication & Team working, 3)Environment & Processes, 4)Patient /carer feed back
- Each SSW Included:
  - Observation of SSW Themes.
  - Staff discussion including feedback measures
  - Discussion with Services user /Patient/carer

### **Impact measurement results:**

- 80% of identified issues were resolved within agreed time frame.
- Multiple safety based changes made as a result of SSWs.
- Number of compliments received from services users during this period.
- Staff survey results indicate: Improvements in staff understanding of patient safety measures. Also highlighted staff satisfaction for senior managers involvement in front line issues.

### **Conclusion:**

- Senior safety walks is a valuable tool to engage senior managers and frontline staff in a meaningful discussion for patient safety concerns.
- Our results indicates SSW can lead to and resolution of safety issues with agreed actions. It can also improve team working and safety culture of the organisation.
- Dedicated additional resources are required for SSW.
- A repeat staff Safety culture survey is recommended in 12 months.
- Patient Safety Leadership walk-round 2004, Institute of Healthcare Improvements, Boston. . Quality and Safety Walk-rounds- QI Davison,HSE.ie

**Presentation Time: 16.20-16.30 – Friday 8 December**

**HOW WELL DO WEE WORK?: AN AUDIT OF ENURESIS SERVICES IN CAVAN AND MONAGHAN**

CE Ahearne<sup>1</sup>, RA Mullaly<sup>1</sup>, RN van der Spek<sup>1</sup>

<sup>1</sup>Paediatrics, Cavan General Hospital, Cavan, Ireland

**Aims:** To audit the treatment success of a community-based public health nurse provided enuresis clinic since the amalgamation of services in Cavan and Monaghan. Success was based on International Children's Continence Society definitions (% reduction in wet nights) and compared to targets set by ERIC (Education and Resources for Improving Childhood Continence), defined as initial success (14 consecutive dry nights) achieved by 50% of patients.

**Methods:** A retrospective review of new patients attending the fortnightly combined Cavan/Monaghan Enuresis clinic from October 2014 to April 2017. The existing defined referral pathways are via PHN, GP or paediatrician. Statistical analysis was performed using IBM SPSS Statistics 23.0.

**Results:** 79 new patients were identified, 2 were excluded due to failure to attend, and 77 were included for analysis. Male-to-female ratio was 1.7:1. The median (range) of age at first visit was 8.1 (6.5-13.8) years. 55/77 (71.4%) represented patients with monosymptomatic enuresis. Overall, 48/77 (62.3%) achieved initial success with a median (IQR) time to initial success of 23 (12-34) weeks from first visit. 33/77 (42.9%) achieved initial success by 16 weeks of treatment. 17/77 (22.1%) achieved complete success (>99% reduction in wet nights) by 16 weeks. Median (IQR) of dry index (number of dry nights/number of nights observed) by 16 weeks was 0.54 (0.85-0.13) and median (IQR) of % reduction in wet nights was 80.5% (39-97). 46/77 (59.7%) initiated an enuresis alarm. Initiating an alarm was significantly associated with achievement of initial success, p=0.04. Number of clinical contacts in the first 6 months significantly differed between those that achieved initial success and those that didn't, p=0.02.

**Conclusion:** Success rates at 16 weeks, 42.9%, fell short of the ERIC target of 50%. Increased intensity of interaction at onset of treatment, further streamlining of referral process and treatment implementation may improve this.

**Presentation Time: 16.30-16.40 – Friday 8 December**

**IMMUNE MEDIATED THROMBOCYTOPAENIA IN CHILDREN: WHAT HAPPENS AFTER THE REFERRAL? A 7 YEAR RETROSPECTIVE REVIEW**

R Koshy<sup>1</sup>, B Nolan<sup>1</sup>

<sup>1</sup>Paediatric Haematology Department, Our Lady's Children's Hospital for Sick Children, Crumlin, Ireland

**OBJECTIVE:** This study aims to perform a retrospective review of all children referred to our haematology department with a diagnosis of ITP and report on outcomes, treatment tolerability and describe the relationship, if any, between chronic ITP and the progression to development of auto-immune disease in a cohort of paediatric patients.

**METHOD:** A retrospective review of patients referred to the Haematology Department between 2010-2017 with a platelet count <100x 10<sup>9</sup> platelets per litre. Demographics, disease-related data, relevant auto-immune history and laboratory results were collected from medical records entered and analysed using Excel.

**RESULTS:**

**Demographics:** 140 patients were identified, 71 male and 69 female. At diagnosis, 78 were between 0 and 4 years of age, 35 between 5 and 10 years and 27 between 10 and 15 years.

**Preceding events:** 3 patients had recent vaccinations. 6 patients had Epstein Barr Virus associated ITP.

**Course of thrombocytopenia :** In 79 patients , platelet count recovered in less than 6 months. 43 patients had chronic ITP. Platelet count returned to normal in 17 patients who had ITP for more than 12 months. 3 patients developed recurrent ITP after initial recovery of platelet count.

**Bleeding:** 27 patients received treatment for bleeding. 7 of 37 patients who received intravenous immunoglobulin developed symptoms suggestive of aseptic meningitis.

**Treatment of thrombocytopenia:** 8 patients received Prednisolone with non sustained increase in platelet count. 2/8 received Rituximab treatment.

**Auto-immune disease:** 5 patients had co-existing / progression to autoimmune conditions.

**CONCLUSION:** In conclusion, this data illustrates the diversity of ITP in children. Data here may be skewed to chronic or atypical patients referred to one tertiary centre and may not reflect the true history of ITP. We would recommend that a national registry be established to capture data on all children presenting with ITP in Ireland.

**Presentation Time: 16.40-16.50 – Friday 8 December**

**HOW ACTIVE ARE "ACTIVE" CHILDREN? A MEASURE OF PHYSICAL ACTIVITY LEVELS IN CHILDREN WHO PARTICIPATE IN GAA**

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<sup>1</sup>School of Medicine, University College Cork, Cork, Ireland

<sup>2</sup>Department of Paediatrics, Cork University Hospital, Cork, Ireland

<sup>3</sup>Department of Arts, Education and Physical Education, Mary Immaculate College, Limerick, Ireland

<sup>4</sup>Department of Paediatrics, Midland Regional Hospital, Mullingar, Ireland

**Aim:** To establish if children involved in regular structured physical activity opportunities meet current physical activity guidelines in Ireland.

**Method:** Thirty-three children aged between seven and twelve years old that attend GAA training in East Cork on a weekly basis were recruited. Body Mass Index (BMI) was calculated using height and weight measurements. Each participant was asked to wear a pedometer device for seven consecutive days and record the steps taken each day.

**Results:** 23 boys and 10 girls took part in the study. 97% had a normal BMI. Mean weekend steps reached recommended counts, while weekday step-count fell short for both sexes. 78% of boys and 60% of girls met targets at weekends. Only 26% boys and 30% girls met recommended levels during the week. Boys took more steps than girls.

**Conclusion:** The World Health Organisation recommends that children exercise daily for at least sixty minutes in order to maintain good health. Studies have shown that the majority of Irish children are not meeting these targets. GAA participation appears to help children meet physical activity targets at weekends. Pedometer usage resulted in both parents and children increasing their physical activity awareness.

5. Organisation, World Health. Global Strategy on Diet, Physical Activity and Health. [Online]

[http://www.who.int/dietphysicalactivity/physical\\_activity\\_intensity/en/index.html](http://www.who.int/dietphysicalactivity/physical_activity_intensity/en/index.html). 6. Woods, C.B., Tannehill D., Quinlan, A.,

Moyna, N. and Walsh, J. The Children's Sport Participation and Physical Activity Study . s.l. : Irish Sports Council, 2010. 7.

Andersen, Harro, et al. Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). s.l. : The Lancet, 2006.

**Presentation Time: 16.50-17.00 – Friday 8 December**

**ALICE: ATRAUMATIC LIMP IN CHILDREN PRESENTING TO THE EMERGENCY DEPARTMENT**

K O'Halloran<sup>1</sup>, S Hurley<sup>1</sup>, R McNamara<sup>1</sup>, I Okafor<sup>1</sup>, N Kandamany<sup>1</sup>, P Fitzpatrick<sup>1</sup>

<sup>1</sup>Emergency , Children's University Hospital, Temple Street, Dublin 1, Ireland

**AIMS:** Atraumatic limp represents a significant proportion of presentations to the ED (1). The majority have self-resolving aetiologies. As part of a quality improvement project, we aimed to reduce unnecessary blood tests, imaging and follow up appointments, by implementing a guideline for the assessment of atraumatic limp.

**METHODS :** Following staff education and an awareness campaign, the guideline was implemented and prospectively audited. Data was collected from a clinical report form, and from healthcare records. The analysed data from March to April 2017 was compared to a previous epidemiological study, conducted in the same ED in 2015.

**RESULTS:** (see table 1)

35 patients (40% of total) were in the low risk group (ie symptoms <72hours, afebrile and a normal clinical exam). 14 (40%) of these patients underwent investigations. None of these investigations changed the diagnosis. In total there were 5 changes in diagnosis post discharge. Two were following x-rays reports with abnormalities. Three patients had a diagnosis change that were not initially investigated, one was subsequently diagnosed with HSP after representing with a lower limb non-blanching rash, one represented with ankle cellulitis and one was re-examined and referred to General

Paediatrics with increased tone unilaterally. 60% of patients with a diagnosis of transient synovitis (TS) were discharged home without investigation. Of those diagnosed with TS 17% had bloods and 32% had an x-ray. 35% of these investigations were unnecessary according to the guideline.

**CONCLUSIONS:** Implementation of a guideline can aid in the assessment of atraumatic limp and reduce the number of investigations and follow up appointments, without significant adverse outcome. Compliance with the guideline can be further improved.

1- Emerg Med J 2013;30:19–23. Implementation of an evidence based guideline reduces blood tests and length of stay for the limping child in a paediatric emergency department. Peter J McCanny, Siobhan McCoy, Tim Grant, Sean Walsh, Ronan O'Sullivan

**Presentation Time: 17.00-17.10 – Friday 8 December**

**ESCALATE ACCORDINGLY: A PROSPECTIVE AUDIT OF EFFECTIVE ESCALATION SUSPENSIONS AND PARAMETER AMENDMENTS OF THE IRISH PAEDIATRIC EARLY WARNING SCORE**

**A Shankar<sup>1</sup>, C O'Leary<sup>1</sup>, K Munir<sup>1</sup>, Y Jaly<sup>1</sup>, J Tan<sup>1</sup>, A Nicholson<sup>2</sup>**

<sup>1</sup>Department of Paediatrics, The Royal College of Surgeons in Ireland, Dublin, Ireland

<sup>2</sup>General Paediatrics Department, Temple Street Children's University Hospital, Dublin, Ireland

**Aims:** This prospective audit analysed all parameter amendments (PA) and escalation suspensions (ES) of the paediatric early warning score (PEWS) at a busy tertiary paediatric centre in Dublin. Fifty patients were sampled to analyse the most common ages, underlying conditions, parameters and the acute or chronic nature of their conditions. The objectives of this study are to collect this information and consider the potential for modification of the PEWS given current limitations surrounding the standardised nature of amendments and escalations.

**Methods:** All medical ES and PA were noted in the children's hospital for a period of four weeks. Data analysed included the amendment, the parameters, the nature of the condition and the patient's age range. In keeping with the PEWS chart this study took place during the summer of 2017 and data collected was from version 2 of the chart.

**Results:** There were 50 patients, with 8 PA and 44 ES. 24 triggered contact of the medical team before the ES or PA, of which 5 patients triggered a consultant call after ES or PA. The most frequent PA and ES implementations belonged to the following criteria: Age 1 to 4 (23), Respiratory tract infections (34), Acute conditions (36). Heart rate was the most frequently affected parameter (31).

**Conclusion:** The establishment of PA and ES actions resulted in a decrease in triggers that called for a consultant-led team by 79.2%. More than half of these amendments included the same parameter and were caused by acute respiratory tract infections, which flags a need for special consideration in patients who present with respiratory conditions. This study, coupled with the implementation of version 3 of PEWS, allows for a computable analysis of improvement. The future applications of this study are to highlight changes in parameters over different seasons and time to assess trends and disease burden.

**References:** Fuijkschot J, Vernhout B, Lemson J, Draaisma JM, Loeffen JL. Validation of a Paediatric Early Warning Score: first results and implications of usage. Eur J Pediatr. 2015;174(1):15-21. De vries A, Draaisma JMT, Fuijkschot J. Clinician Perceptions of an Early Warning System on Patient Safety. Hosp Pediatr. 2017;7(10):579-586. Ennis L. Paediatric early warning scores on a children's ward: a quality improvement initiative. Nurs Child Young People. 2014;26(7):25-31.

***Presentation Time: 17.10-17.20 – Friday 8 December***

### **KNOWLEDGE GAP IN FOOD PORTION SIZES FOR 1-3 YEAR OLD CHILDREN**

**DM Ryan<sup>1</sup>, P Dalton<sup>1</sup>, E Carolan<sup>1</sup>**

<sup>1</sup>Paediatrics, St Luke's General Hospital, Kilkenny, Ireland

**Aims:** Obesity is a global epidemic that poses future catastrophic public health outcomes. Healthy weight is achieved in only 40% of the Irish population and 25% of children are categorized as being either overweight or obese. Obesity is now occurring in early childhood and the trajectory then tracks into adulthood. Establishing a healthy diet from an early age is fundamental in the prevention of obesity. Our aim was to establish what knowledge parents and various health care professionals working with children had in relation to appropriate portion sizes of different food groups for pre-school children.

**Methods:** Parents of children attending outpatients and healthcare professionals working with children were invited to complete a pictorial questionnaire on what they regarded as appropriate sized portions for the main food groups for children aged between 1-3 years. Healthcare professionals asked to complete survey included Paediatric Nurses, Non-Consultant Hospital Doctors, Consultant Paediatricians and Dieticians.

**Results:** In total 50 parents of children aged 1-3 years and 50 healthcare professionals completed the questionnaire. Only 54% of parents (n=27) who completed the questionnaire answered the correct amount of milk a pre-school child should receive under normal circumstances. Correct daily portion size of vegetables was identified by 56% of parents (n=23) and healthcare professionals (n=23). 50% parents (n=25) stated Doctor or Public Health Nurse as their information source about portion size for their children but 34% of health care professionals (n=17) acknowledged that they did not know about any resources on appropriate portion sizes in this age group.

**Conclusion:** We identified a knowledge deficit regarding food portion sizes for this age group. Parents frequently ask healthcare professionals for guidance about healthy diet, therefore a better proficiency in dietary advice and readily available resource tools in the clinical setting may be highly beneficial.

***Presentation Time: 17.20-17.30 – Friday 8 December***

### **AETIOLOGICAL ASSESSMENT OF PERMANENT CHILDHOOD HEARING IMPAIRMENT DIAGNOSED BY UNIVERSAL NEW-BORN HEARING SCREENING IN CAVAN GENERAL HOSPITAL**

**S. Mac Farland , N. van der Spek**

<sup>1</sup>Paediatric Department, Cavan General Hospital, RCSI, Cavan, Ireland

**Background and Aims:** The Universal New-Born Hearing Screening program (UNHS) was introduced in Cavan General Hospital in 2012. It aimed to identify newborns with Permanent Childhood Hearing Impairment (PCHI) and initiate early medical and educational interventions. In Ireland, PCHI affects 1-2 per 1,000 births and these children require a paediatric aetiological assessment. Our study aims to review the results of the aetiological assessments completed by paediatricians after identification by the UNHS of all infants with PCHI in our hospital. Currently, we use the British Association of Audiovestibular Physicians (BAAP) guidelines 2015 to aid our assessment.

**Methods:** A retrospective chart review was carried out of patients with confirmed PCHI identified by the UNHS over a four-year period from October 2012 to November 2016. Data such as audiological diagnosis, investigations, and final aetiological diagnosis were recorded.

**Results:** In total, 12 patients were identified (6 Male: 6 Female). On average, 3 cases per year of PCHI were diagnosed, which is in keeping with the birthrate in Cavan (~2,000 per year).

In our cohort, bilateral hearing loss (n=7) was more common than unilateral (n=5). In terms of severity, severe/profound hearing impairment (n=6) was the commonest level of PCHI diagnosed. Of the 12 patients identified, 3 were not assessed due to emigration and parental refusal. Of the 9 patients remaining, 7 were fully diagnosed (78%) and 2 are still undergoing investigations. Of the 7 diagnosed: 3 had mutations in Connexin 26 gene (CNX), 2 had congenital cytomegalovirus (CMV) infections, and 2 had structural abnormalities of the inner ear.

Table 1: Audiological Diagnosis

	<b>Mild (20-40dB)</b>	<b>Moderate (40-70dB)</b>	<b>Severe/Profound (&gt;70dB)</b>	<b>Total</b>
<b>Unilateral</b>	1	1	3	5
<b>Bilateral</b>	2	2	3	7
<b>Total</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>12</b>

**Conclusion:** In our cohort, aetiological assessment was successful in establishing a diagnosis in 78% of cases of PCHI identified by the UNHS. This supports the need for the assessment and its effectiveness. The principal investigations to aid diagnosis include MRI Brain/Internal Auditory Meati, Urinary CMV, and CNX26 genetics.

**Presentation Time: 17.30-17.40 – Friday 8 December**

**"Paediatric Pitstop" General Academic Paediatric Research workshop**

**C Purcell<sup>1</sup>, C Martin<sup>1</sup>, J Balfe<sup>1</sup>, S Murphy<sup>2</sup>, EM Molloy<sup>3</sup>**

<sup>1</sup>General Paediatrics, National Children's Hospital, Tallaght, Dublin 24, Ireland

<sup>2</sup>General Paediatrics, Children's University Hospital, Temple Street, Dublin 1, Ireland

<sup>3</sup>Academic Paediatrics, Trinity College Dublin, National Children's Hospital, Tallaght,, Dublin 24, Ireland

**Aims:** Research and audit activity is mandatory for Paediatric trainees with one annual audit the minimum expected standard. Senior support facilitates successful project completion. With this aim a General Paediatric research workshop was established, providing a supportive forum for discussion and advice on individual projects. This paper will describe the development and outcomes of this project.

**Methods:** An open, monthly, Consultant-supported, breakfast meeting was convened. Participants were allocated 5 minutes to provide a short focused presentation, noting progress and highlighting difficulties in research projects. Group input and structured feedback was encouraged to optimise ideas and solutions. Deadlines and targeted publications were advised with an aim to ensure project success. Attendances were recorded, weekly logs kept of each project with recommended advice and timelines for completion.

**Results:** To date, 12 workshops have been held ; involving Consultants, junior hospital doctors, Nurse Specialists, Dieticians and Physiotherapists. >20 projects have been submitted as presentations for the upcoming Irish Paediatric Association (IPA) Conference. In addition, 10 projects are due for presentation at a variety of European Meetings in 2017, 1 project is informing National UTI Guidelines and 1 project was submitted for publication at a peer-reviewed Journal. In the year prior to this initiative; 2 oral presentations and 9 poster presentations were accepted at the IPA Conference. The feedback to date is overwhelmingly positive with Junior Doctors reporting greater support, interest and involvement in research.

**Conclusions:** The workshops continue and we plan to expand and include General Paediatric Departments in Crumlin and Temple Street Hospitals. The opening of Ireland's new National Paediatric Hospital in 2022 provides great opportunities for further development of the Academic Department of General Paediatrics. The goal is to contribute to a structured template for further Research workshops across all Paediatric centres in Ireland and provide a collaborative Network for General Paediatric Research in the future.

**Presentation Time: 17.40-17.50 – Friday 8 December**

## **IMPROVING QUALITY OF CLINICAL HANDOVER IN PAEDIATRIC DEPARTMENT**

**A Khan<sup>1</sup>, P Slevin<sup>1</sup>, H Fitzpatrick<sup>2</sup>**

<sup>1,2</sup>Department of Paediatrics, Daisy Hill Hospital, SHSCT Newry

**Background:** Clinical handover refers to the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis. It is recognised as an important source of error but also as a unique opportunity for a range of healthcare professionals to work together to optimise patient safety.

**Aim:** To improve quality of clinical handover in Paediatric department

### **Method:**

- A Multi-disciplinary project team was established who after literature search and team discussions developed following criteria which were deemed vital at every handover:
  - Senior Paediatrician leading handovers
  - Multidisciplinary team input (Medical & Nursing)
  - Standardized communication template/tool- ISBAR (Identify, situation, Background, Assessment, Recommendation)
  - 3 times per day at shift changeover (9am, 5pm & 9pm)
  - Bleep free, protected time (30- 45 min)
  - Dedicated handover space –Away from wards
- PDSA cycle was used as QI methodology.
- Random Audits planned throughout the project. A staff survey was also planned.

### **Results:**

- From Jan 2017, multiple improvements were made including MDT involvement, Senior Paediatrician leading every handover in a dedicated space on ISBAR Template.
- Additional measures were incorporated such as inclusion of “Safety Brief” at every handover.
- Quantitative Measurements: Random Handover Audits were performed during June 2017 -

#### **Findings:**

- **Multidisciplinary-** MDT for 9am & 5pm- Achieved 100%. But 40% achieved at 9pm – Due to insufficient nursing staff available.
- **Leadership :** Consultant led- 75%, Senior Paediatrician (Consultant or Sp. Doctor) led- Achieved 100%
- **Standardised template :** ISBAR color coded template- Achieved 100%
- **Time allocation** – 30 min for update and 45 min for handover- Achieved 75%
- **Dedicated space** –Away from wards- 100%
- **Bleep free;** Achieved 50% of the time

### **Conclusion & Recommendations:**

- Quality of clinical handovers have improved, most notably in standardization, communication and Multi-disciplinary input. Challenges remain for Bleep free dedicated time and for Nursing input at night handover.
- Due to vital nature of this process, continuous monitoring and improvements are required.
- We recommend re-auditing in 6 months to quality assure the process.

**Reference:** Communication (Clinical Handover) in Acute and Children's Hospital Services, DOH, Nov15

**Presentation Time: 09.00-09.10 – Saturday 9 December**

**SPIRITUAL CARE IN NEONATOLOGY: ANALYSIS OF EMERGENCY BAPTISMS IN AN IRISH NEONATAL UNIT OVER 15 YEARS.**

**F Caulfield<sup>1</sup>, OA Ihidero<sup>1</sup>, M Carroll<sup>2</sup>, M Dunworth<sup>2</sup>, M Hunt<sup>3</sup>, D McAuliffe<sup>4</sup>, RK Philip<sup>1</sup>**

<sup>1</sup>Division of Neonatology, Dept of Paediatrics, University Maternity Hospital Limerick

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<sup>3</sup>Counselling services, University Maternity Hospital, Limerick, Ireland

<sup>4</sup>Our Lady of Rosary Parish, Ennis Road, Limerick, Ireland

**Background:** Emergency baptism remains an important emotional and spiritual element for many parents of critically ill infants in neonatal intensive care units. There is no published Irish data available as to which babies are baptised or their outcomes.

**Objectives:** To evaluate trends, outcomes and characteristics of newborn infants baptised over a fifteen-year period in an Irish university maternity hospital.

**Methods:** Retrospective study of infants baptised in University Maternity Hospital Limerick (UMHL) over a fifteen-year period. Patients were identified from the 'register of baptisms' for the years 2002 -2016. Audit committee approval was sought prior to commencement of the study and statistical analysis was done with SPSS® software.

**Results:** 354 patients were identified and further information was available for 341. Emergency baptisms declined over the 15-year period. 114 (32.2%) infants were term and 199 (56.2%) preterm. 288 infants (81.5%) were baptised by a priest, 61 (17.3%) by a staff member, 1 (0.3%) by a family member and in 3 cases (0.9%) the person baptising was unrecorded. Day of baptism varied from 1 to 88 with a mean age at baptism of 4.6 days. 113 (31.9%) babies died after baptism. Majority of babies baptised were preterm and low birth weight, with a predominance of extremely low birth weight (ELBW) infants who also had proportionately higher mortality following baptism 47 (47.5%). A 'multi-faith neonatal spiritual support information' for the families is being developed and a re-audit is proposed to assess the implementation of the same in one year.

**Conclusions:** Emergency baptism remains an important element in the spiritual care of the critically ill infant. Maternity hospitals and Neonatal units should have access to emergency baptism service or other equivalent 'spiritual blessings' as appropriate to the faiths followed by the family, especially in an emerging multi-faith Irish population.

1. Windau, V., & Dewitt, P. J. (1988). Emergency baptism by nurses in an NICU: answering a spiritual need. *Neonatal Netw*, 7(1), 57-62.
2. Campbell, A., & Campbell, D. (2005). Emergency baptism by health professionals. *Paediatr Nurs*, 17(2), 39-42.
3. Watkins, D. A. (2001). Emergency baptism of the critically ill or stillborn child. *Emerg Med Serv*, 30(4), 72-73.
4. De Lisle-Porter, M., & Podruchny, A. M. (2009). The dying neonate: family-centered end-of-life care. *Neonatal Netw*, 28(2), 75-83

**Presentation Time: 09.10-09.20 – Saturday 9 December**

**SERIAL CYTOKINE RESPONSES TO ENDOTOXIN IN NEONATAL ENCEPHALOPATHY**

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**Aim:** Systemic inflammation has been implicated in the pathophysiology of Neonatal Encephalopathy (NE). We aimed to profile systemic pro and anti-inflammatory cytokines in infants with NE undergoing therapeutic hypothermia (TH) in comparison to healthy term controls and the responses to endotoxin.

**Methods:** Infants with NE, Sarnat Stage 2 and 3, requiring TH in two tertiary NICUs had serial serum cytokines analysed during TH and were compared with healthy term infants. A selected panel of pro and anti-inflammatory cytokines were evaluated post endotoxin stimulation via multiplex cytokine analysis. The panel included interleukin(IL)-1 $\alpha$ , IL-1 $\beta$ , IL-1RA, IL-2, IL-6, IL-8, IL-10, IL-18, Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF), Interferon Gamma (IFN- $\gamma$ ), Tumour Necrosis Factor (TNF) - $\alpha$ , TNF- $\beta$ , Erythropoietin (EPO) and Vascular Endothelial Growth Factor (VEGF).

**Results:** IL-18 and TNF- $\beta$  were significantly elevated in response to endotoxin stimulation in NE (n=28) in comparison to controls (n=16;  $p = 0.023$ ,  $p = 0.01$ ). In addition, IL-1RA and VEGF were significantly higher in NE in response to endotoxin than in control groups ( $p = 0.0005$ ,  $p = 0.0008$ ). Pro-inflammatory cytokines IFN- $\gamma$ , IL-1 $\beta$ , IL-6, TNF- $\alpha$  were higher in controls compared to NE ( $p = 0.029$ ,  $p = 0.013$ ,  $p = 0.04$ ,  $p = 0.021$  respectively). Increased concentrations of all pro and anti-inflammatory cytokines were observed in both NE and control serum following endotoxin stimulation. There was no statistically significant difference in EPO, GM-CSF, IL-10, IL-1 $\alpha$ , IL-2 and IL-8 levels in NE serum compared to controls post endotoxin stimulation.

**Conclusion:** Serum pro and anti-inflammatory cytokines are upregulated following endotoxin stimulation. This is altered in NE in comparison to healthy term controls. Understanding the inflammatory response in NE will inform the development of predictive biomarkers and immunomodulatory adjunctive therapies.

**Presentation Time: 09.20-09.30 – Saturday 9 December**

**Perinatal Survival following Helping Babies Breathe Training and Regular Peep-Peer Skills Training in Sudan**

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**Background:** Over 80% of deliveries in Sudan occur in rural areas, attended by village midwives (VMs). Upgrading their newborn resuscitation skills with the Helping Babies Breathe (HBB) program could improve perinatal mortality as seen in studies from other resource-limited countries.

**Objective:** To determine the impact of HBB on resuscitation practices and perinatal mortality, pre- and post-HBB training.

**Methods:** In a prospective community-based intervention study, 71 VMs in the East Nile Area received HBB training. Outcomes of interest included changes in the resuscitation practices of VMs and perinatal mortality rates which were documented before (Jan to June 2013) and after HBB training (X to Y 2014).

**Results:** Seventy-one VMs conducted a total of 4350 home deliveries during the study period, 1350 before and 3040 following HBB training. There were no significant differences between mothers pre- and post-HBB as regards to maternal age, **parity**, maternal years of education, or **area of birth**. According to VMW self-reports, drying of the newborn at birth increased almost ten-fold (8.4%, n=113 to 74.9%, n=1011) while suctioning of the mouth decreased five-fold (80.3%, n = 2442 to 14.4%, n = 437, following HBB training). There were 56 deaths during the study period; 35 stillbirths and 31 neonatal deaths. Stillbirths rates decreased from 10.5 to 3.3 per 1000 birth (Pearson  $\chi^2(1) = 8.6209$  Pr = 0.003) while early newborn death rates decreased from 13.5 to 4.3 per 1000 live births (Pearson  $\chi^2 = 10.9369$  Pr = 0.001) in the pre- and post-HBB intervention phases, respectively.

**Conclusion:** HBB implementation was associated with positive changes in newborn resuscitation practices and improvements in perinatal mortality. HBB could potentially have immense benefits on infant, and possibly on maternal health if propagated nationally to all 17,000 VMs in Sudan

**Presentation Time: 09.30-09.40 – Saturday 9 December**

**INCIDENTAL FINDINGS ON ROUTINE TARGETED NEONATAL ECHOCARDIOGRAPHY PERFORMED IN PRETERM INFANTS LESS THAN 29 WEEKS GESTATION**

**A Smith**<sup>1</sup>, C Breatnach<sup>1</sup>, A James<sup>1</sup>, O Franklin<sup>2</sup>, A El-Khuffash<sup>1</sup>

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<sup>2</sup>Cardiology, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland

**Background:** With the growing use of targeted neonatal echocardiography (TnECHO) the discovery of incidental findings is increasing.

**Aim:** The aim of this study was to quantify the rate of incidental findings identified on elective research echocardiograms performed on infants less than 29 weeks gestation.

**Methods:** This was a retrospective study of echocardiograms performed within the first 24 hours of age on infants less than 29 weeks gestation over a three year period for research purposes.

**Results:** Echocardiograms performed 145 infants were respectively reviewed. Forty three (30%) infants had a total of 54 (37%) unexpected findings. The vast majority comprised of malpositioned UVCs where the tip was identified in the left atrium. The rate of CHD was 10%, the commonest being an atrial septal defect. One infant had an incidental finding of total anomalous pulmonary venous drainage, and another with transposition of the great arteries. The remainder of the findings included liver haematomas, pericardial effusions and unexpected PH [TABLE 1]. The presence of unexpected findings on TnECHO was independently associated with chronic lung disease or death when controlling for gestation [Adjusted OR 3.6 (95%CI 1.4 – 9.6)].

**Conclusions:** There is a high rate of unexpected findings discovered on screening echocardiograms in preterm infants less than 29 weeks gestation. Malpositioned UVCs when deep are more likely to be found in the left rather than the right atrium contrary to common knowledge. This is likely due to the persistent fetal channels directing inferior vena cava flow across the foramen ovale. Routine TnECHO screening of preterm infants may be warranted to identify the high likelihood of unexpected findings.

Table 1: Rate and type of unexpected findings

Complication	Frequency
Overall unexpected pathology	54 (37%)
Number of infants with pathology	43 (30%)
Total number of infants with a UVC inserted	87 (60%)
Malpositioned UVC identified on TnECHO	24/87 (28%)
Tip in Left atrium	18/24 (75%)
Tip in the Right Atrium	2/24 (8%)
Tip in the Liver	4/24 (17%)
Liver Haematomas	4/87 (17%)
Congenital Heart Disease	15 (10%)
Atrial Septal Defect (number, proportion, median size in mm)	7/15 (47%), 5.2 [4.5-5.2]
Ventricular Septal Defect (number, proportion, median size in mm)	4/15 (27%), 2.3 [1.7-3.1]
Pericardial Effusion	3 (2%)
Unexpected pulmonary hypertension	5 (3%)

Unless stated, the denominator for the values is 145.

***Presentation Time: 09.40-09.50 – Saturday 9 December***

**MYOCARDIAL DEFORMATION AND ROTATIONAL MECHANICS IN INFANTS WITH DOWN SYNDROME IN THE EARLY NEONATAL PERIOD**

**CR Breatnach**<sup>1</sup>, N Bussman<sup>1</sup>, A Smith<sup>1</sup>, PT Levy<sup>2</sup>, N McCallion<sup>1</sup>, O Franklin<sup>3</sup>, A El-Khuffash<sup>1</sup>

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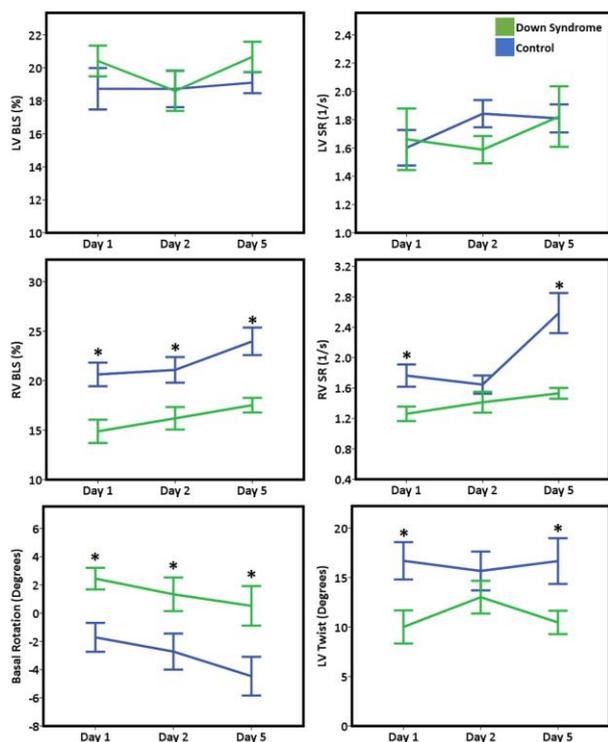
<sup>3</sup>Department of Cardiology, Our Lady's Children's Hospital Crumlin, Dublin, Ireland.

**Aims** The impact of Down syndrome on myocardial performance measured using deformation imaging and pulmonary hypertension (PH) in the neonatal period requires exploration. We aimed to assess PH and measure left (LV) and right (RV) ventricular function using deformation imaging in neonates with DS (without structural heart disease) over 5 days of age.

**Methods** Echocardiograms were performed on Days 1, 2 and 5 to measure LV and RV dimensions, LV basal longitudinal strain (LV BLS) and systolic strain rate (LV SR), RV free wall basal longitudinal strain (RV BLS) and systolic SR (RV SR), and LV rotational mechanics. PH was assessed by examining ductal (PDA's) shunting and tricuspid regurgitation (to estimate RV systolic pressure, RVSp). Values were compared with healthy controls.

**Results** 17 infants with DS with a mean ± SD gestation & birthweight of 38.4±2.1 weeks and 3.1±0.5 Kg respectively were compared with 16 controls (38.3±2.0 weeks & 3.3±0.5 Kg). On Day 1, infants with DS had a higher proportion of b THE TRAIN STUDY: TRANSFUSION IN NEONATES AND IDEAL RED CELL VOLUME STUDY, A RANDOMIZED CONTROLLED STUDY: ISRCTN68861901idirectional PDAs (100% vs. 20%, p<0.01), a higher RVSp (35vs. 18 mmHg, p=0.03). Infants with DS had lower RV BLS and RV SR over

the three time points. Infants with DS had impaired LV basal rotation on Day 1, 2 and 5 resulting in significantly lower LV twist.



**Conclusion** Infants with DS demonstrate elevated pulmonary pressures during the early neonatal period translating into lower RV function measured using deformation imaging. They also demonstrate impaired twist driven by reduced basal rotation. The clinical implications warrant further study.

**Presentation Time: 09.50-10.00 – Saturday 9 December**

**THE TRAIN STUDY: TRANSFUSION IN NEONATES AND IDEAL RED CELL VOLUME STUDY, A RANDOMIZED CONTROLLED STUDY: ISRCTN68861901**

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**Aim:** There are different guidelines to calculate red blood cell (RBC) replacement volume in neonates, ranging from 5 ml/kg up to 20 ml/kg RBC volume to be transfused. We aimed to investigate which method is more reliable in achieving the desired Haemoglobin (Hb) from a single blood transfusion in infants < 32 weeks gestation admitted to the Neonatal Intensive Care Unit (NICU).

**Methods:** Preterm infants < 32 weeks gestations were enrolled if they were admitted to the Neonatal Intensive Care Unit, required a RBC transfusion and parental consent was obtained. Infants were excluded if there was evidence of active bleeding, intraventricular haemorrhage (IVH) grade ≥III or more at the time of transfusion, <24 hours post surgical intervention, ABO/Rh incompatibility or Disseminated Intravascular Coagulopathy. Each infant was then randomized to either the standard practice of calculating RBC volume (RBC volume= 20ml/kg) or to the intervention volume calculation (RBC volume= 5 X working weight X [Hb desired - Hb current]).

**Results:** Sixty three infants were randomized, 55 infants had values for both the post-transfusion Hb and the target Hb. A chi-square test was used to determine if there was an association between the group to which the infant was randomized and whether they achieved the target Hb level. 21 (84.0%) of the 25 infants in the control group achieved the target Hb level, and 20 (66.7%) of the 30 infants in the intervention group achieved the target Hb level. Testing at a 5% significance level, there is no significant difference between the control and intervention groups in the proportion of infants who achieved the target Hb level ( $p = 0.142$ ,  $df=1$ ).

**Conclusion** There was no significant difference between the 2 methods of RBC volume calculation in achieving the target Hb. The simpler calculation method of 20ml/kg may be the optimum method as less chance of calculation error.

***Presentation Time: 10.00-10.10 – Saturday 9 December***

**NEONATAL OUTCOMES OF EARLY ONSET SEVERE GROWTH RESTRICTION.**

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<sup>2</sup>Department of Fetal Medicine, Rotunda Hospital, Dublin 1

**AIMS:** Severe early onset growth restriction (GR) presents a management dilemma for the perinatal team. Balancing gestation and birthweight against the odds of an intrauterine death is challenging. Realistic and informed expectations of perinatal outcomes are important for shared decision making regarding intervention. To investigate the neonatal outcomes in the context of severe early onset GR and enteral feeding.

**METHODS:** A total of 43,231 deliveries at a tertiary referral centre in the Republic of Ireland over a 5-year period (2012-2016 inclusive) were reviewed. Cases where the estimated fetal weight (EFW) was less than the 5<sup>th</sup> centile at <28 weeks were identified and electronic databases and medical records interrogated.

**RESULTS:** There were 77 pregnancies in 76 women that met the inclusion criteria. There were 41 pregnancies resulting in delivery at viable gestation; 22 singletons and 19 sets of twins or higher order multiples resulting in 59 live born infants. Antenatal steroids were received in 24 (58.5%) cases, steroids were administered on 14 days prior to delivery (1-42). The average birthweight was 1.18kg and average gestation 30+2 weeks (24+6 – 38+6). Average time to first enteral feed was 32 hours (50 minutes – 169 hours) with average time to full enteral feeds was 13.7 days. Breast milk was the initiating feed in 53 (89%) of infants. Necrotising enterocolitis (NEC) was diagnosed in 10 (16.9%) infants during intensive care stay, 1 case required surgical intervention. There were 7 (11.8%) deaths prior to neonatal unit discharge.

**CONCLUSION:** Severe early onset growth restriction is well recognised as being associated with necrotising enterocolitis and prompts caution in NICU's in commencing enteral feeding. Significant delays in commencing enteral feed were identified. However, the ADEPT study demonstrated that early introduction of enteral feeds does not appear to increase risk of NEC in this cohort, encouraging earlier introduction of enteral feed<sup>1</sup>.

Early or delayed enteral feeding for preterm growth-restricted infants: a randomized trial. Leaf A, Dorling J, Kempsey S, McCormick K, Mannix P, Linsell L et al. *Pediatrics*. 2012 May;129(5):e1260-8. r 9.

**Poster No.187a - Neonatal**

**Reducing Preventable Harm: Attitudes toward Patient Safety in an Irish Tertiary Neonatal Unit**

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**Introduction:** Ensuring patient safety is a vital component of any high quality healthcare service. There is little published research investigating interventions to improve safety culture in neonatal units. This study aimed to explore the safety culture that exists within a level III Irish neonatal unit.

**Methods:** This was a quantitative, cross-sectional study which was performed in the Rotunda Hospital, Dublin, with a birth rate of ~8,500 per annum. Data collection took place between July 2016 and March 2017. A 30 item safety attitudes questionnaire (SAQ) was utilized to analyze staff perceptions in six areas: the teamwork climate, the safety climate, the perceptions of management, job satisfaction, working conditions and stress recognition, with a 5-point Likert response scale ranging from 1 (disagree strongly) to 5 (agree strongly). The scores were then transformed to a numerical 100 point scale (Positive score>75).

**Results:** The 'Stress Recognition' domain received the highest score (75.3) followed by 'Job Satisfaction' domain (74.4). The 'Teamwork Climate' domain showed a mean score of 71.2 followed by the 'Safety Climate' domain with a mean score of 68.2. The 'Working Conditions' domain had a mean score of 59.6. The lowest mean scale score was for 'Perceptions of Management' (50.7): 42% agreed that administration supported their daily efforts, with a significantly high percentage agreed that staffing levels were insufficient to handle the number of patients. Internal consistency of the six factors via Cronbachs alpha ranged from 0.43 to 0.78. Collaboration and Communication scores were high across all disciplines at 76%.

**Conclusion:** This SAQ has brought to light a number of important areas for quality improvement and staff satisfaction in our neonatal unit. Importantly, this study highlighted that the Rotunda neonatal unit scored higher for all domains when compared to international benchmarked data, reflecting well on the hospital risk management programme.

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***Presentation Time: 11.20-11.30 – Saturday 9 December***

### **CONGENITAL CARDIAC DEFECTS ASSOCIATED WITH 22Q11.2 DELETION SYNDROME: A NATIONAL COHORT STUDY**

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<sup>2</sup>National Centre for Medical Genetics, Our Lady's Children's Hospital Crumlin, Dublin 12, Ireland

**Aims:** 22q11 Deletion Syndrome is a chromosomal microdeletion disorder, characterised by impaired communication, subtle facial features, and a typical cognitive and behavioural profile. Between 50-85% of affected individuals have congenital heart disease, especially conotruncal defects. We evaluated data collected over 50 years at a single institution, to characterize the spectrum of congenital heart disease in patients with 22q11.2 deletion syndrome in Ireland.

**Methods:** This retrospective study included patients with 22q11.2 deletion syndrome evaluated between 1960 and July 2017. The diagnosis was established by detection of the 22q11.2 microdeletion using FISH or microarray. Cardiovascular abnormalities were detected by conventional echocardiography. The frequency of each cardiovascular anomaly was demonstrated as a percentage.

**Results:** During the study period, there were two hundred and seventy eight children genetically diagnosed with 22q11.2. Of those, echocardiography data was available on one hundred and thirty six patients. A diagnosis of congenital heart disease was made in one hundred and five (77.21%) patients. Fifty-eight (42.65%) patients had single cardiac defects; forty-seven (34.56%) had multiple. Seven (5.15%) patients had interrupted aortic arch (IAA) with ventricular septal defect (VSD); five (3.68%) patients had pulmonary atresia, VSD, major aortopulmonary collateral arteries (MAPCAs) and five (3.68%) patients had an atrial septal defect(ASD) with VSD. Fifteen (11.03%) patients had tetralogy of fallot(TOF), as a single defect.

**Conclusion:** This is the first known national cohort study of congenital heart defects associated with a genetically confirmed diagnosis of 22q11.2 deletion syndrome. The prevalence of congenital heart defects in this population was 77.21%. The most common multi-defect congenital heart diseases identified in an Irish population of patients with 22q11.2 deletion syndrome were IAA/VSD, pulmonary atresia/VSD/MAPCAs and ASD/VSD. The most common single cardiac defect in this population was TOF.

***Presentation Time: 11.30-11.40 – Saturday 9 December***

### **EARLY IMPACT OF ROTAVIRUS VACCINATION IN AN IRISH PAEDIATRIC EMERGENCY DEPARTMENT**

**J Coveney<sup>1</sup>, P Fitzpatrick<sup>1</sup>, N Kandamany<sup>1</sup>, R Mc Namara<sup>1</sup>, I Okafor<sup>1</sup>**

<sup>1</sup>Emergency Department, CUH Temple Street, Dublin , Ireland

**Aims:** In the developed world, acute gastroenteritis (AGE) is responsible for important morbidity in children, especially in infants<sup>1</sup>. The leading cause of severe AGE in infants and young children worldwide is rotavirus<sup>2</sup>. In Ireland, rotavirus has a well-documented seasonal pattern with a peak in cases in early spring<sup>3</sup>.

RV1 (Rotarix GlaxoSmithKline Biologicals [GSK]) is an oral monovalent live attenuated human rotavirus vaccine, given in a two-dose course at approximately 2 and 4 months of age. Internationally, vaccination has been shown to significantly reduce the number of infants and children presenting to emergency departments (EDs) with AGE<sup>4</sup>. RV1 was added to the Irish National Immunisation Schedule for all children born after the 30<sup>th</sup> of September 2016.

This study aims to assess the impact of vaccination on ED attendances and hospital admissions following vaccine introduction.

**Methods:** A retrospective search was performed of ED electronic records to count weekly presentations with AGE in the first 30 weeks of the years 2012-2017. An ED presentation was defined as being for AGE if the primary diagnosis was recorded using codes for gastroenteritis. Counts were stratified by age. Median weekly presentation and admission counts in the pre-vaccination period (2012-2016) were compared with the 2017 season.

**Results:** Median weekly presentations in 2017, 66 (interquartile range [iqr] 47-80) were lower than in the previous five years 67 (iqr 48-88) (p=.30). A significant reduction was seen in median presentations in those aged <6 months (5.5 [iqr3-7] vs 6 [iqr 4-8] p=.04) and between 6 and 12 months (9 [iqr 8-13] vs 11 [iqr8-15] p=.03).

**Conclusion:** A significant reduction in ED presentations with AGE in the partially-vaccinated group is shown in the first season post-vaccination. These results are consistent with results internationally and are likely to represent the early impact of vaccination on ED presentations in Ireland.

	2017 (n=30)	2012-2016 (n=150)	P-Value
0-16 years (All presentations)	66 (47-80)	67 (48-88)	0.30
< 6 months	5.5 (3-7)	6 (4-8)	0.04
6 months to < 12 months	9 (8-13)	11 (8-15)	0.03
12 months to < 18 months	11 (7-14)	10 (5-14)	0.31
18 months to < 2 years	6.5 (4-9)	7 (3-12)	0.08
2 years to < 3 years	7.5 (4-10)	8 (5-12)	0.20
3 years to < 4 years	5 (3-7)	4.5 (2-6)	0.20
4 years to < 5 years	3 (2-5)	4 (2-6)	0.17
5 years to < 10 years	11 (7-14)	9 (7-13)	0.18
10 years to < 16 years	5 (4-7)	5 (3-6)	0.03

Table: Median (interquartile range) weekly presentations with AGE (2017 Vs 2012-2016)

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**Presentation Time: 11.40-11.50 – Saturday 9 December**

**THE SPECTRUM OF HEAD INJURY PRESENTING TO DUBLIN PAEDIATRIC EMERGENCY DEPARTMENTS**

**E Ryan<sup>1,2</sup>, I Okafor<sup>3</sup>, C Blackburn<sup>4</sup>, MJ Barrett<sup>4,5</sup>, E Molloy<sup>1,2</sup>, T Bolger<sup>1</sup>**

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<sup>4</sup>Emergency Department, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland

<sup>5</sup>National Children's Research Centre Ireland

**Aims:** To determine the burden and aetiology of head injury with associated traumatic brain injuries (TBIs) presenting to paediatric emergency departments (PEDs) in Dublin.

**Methods:** Retrospective analysis of presentations of children 0-16y to the 3 Paediatric Emergency Departments (PEDs) over 24 months. Diagnoses of head injury, intracranial bleed, skull fracture and those re-attending with the same complaint within 28 days were included. Emergency Department Information System (EDIS) and radiology NIMIS information systems were interrogated. Demographics, mechanism of injury, CT ordering and discharge destination were recorded. National demographic data was extracted from the 2016 national census.

**Results:** Head injury was diagnosed in 13,336 of 224,860 (5.9%) presentations to Dublin PEDs over 24 months. Median (range) age of presentation was 5.3 (0-16) years. The age profile was: <1y; n=1705 (12.8%), 1-4.9y; n=6424 (48.2%) 5-11.9y; n=3673 (27.6%), 12-16 y; n=1970 (14.8%). From age 5y, males predominate. In the 1-4.9y group the rate of presentation is 2.95%, i.e. 3212 preschoolers/yr for a population of 108,868 that age in the catchment area.

Number admitted, transferred or reviewed was n= 1460(10.810.8 %) with a neuroimaging rate of 4.4%. The triage category was 4 or less in 6718 (50%). The place of accident was known in n=5298 (39.5%). Accidents occurred at home in n=3325 (62.7%). In those with known mechanisms (52%), falls were

predominant; n=3315(47.5%) particularly from a height (n=1925) including from beds (n=298). Sport emerges in the adolescent age group, n=619 (49%).

**Conclusion:** Preschool children have the highest incidence of head injury with the majority of injuries following a fall. Triage category was low- access to good quality head injury information for parents may prevent many presentations. Sport accounts for a significant number of injuries in older children. Standardised reporting would improve information on demographics and mechanisms and allow targeted interventions in each age-group

**Presentation Time: 11.50-12.00 – Saturday 9 December**

**Antibiotic sensitivity pattern in a Paediatric Cohort with Urinary tract infection: Are we using the “ideal” first choice antibiotic?**

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<sup>3</sup>Paediatrics and child health University college cork Ireland

**Aims:** Urinary tract infection (UTI) is a common infection in the Paediatric age group. UTI has long-term complications if not adequately treated. The aims of this study were to evaluate the antibiotic sensitivity pattern in positive urine culture and to determine if the first line antibiotic of choice is justifiable.

**Methods:** The data of children aged 16 years and below with suspected UTI from January 2014 to December 2016 were analyzed. A diagnosis of UTI was defined by a positive clean catch urine culture of greater than 10<sup>5</sup> single colony organism. The culture results of bag urine samples and mixed growths were excluded. The sensitivities of five antibiotics (amoxicillin, augmentin, cephalexin, trimethoprim, and nitrofurantoin) were calculated.

**Results:** 423 children were admitted over the 3-year-period with suspicion of UTI as coded by the Hospital In-Patient Enquiry (HIPE) system. 216 children, {120 female(55.55%) and 97(44.9%) male }had UTI as defined by this study.. 22.2%(48/216) were less than 3 months, 53.7%(116/216) between the ages of 3 months and 2.99 years and 24.5%(53/216) between the ages of 3 years and 16 years. The most predominant isolated organism was E.coli 93%(202/216). The antibiotic sensitivity pattern revealed 95%, 94%, 82%, 74%, 36.5% for nitrofurantoin, cephalexin, augmentin, trimethoprim, and amoxicillin respectively.

**Conclusion:** Cephalexin is the most sensitive antibiotic in this study population. It is a reasonable first choice antibiotic for UTI treatment. Resistance to amoxicillin and augmentin is demonstrated in this study.

**Presentation Time: 12.00-12.10 – Saturday 9 December**

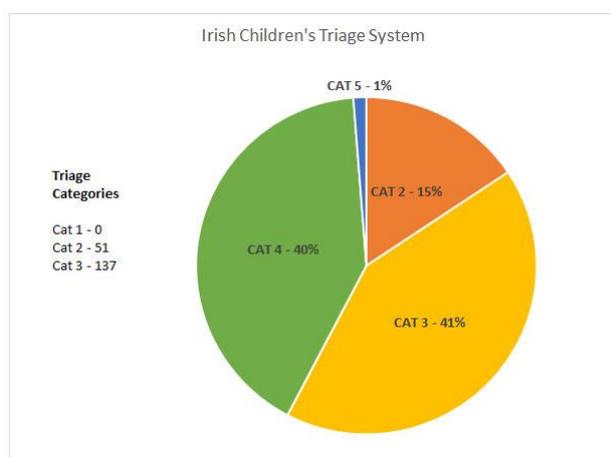
## **AN OBSERVATIONAL SNAP SHOT OF NON-ADMITTED GP REFERRALS TO A PAEDIATRIC EMERGENCY DEPARTMENT**

**J Finnegan, C Blackburn**

<sup>1</sup>Emergency Department, Our Lady's Children's Hospital, Dublin.

**Aims:** To assess referrals to the paediatric emergency department (PED) at Our Lady's Children's Hospital Crumlin (OLCHC) from GPs and out of hours services who did not ultimately require hospital admission. We aimed to outline the reason for referral, time spent in department and assess if treatment was required.

**Methods:** Data was collected from the ED Information System *Symphony* database and ED case notes. Two 7 days periods in January and February 2017 were chosen as representative samples for Winter data. A Microsoft Excel database was used.



**Results:** There were a total of 336 GP referrals in the selected time frame who did not require admission to hospital. The age range was 11 days to 16 years. 203 patients (60%) were aged less than 6 years. 7 patients (2%) were neonates. The median time in PED was 201 minutes (19-794). Patients were triaged according to the Irish Children's Triage System (ICTS). The commonest reasons for referral were 'respiratory' (14%), followed by 'limb' (13.4%), 'unwell child' (10.4%) and 'abdominal pain' (9.5%). Of 336 patients referred, 101(30%) required no intervention in PED. 70(21%) had an urine dipstick. 51(15%) had phlebotomy performed.

17(5%) had swabs taken. 20(6%) had wound closure. 69 x-rays were performed, 34 of these were of a limb. 16 of these patients were referred to the fracture clinic. 30 chest x-rays were performed.

### **Conclusion:**

Of 336 patients referred, 30% required no acute intervention. 21% had imaging performed. Over half of patients (56%) received initial high acuity triage categories (Cat 2 or 3), but did not ultimately require admission. This likely reflects the incorporation of vital signs into ICTS as a discriminator for initial prioritisation of medical review.

The study identifies a cohort of patients who may be suitable for attendance to the urgent care centres when established, as 82% of referrals were designated to triage Cat 3-5 for whom likelihood of admission is lower than in acute categories 1 and 2.

**Presentation Time: 12.10-12.20 – Saturday 9 December**

## **HIGH FALLS FROM WINDOWS AND BALCONIES IN CHILDREN (2006-2011)**

**SP Lewis<sup>1</sup>, J Doyle<sup>1</sup>, AJ Nicholson<sup>1</sup>**

<sup>1</sup>Department of Paediatrics, Children's University Hospital, Temple Street, Dublin 1, Ireland

**Aims:** Young children are at risk of unintentional falls due to their lack of danger awareness and curious nature. Falls from heights more than two metres are associated with the significant risk of death and morbidity and contributed to 2.7% of injury related deaths in Ireland between 2006-2011. The aim of this study was to look specifically at falls from windows and balconies, identify demographics, injury type and severity and long-term outcome and to inform strategies for prevention.

**Methods:** This retrospective cohort study reviewed high falls from windows and balconies in children from 2010 to 2016 in Ireland. Data was obtained from submissions to the Trauma Audit & Research Network (TARN) database and analysed in Excel. Epidemiology, the types of injuries sustained, the injury severity score (ISS) and long-term neurological outcome were explored.

**Results:** Seventy-six high falls were recorded during the study period with twenty falls occurring from a window or balcony. Of these twenty children, eighteen were less than five years, with a median age of 2 years (range 1.0-7.6 years) and a male to female ratio of 2.3:1. In this patient cohort, there were two deaths, four children sustained moderate disability and fourteen had a good recovery according to Glasgow Outcome Score (GOS). The head was the most severely injured body part in 75% of falls (15/20). Injury severity score was greater than 15 in 65% (13/20) indicating moderate to severe injury. Most high falls were unsupervised and onto concrete. The two deaths were associated with falls from fourth and fifth floor windows.

**Conclusion:** High falls from windows and balconies, although infrequent, do occur and are largely preventable. Boys and children under 5 are at highest risk. Education on child safety, and environmental modifications such as window guards, and alteration of surfaces below windows may prevent death and serious injury in children.

1. Committee on Injury and Poison P. American Academy of Pediatrics. Falls from heights: windows, roofs, and balconies. Pediatrics 2001; 107:1188-91. 2. Freyne, B (et. al), "Epidemiology of high falls from windows in children", Irish Medical Journal Feb 2014 Vol. 107 No.2

**Presentation Time: 13.50-14.05 – Saturday 9 December**

**ESTABLISHING A NATIONAL DUCHENNE MUSCULAR DYSTROPHY DATABASE**

**E Forman**<sup>1,2</sup>, A Tobin<sup>1,3</sup>, G Nic Fhirleinn<sup>1</sup>, E Cuilligan<sup>1,3</sup>, S Moran<sup>1,3</sup>, D McDonald<sup>3</sup>, D O'Rourke<sup>1,2</sup>

<sup>1</sup>Neuromuscular Clinic, Central Remedial Clinic, Dublin 3, Ireland

<sup>2</sup>Dept of Neurology, Children's University Hospital, Temple Street, Dublin 1, Ireland

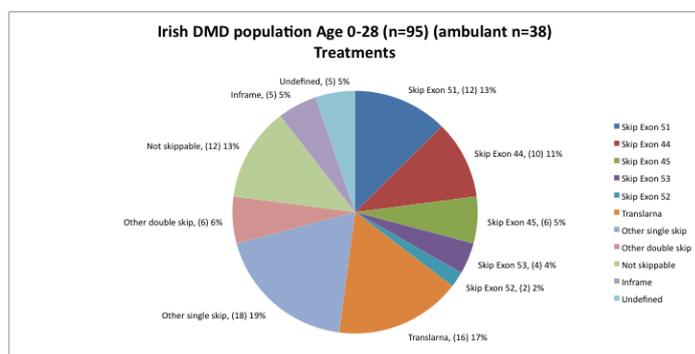
<sup>3</sup>Neuromuscular Clinic, National Children's Hospital, AMNCH, Dublin 24, Ireland

**Introduction:** The Neuromuscular Clinic at the CRC is the largest paediatric neuromuscular clinic in Ireland, where approximately 80% of Irish children with neuromuscular disorders attend. Two smaller neuromuscular disease clinics are in operation at the National Children's Hospital (NCH) in Tallaght and Cork University Hospital. Extensive research and clinical trials are ongoing to develop new treatment targets for DMD including but not limited to dystrophin exon skipping and antisense oligonucleotide treatment. National disease specific registries are essential to audit, to ensure appropriately care standards are being met and to easily select patients for clinical trials. Until recently no such Irish registry existed for children with Duchenne Muscular Dystrophy.

**Aim:** To establish and compile a national database of children with Duchenne Muscular Dystrophy with the aim of stratifying patients based on potential genetic treatment targets.

**Method:** Clinical databases at the neuromuscular clinics in CRC and NCH were compiled to start a national database of DMD patients in order to appropriately select patients for emerging treatments and clinical trials.

**Results:** 95 patients with DMD aged between 0-28 years were identified. 38 patients on the database were still ambulatory. 16 (17%) had a nonsense mutation which was potentially amenable to Translarna. Of those, two patients are currently eligible (over 5 years of age and still ambulatory). 12 (13%) have dystrophin mutations that are potentially amenable to exon 51 skipping and 10 (11%) have mutations that are amenable to exon 44 skipping. 12 (13%) have mutations not treatable by exon skipping.



**Chart 1: Irish DMD population stratified by potential genetically targeted treatments.**

**Discussion:** In Irish patients, nonsense mutations are over represented compared to other reported cohorts (usually 10-13%). Translarna maybe an especially important treatment for Irish boys with DMD. Other dystrophin mutations which are potentially skippable are represented in a similar frequency in Irish populations when compared to other reported populations. This database will help effectively identify patients eligible for specific DMD clinical trials.

**Presentation Time: 14.05-14.20 – Saturday 9 December**

**Utility of Arm Span For Estimation Of GFR in Paediatric Population**

**Attia Kalim, Emma Kilbride, Peter Greally**

**National Children's Hospital Tallaght.**

**A Kalim, E Kilbride, P Greally**

<sup>1</sup>Paediatrics, National Children's Hospital Tallaght, Dublin, Ireland

**Aims:** The glomerular filtration rate (GFR) is widely considered the best overall index of kidney function in health and disease. Selistre et al has recommended the use of Schwartz equation to estimate the GFR in children due to its better prediction performance. This equation needs height of the children which can be difficult to obtain in a very sick obtunded child or in a child with physical disability. Our aim was to evaluate if direct substitution of arm span for height during interpretation of eGFR leads to any significant differences and to investigate the agreement between the two methods.

**Methodology:** This was a prospective observational study, including 100 paediatric patients aged 2 to 12 years attending Paediatric OPD of National Children's Hospital Tallaght for their evaluation and for blood tests including serum creatinine from 01/03/17 to 15/05/17. Height was measured by stadiometer and arm span measurements were taken by measuring tape. Informed consent was obtained. Serum creatinine was used to measure eGFR with the height and arm span. The level of agreement between the two measurements was assessed by Bland-Altman analysis. The statistical analysis of the results was performed using regression model.

**Results:** Mean eGFR measured by arm span was 99.37ml/min/m<sup>2</sup>, while mean arm span measured by height was 99.74ml/min/m<sup>2</sup>. Correlation co-efficient measured between two methods showed r=0.997, p<0.01. A Bland-Altman plot of the difference between the two methods showed Bias = 0.37. Limits of Agreement (1.96\*SD). Correlation R = 0.192 . Slope = 0.01.

**Conclusion:** We can conclude from this pilot study that arm span can be substituted for height for estimation of GFR, when standing height is difficult to obtain as there is a strong correlation and good agreement between the two measures.

**Presentation Time: 14.20-14.35 – Saturday 9 December**

**HEALTH AND DISEASE IN CHILDREN OF THE "IRISH TRAVELLER" COMMUNITY**

**PJ O'Reilly<sup>1</sup>, A Jenkinson<sup>1</sup>, T Martin<sup>1</sup>, B Power<sup>1</sup>, G Stone<sup>1</sup>, AM Murphy<sup>1</sup>**

<sup>1</sup>Department of Paediatrics, University Hospital Limerick, Ireland

**Background and Aims:** Irish Travellers are a Roman Catholic endogamous minority group believed to originate from the 12th century whose ethnicity was finally recognised by the Irish Government in March 2017. Latest estimates put their numbers at 40,129 on the Island of Ireland, 15,000 in the United Kingdom, 6,000 on Mainland Europe and 7,000 in America.

Our aim was to collate current data on morbidity and mortality of Traveller children with a view to planning of services and provision of healthcare for this population in our region.

**Methods:** A literature and database(s) search was conducted and relevant clinicians contacted in an effort to compile data on the complexity and heterogeneity of the modern Irish Traveller Community to inform appropriate action in the area of Traveller Child Health.

**Results:** Between 650 and 850 Traveller babies are born on the Island of Ireland every year. The infant mortality rate is 3.5 times that of the general population. 10 % of Traveller children are dead before their second birthday. Main causes of mortality are accidents, congenital malformations and inherited metabolic disorders. To date 93 different genetic disorders are reported, 82 of which the genetic basis is known. There are more than 60 founder mutations. The commonest disorders are Galactosemia, Hurler syndrome and I-Cell disease, the carrier frequency for which is 1/11, 1/11 and 1/15 respectively.

**Conclusion:** Our study highlights the huge disease burden imposed on these children by the combination of circumstances of poverty, increased frequency of genetic disorders in consanguineous communities, peripatetic lifestyle, nomadic mindset, superstition, stigma and distrust and provides useful epidemiological information with particular reference to the healthcare needs of minority groups marginalised in our society.

***Presentation Time: 14.35-14.50 – Saturday 9 December***

**A pilot study: implementing a structured amplitude integrated electroencephalography (aEEG) education programme in an Irish neonatal intensive care unit (NICU) setting**

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<sup>1</sup>The Department of Neonatology, The National Maternity Hospital, Dublin, Ireland

<sup>2</sup>The Department of Neonatology, The Rotunda Hospital, Dublin, Ireland

**Aims:** Use of aEEG to monitor brain function is standard of care for infants with suspected neurology in tertiary NICUs internationally. Duration and severity of abnormalities of aEEG tracings are highly predictive of subsequent neurologic outcome. Neonatal trainees have responsibility for the aEEG set-up, monitoring and interpretation with minimal formal training. The aim of the study was to evaluate baseline trainee knowledge of aEEG practice and to improve on this through a structured aEEG education programme.

**Methods:** Participants were neonatal trainees in a NICU setting. Out of 19 eligible trainees, 12 gave implied consent by completion of a pre-intervention questionnaire. This questionnaire collected demographic details and baseline knowledge of aEEG use, indications and interpretation. A structured education programme was established involving a didactic lecture, a training workbook, bedside teaching and an aEEG protocol session. An identical questionnaire was used to re evaluate the trainees' knowledge post intervention.

**Results:** The pre-intervention response rate was 63% (12/19). An assessment of aEEG indications and set-up showed a mean (+/-SD) score of 4.4/8 (+/-1.9) and 4.5/7 (+/-1.8) respectively. The mean score for aEEG interpretation was 7.5/20 (+/-3.7). Post intervention, the response rate was 58% (10/17). The mean scores for aEEG indications and set-up increased to 7.9/8 (+/-0.8) and 5.5/7 (+/-0.3) respectively. The mean score for aEEG interpretation increased to 16.2/20 (+/-0.9). The improvement in scores for aEEG indications and interpretation was statistically significant (p value <0.05).

**Discussion:** Interpretation and use of aEEG is an essential skill for neonatal trainees. Our project demonstrates poor baseline knowledge of aEEG use, indications and interpretation amongst neonatal trainees. After enrolment in a structured educational programme, there was an increase in mean scores across all measured domains.

***Presentation Time: 14.50-15.05 – Saturday 9 December***

**The Use of Speckle Tracking Echocardiography to Assess Myocardial Performance in Monochorionic Diamniotic Twins with Twin to Twin Transfusion Syndrome**

CR Breatnach<sup>1</sup>, N Bussmann<sup>1</sup>, D Vincent, AT James<sup>2</sup>, F Malone<sup>3</sup>, N McCallion<sup>1</sup>, O Franklin<sup>4</sup>, A El-Khuffash<sup>1</sup>

<sup>1</sup>Neonatology, The Rotunda Hospital, Dublin, Ireland

<sup>2</sup>Cardiology, The Hospital for Sick Children, Toronto, Canada

<sup>3</sup>Obstetrics and Gynaecology, The Rotunda Hospital, Dublin, Ireland

<sup>4</sup>Cardiology, Our Lady's Children's Hospital, Dublin, Ireland

**Aims:** Data on myocardial performance in monochorionic diamniotic (MCDA) twins during the early neonatal period is lacking. These infants are at risk of developing twin to twin transfusion syndrome (TTTS). We aimed to assess myocardial function using speckle tracking echocardiography (STE) in MCDA twins with and without TTTS. We hypothesise that infants exposed to TTTS would exhibit lower values for strain and strain rate measured using (STE) during the early neonatal period.

**Methods:** We performed a prospective observational study of 4 twin groups: Uncomplicated MCDA, MCDA twins with selective IUUGR, MCDA with TTTS in receipt of SLPCV (MCDA & LASER) and MCDA twins

with TTTS not receiving SLPCV (MCDA no LASER). Serial echocardiography was performed on day one, day two and between days 5 – 7 of life. Assessment of myocardial performance included the use of STE. **Results:** Forty seven twin pairs were enrolled in the study: 21 uncomplicated MCDA; 14 selective IUGR; 6 TTTS no LASER, and 6 TTTS & LASER. Recipient TTTS no LASER infants had lower LV and RV strain (which persisted throughout the first week. Function measurements in the Donor twins of all 4 groups were comparable. Function measurements in the TTTS no LASER donor group were significantly higher than the recipient counterparts.

**Conclusion:** This is the first study using STE to highlight the poor myocardial performance in MCDA twins exposed to TTTS who do not undergo SLPCV. This highlights the need for close monitoring of their haemodynamic status during the early neonatal period. Further study is warranted to explore this condition further.

**Table 1: Demographics and Day 1 Functional Measurements in the Larger Twin Set (Appropriately grown in the Selective IUGR Group and Recipients in the TTTS Groups)**

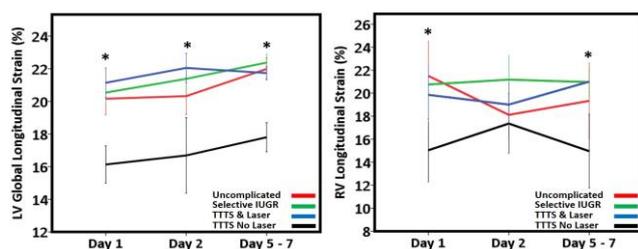
	Uncomplicated (n=21)	Selective IUGR (n=14)	TTTS No Laser (n=6)	TTTS & Laser (n=6)	p
Gestation (weeks)	35.9 [31.9-36.9]	31.6 [28.6-34.4]	29.3 [28.0-32.2]	34.0 [32.9-34.4]	0.03
Birthweight (g)	2410 [1555-2810]	1710 [1180-2052]	1550 [1097-1882]	2150 [1825-2345]	0.02
Caesarean Section	15 (71%)	11 (79%)	2 (33%)	4 (67%)	0.24
Male	6 (27%)	8 (57%)	3 (50%)	5 (83%)	0.08
5 Min Apgar Score	10 [9-10]	9 [9-10]	9 [9-10]	10 [9-10]	0.53
Hospital Days	5 [4-23]	19 [10-48]	39 [18-73]	6 [5-13]	0.04
LV Length (mm)	24 [22-27]	22 [20-25]	19 [17-21]	26 [23-27]	<0.01
LV GLS (%)	22.4 [20.3-24.6]	20.6 [17.5-22.5]	17.3 [13.2-18.4]	22.4 [20.7-23.1]	<0.01
LV SR (1/s)	2.0 [1.8-2.1]	2.0 [1.9-2.3]	1.7 [1.5-1.9]	1.9 [1.8-2.1]	0.08
RV Length (mm)	24 [20-27]	22 [19-23]	21 [19-26]	22 [20-24]	0.12
RVFw Strain (%)	24.3 [20.4-26.1]	22.6 [17.9-23.9]	13.8 [10.9-19.0]	20.6 [15.1-23.9]	<0.01
RVFw SR (1/s)	2.1 [1.8-2.5]	2.0 [1.8-2.5]	1.5 [1.2-1.8]	1.9 [1.4-2.2]	0.06

Data presented as medians [inter-quartile ranges] and count (%). LV: left ventricle; GLS: global longitudinal strain; SR: systolic strain rate; RV: Right ventricle; RVFw: RV free wall. IUGR: Intrauterine growth restriction; TTTS: Twin to twin transfusion syndrome.

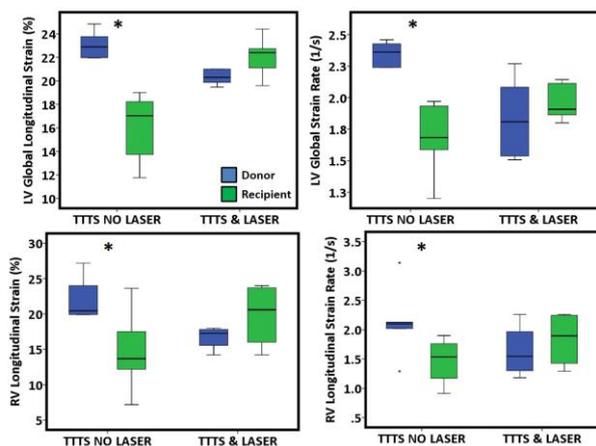
**Table 2: Demographics and Day 1 Functional Measurements in the Smaller Twin Set (IUGR infant in the Selective IUGR Group and Donors in the TTTS Groups)**

	Uncomplicated (n=21)	Selective IUGR (n=14)	TTTS No Laser (n=6)	TTTS & Laser (n=6)	p
Gestation (weeks)	35.9 [31.9-36.9]	31.6 [28.6-34.4]	29.3 [28.0-32.2]	34.0 [32.9-34.4]	0.03
Birthweight (g)	2110 [1500-2495]	1145 [750-1690]	1010 [792-1430]	1940 [1410-2202]	<0.01
Caesarean Section	15 (71%)	11 (79%)	2 (33%)	4 (67%)	0.24
Male	6 (27%)	8 (57%)	3 (50%)	5 (83%)	0.08
5 Min Apgar Score	10 [9-10]	9 [7-10]	8 [6-10]	10 [9-10]	0.07
Hospital Days	5 [4-24]	21 [6-45]	41 [5-105]	11 [5-14]	0.24
LV Length (mm)	24 [21-26]	20 [17-21]	18 [15-22]	23 [21-25]	<0.01
LV GLS (%)	22.9 [18.7-23.4]	21.2 [19.9-23.3]	22.8 [21.1-24.0]	20.3 [19.7-21.7]	0.60
LV SR (1/s)	1.9 [1.7-2.1]	2.1 [1.9-2.4]	2.4 [2.1-2.4]	1.8 [1.5-2.1]	0.02
RV Length (mm)	22.4 [19.9-25.1]	19.3 [16.5-22.2]	17.6 [15.6-19.1]	22.3 [19.4-23.1]	<0.01
RVFw Strain (%)	20.1 [16.9-23.4]	21.6 [19.3-25.9]	20.4 [16.1-25.6]	17.3 [14.9-17.9]	0.05
RVFw SR (1/s)	1.8 [1.5-2.0]	2.0 [1.8-2.2]	2.1 [1.7-2.6]	1.5 [1.2-2.1]	0.15

Data presented as medians [inter-quartile ranges] and count (%). LV: left ventricle; GLS: global longitudinal strain; SR: systolic strain rate; RV: Right ventricle; RVFw: RV free wall. IUGR: Intrauterine growth restriction; TTTS: Twin to twin transfusion syndrome.



**Figure 1: Change in LV and RV function in the Larger/Recipient twin of the four groups over the first week of age. Infants in the TTTS No Laser Group had lower LV and RV function throughout the study period. Values are presented as means and standard error. \*= $p < 0.05$  on one way ANOVA (Bonferroni adjustment).**



**Figure 2: LV and RV strain and systolic strain rate in the two TTTS groups.** The recipient twins of the TTTS no Laser Group have lower LV and RV function when compared with the donor twins. There are no differences in function between the recipient/donor twin pair of the TTTS & Laser Group. Wilcoxon signed rank test was used to test the differences. \*=p<0.05.

**Presentation Time: 15.05-15.15 – Saturday 9 December**

**A MACROPHAGE-SPECIFIC GENE THERAPY APPROACH TO RESTORING DEFECTIVE IL-10 RECEPTOR SIGNALLING FOUND IN VERY EARLY-ONSET INFLAMMATORY BOWEL DISEASE**

**AM Tou<sup>1</sup>, A McCabe<sup>2</sup>, C Brendel<sup>2</sup>, SM Frei<sup>3</sup>, SB Snapper<sup>3</sup>, DA Williams<sup>2</sup>**

<sup>1</sup>Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland

<sup>2</sup>Hematology and Oncology, Boston Children's Hospital / Dana Farber Cancer Institute, Boston, USA

<sup>3</sup>Gastroenterology, Hepatology and Nutrition, Boston Children's Hospital, Boston, USA

Very Early-Onset Inflammatory Bowel Disease (VEO-IBD) is a fatal intestinal disorder seen in infants that is associated with a loss-of-function mutation in the beta subunit of the IL-10 receptor (*IL-10Rβ*). This disease causes defective IL-10 signalling, which is normally crucial for reducing excessive pro-inflammatory signals. The main effector cells are macrophages, and thus our approach is designed to be highly-specific for these cells. Currently, haematopoietic stem cell transplantation (HSCT) is the only successful treatment but carries many risks such as Graft-versus-host disease. Therefore, the aim of this study is to show that gene therapy can be an ideal alternative treatment option.

Transgenic *IL-10Rβ*-deficient mice develop colitis within 2-3 months and were the chosen subject model. To alter the genetic information of deficient mice, haematopoietic stem cells from bone marrow were collected, lineage depleted, and transduced with engineered lentiviral vectors. Two vectors were created, both of which contained the corrected *IL-10Rβ*-transgene and one of the cell-specific promoters targeting either macrophages or all myeloid cells. Once transduced, lineage-depleted cells were re-differentiated into macrophages. To determine if IL10-Rβ function has been restored, macrophages were then stimulated with IL-10 and pSTAT3. Increased levels of pSTAT3 upon IL-10 stimulation would indicate a functioning receptor.

When stimulated with IL10, there was a significant increase in pSTAT3 signal in transduced macrophages, whereas no increase in signal was found in untransduced controls. These results showed that IL-10Rβ function was effectively restored in deficient mice when transduced with both the macrophage and the myeloid-specific lentiviral vector.

In conclusion, this research showed that IL-10Rβ function can be restored in IL-10Rβ-deficient mice by transducing lineage-depleted cells with macrophage and myeloid-specific lentiviral vectors. This supports that gene therapy has a large potential to replace high-risk therapies in children with VEO-IBD, and can eliminate a major component of the inflammatory pathway giving rise to this disease.

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**Presentation Time: 15.15-15.25 – Saturday 9 December**

**Poster No. 240**

**Medical Education, Management and Laboratory Medicine**

**AN EVALUATION OF THE EFFICACY OF A PRECISION TEACHING INTERVENTION TO TEACH LUMBAR PUNCTURE SKILLS TO PAEDIATRIC SENIOR HOUSE OFFICERS**

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Precision teaching focuses on teaching the student a skill to a level of “fluency” or master performance. Skills taught to the level of fluency are of a higher quality, retained longer, maintain the same high standard and are readily applied in other contexts. Traumatic Lumbar Punctures occur in approximately 20% of paediatric procedures leading to non -diagnostic taps, additional days admitted to the hospital, and overprescription of antibiotics.

Our study aimed to adapt the precision teaching methodology to teach Senior House Officers (SHOs) how to perform a Lumbar Puncture Procedure to a level of fluency. A simulation-based intervention incorporating repeated timed practice, corrective feedback and precision teaching was applied to eleven Paediatric SHOs. To begin a 24 step task analysis was developed for performing a Lumbar Puncture and the fluency criteria were established using a “Master” to provide a standard level. A baseline Lumbar puncture was performed by each SHO. Each SHO then used the task analysis protocol, peering tutoring and frequent timed practice to reach a level of competence followed by fluency (i.e. perform the task 100% accurately within 10% of the time of the Master). Having achieved this, a retention test was performed one month later and the stability of their performance was assessed by getting them to perform the task whilst distracted. A control group of Paediatric Registrars were used for comparison.

Results: Average training time to reach fluency was 96mins 15seconds. Mean percentage accuracy at final training trial was 100%. Mean percentage accuracy during retention trial was 90.92%. Mean percentage accuracy during stability trial was 99.3%. Precision based teaching is an efficient method of teaching SHOs procedural skills. 96minutes per Senior House Officer is easily attained. Improved performance has led to an increase in successful samples, a decrease in bloody taps, thus increased patient safety.

**Presentation Time: 15.25-15.35 – Saturday 9 December**

**MILD TRAUMATIC BRAIN INJURY: DOCTORS' BASELINE KNOWLEDGE IN PAEDIATRIC HOSPITALS**

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**Aims:** We aimed to assess the familiarity of physicians working in tertiary Paediatric hospitals with the assessment and management of mild traumatic brain injury (mTBI)/concussion in children. We planned to compare doctors' knowledge of current practice guidelines to allow improvements through tailored educational intervention modules.

**Methods:** A cross-sectional questionnaire survey was conducted and responses returned anonymously. The design of the study-specific questionnaire was informed by the literature on TBI in children. The self-administered questionnaire consisted of demographic information and attitudinal items using a six point Likert-type scale.

**Results:** There were 53 respondents and 62% had >5yrs experience. And 47% reviewed children with head injury at least weekly. While 78% perceived they knew and understood what concussion was 44% did not feel competent in assessing concussion. 69% did not feel competent in performing a Sports Concussion Assessment Tool, with 51% having not heard of the tool. The interval prior to returning to activities with a risk of head impact for children yielded a 64% incorrect response rate. Doctors were confident assessing the need for brain imaging (76%) and in discussing radiation risk of CT scans with parents (82%). A clinical decision tool was not used by 58% and 82% had not been taught to use one. The GCS threshold for CT <1y and at 2hrs was correctly identified by 37% and 26% respectively.

**Conclusion:** This study describing practicing doctor's knowledge and level of comfort managing mTBI indicate a paucity of knowledge amongst all grades in current best practice in managing TBI. Formalized teaching is required to communicate risks of second impact to parents and to manage expectations of recovery from mTBI. This study supports the ongoing development of a national best practice guideline in managing TBI.

**Presentation Time: 15.50-16.00 – Saturday 9 December**

**AN AUDIT OF HYPOGLYCAEMIA WORKUPS PERFORMED IN PORTLOISE OVER A TWO YEAR PERIOD, PRE AND POST INTRODUCTION OF A LOCAL CLINICAL GUIDELINE**

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**Aims:** The aim of this study was to analyse the number of patients having hypoglycaemic workups prior to and post introduction of a guideline in our hospital (October 2016).

We aimed to establish did the workups performed post introduction of guideline meet the outlined criteria for testing. We further aimed to deduce were there a decrease in workups performed post guideline implementation.

**Methods:** A retrospective casenote analysis of all paediatric patients who had hypoglycaemia workups performed between October 2015 and October 2017 was performed. Patients were identified with the aid of the laboratory. Microsoft excel was used to analyse data.

**Results:** A total of 16 patients had hypoglycaemia workups over the audit period. 11 of these were performed in the one year period before the introduction of the guideline. 5 were performed in the one year period after the guideline was introduced.

Before the guideline was introduced, 4 patients (36%) had critical samples sent unnecessarily. All critical samples taken after the guideline was introduced were taken in line with the guidelines.

Of 11 critical samples taken before introduction of the guideline, 4 (36%) did not have ketones sampled. Of those 5 taken after the guideline was introduced, 2 (40%) did not have ketones checked. Two samples were processed although the serum glucose level was >2.6mmol/L.

**Conclusion:** Introduction of a guideline has reduced the number of hypoglycaemic workups that were being performed in our hospital.

All patients with hypoglycaemia on point of care testing should have ketones measured. This important step is often overlooked in our practice.

Hypoglycaemia should be confirmed with serum sample prior to analysis of critical samples, only serum samples  $\geq 2.6$  mmol/L should be processed.

**Presentation Time: 16.00-16.10 – Saturday 9 December**

**REDUCING SWIMMING RELATED ACCIDENTS IN THE PAEDIATRIC POPULATION: REVIEW OF INTERNATIONAL EVIDENCE.**

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**Background:** Evidence from Ireland's Childhood Mortality Register demonstrates that drowning is the second leading cause of death in Irish children. It occurs most commonly in adolescent males engaged in summer swimming activities and in children aged 1-4 years with access to swimming pools and other unprotected water sources. However, despite being an Island nation, significant lack of clear guidelines exists to reduce drowning accidents in these at-risk populations.

**Aim:** The aim of this work was to review international evidence surrounding risk factors associated with drowning accidents in the paediatric population and existing guidelines aimed at reducing drowning accidents.

**Methods:** A structured review of Cochrane, Cinahl, Pubmed and Web of Science databases was performed using the search terms: ("risk factors" AND "drowning") and ("risk reduction" OR "prevention" OR "swim ability" AND "drowning"). In addition, the Childhood Paediatric Mortality Register and Irish Water Safety Authority Annual Reports were consulted. Studies were included if they met age criteria i.e. age 0-18 years.

**Results:** Evidence suggests that boys are at the highest risk of drowning (aged 1-4 yrs in swimming pools; adolescents in freshwater) with inadequate surveillance, inadequate availability of trained first responders, certain clinical diagnoses (e.g. global developmental delay and seizure disorders), lack of swimming ability, and substance misuse in adolescents all posing an increased risk of drowning. Formal swimming education in those aged 4+ years, training of supervising adults in safe rescue, installation of isolation barriers, and enforcing water safety guidelines and regulations are all recommended interventions by International Advisory Groups for prevention of drowning.

**Discussion/Conclusion:** In Ireland, drowning accidents are an important cause of preventable deaths, with peaks in preschool aged children and 10-14-year olds. Modifiable risk factors and international guidelines have been identified, which should form the strategies for future risk reduction programmes.

1. National Paediatric Mortality Register Report, 2013 2. Weiss J et al. Prevention of Drowning. *Pediatrics* 2010;126(1):e253-e262 3. Brenner R, Taneja GS, Haynie DL et al. Association between Swimming Lessons and Drowning in Childhood. *Arch Pediatr Adolesc Med.* 2009;163(3):203-210

**Presentation Time: 16.10-16.20 – Saturday 9 December**

**COMING OF AGE IN IRELAND; THE TWILIGHT ZONE!**

**BD Power**<sup>1</sup>, P O'Reilly<sup>1</sup>, G Stone<sup>1,3</sup>, P Stewart<sup>1</sup>, E Corry<sup>1</sup>, D Lad<sup>1,3</sup>, A McCann<sup>1</sup>, BP Fitzgerald<sup>1</sup>, E Troy<sup>1</sup>, C Costigan<sup>1</sup>, C O'Gorman<sup>1,2</sup>, AM Murphy<sup>1,2</sup>

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**Aim:** Our aim was to describe the healthcare needs of adolescent patients inhabiting the “seventh age of childhood” in our region with a view towards future workforce and infrastructure planning .

**Methods:** The study period was taken as the 10 year timeframe between 01/07/2006 and 01/07 2016. The Study cohort was taken as patients aged 14, 15 or 16 years of age who accessed healthcare in our hospital group during that period. Hospital electronic databases were used to collate data including demographics, diagnoses, duration of hospitalisation, type of inpatient ward, and speciality of admitting Consultant.

**Results:** This cohort utilized a mean of 6.5 beds per day. Their average length of stay was 2.1 days. There were 10, 992 hospital admissions, 41, 456 outpatient appointments and an average of 1847 attendances per year at our Emergency Department.

Less than 17% of patients were admitted to age appropriate wards .

Only 11.3% of our cohort were admitted under the care of a Paediatrician.

**Conclusions:** Adolescence is a transitional period of physical and emotional development that can bring innovation and opportunity, but also angst and upheaval. ‘Coming of age’ presents a myriad of challenges to the modern Irish teenager, and also to the professionals tasked with their care.

Our retrospective descriptive study occurs in light of this year’s National mandate which dictates that all patients should have their medical care overseen by a Paediatrician until their 16<sup>th</sup> birthday. In the past the age at which a patient is deemed “ child” versus “adult” has varied between institutions.

The Irish healthcare agenda needs to be advanced to ensure the optimal health for this valuable, yet vulnerable generation. Further investment will help shape the fledgling discipline of ‘adolescent health’ in Ireland.

‘There is in every child at every stage a new miracle of vigorous unfolding.’

Erik Erikson (1902-1994)

**Presentation Time: 16.20-16.30 – Saturday 9 December**

**CHILDHOOD GROWTH OUTCOMES OF CHILDREN BORN SMALL FOR GESTATIONAL AGE**

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**Aims:** Small for gestational age (SGA) is associated with poor outcomes in terms of growth and metabolism. Consideration should be given to potential treatments for this cohort, such as growth hormone.

The aim of this study was to undertake a systematic review of the literature on growth outcomes in SGA infants

**Methods:** PubMed, Embase and The Cochrane Library databases were searched using the following MeSH terms in the title or abstract: [“small for gestational age” AND (growth OR length OR height OR weight OR circumference)]. Included papers were review articles with full-text available online in English. Following automated duplicate removal, papers were screened on Covidence based on their title/abstract and full-text, with inclusion or exclusion decided by 2 of 3 authors’ votes.

**Results:** 493 search results were identified. 97 were removed as duplicates, 352 were excluded during screening, leaving 44 for inclusion.

**Catch up Growth:** 85% achieve height within 2SD of normal by 2 years of age. 10-15% do not catch-up and are at increased risk of persistent short stature at 10 years.

*Metabolism:* Infants born SGA who experience catch-up growth have a higher risk of developing obesity, type-2 diabetes, hypertension and metabolic syndrome in later life. A high growth velocity during infancy and childhood appears to predict insulin resistance.

*Puberty:* Onset of puberty is earlier in SGA versus AGA children, but still within the normal age range in females

*Growth Hormone Treatment:* SGA children who do not demonstrate catch-up growth often demonstrate abnormalities in the Growth Hormone-Insulin-like Growth Factor (GH-IGF) axis. GH Therapy normalised adult stature in selected cases.

**Conclusions:** SGA predisposes children to the psychosocial consequences of short stature and the chronic health effects of metabolic dysregulation. GH may present an effective therapy which could improve growth outcomes whilst attenuating the metabolic consequences of catch-up growth in selected children.

### **Presentation Time: 16.30-16.35 – Saturday 9 December**

#### **TARGETED TECHNICAL SKILLS SIMULATION TRAINING HELPS PAEDIATRIC TRAINEE'S IN COLLEGE CURRICULUM CORE PROCEDURES.**

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<sup>1</sup>Department of Paediatric Simulation, Royal Belfast Hospital for Sick Children, Belfast, N. Ireland

<sup>2</sup>School of Paediatrics & Child Health, Northern Ireland Medical & Dental Training Agency

**Aim:** Acute Paediatrics is a stimulating and challenging training programme. The Royal College of Paediatrics and Child Health (RCPCH) provide a comprehensive curriculum for trainees during these years.

In Level 1 Training (ST1-3), there are a number of core practical procedure's trainees are expected to perform prior to progression to Level 2 training. These skills include Neonatal Intubation, Lumbar Puncture (LP) and Intraosseous (IO) Access.<sup>1</sup>

Often it may be difficult for trainee's to gain significant experience in these skills and achieving competence can be challenging. Reasons for this include lack of opportunity, lack of experience, and low procedural confidence. The RCPCH advocates the delivery of Simulation and Technology Enhanced Learning (TEL) including in the area of technical skills training.<sup>2</sup>

**Method:** We created a simulated core procedure training day for Level 1 Regional Training targeted at 3 core procedures. We surveyed Paediatric ST1-3 Trainee's about previous experiences and confidence levels with these skills.

**Results:** 24 trainees were surveyed before and after the session. Prior to the teaching, 2 (8%) trainee's felt their Intubation skills were adequate, 12 (50%) described their LP skills as satisfactory and 4 (16%) trainee's labelled their IO access skills as acceptable.

Following the teaching session, 23 of the 24 trainee's (96%) felt significantly more confident in approaching all 3 of the core practical skills. All 24 Trainee's (100%) felt that simulated practise helped improve their technical skills and all (100%) felt it would be useful in their daily job.

**Conclusions:** Simulation-based training for procedural skills has been shown to be effective for trainees and has been widely used in many training programs.<sup>3</sup> By integrating this into the Deanery's Regional teaching programme, we have presented junior trainee's the opportunity to gain vital hands on experience on high-fidelity models, which has improved procedural exposure, enhanced trainee-confidence and may potentially develop procedural competence.

References: 1. Curriculum for Paediatric Training. General Paediatrics. Level 1,2 and 3 Training. August 2016.

<http://www.rcpch.ac.uk/training-examinations-professional-development/postgraduate-training/general-paediatrics-training/ge#curriculum> 2. Strategy- Simulation and TEL. January 2015. Royal College of Paediatrics and Child Health.

<http://www.rcpch.ac.uk/training-examinations-professional-development/postgraduate-training/simulation-and-technology-enh> 3. Barsuk JH, Cohen ER et al. Simulation-based education with mastery learning improves residents' lumbar puncture skills. *Neurology*. 2012; 79(2):132–7.

**Presentation Time: 16.35-16.40 – Saturday 9 December**

**FAST (FAST ACCESS STUDENT-LED TEACHING) CLINIC IS A USEFUL AND VALUED TEACHING-LED SERVICE**

**E O'Donovan<sup>1</sup>, J Pando Kelly<sup>1</sup>, I Korotchikova<sup>1</sup>, I Maris<sup>1</sup>, J Hourihane<sup>1</sup>, L Gibson<sup>1</sup>**

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**Aims:** Student-led clinics have the potential to improve patient flow within the healthcare system while providing valuable clinical experience for undergraduate medical students. This study aimed to assess benefits of FAST (fast access student-led teaching) clinic for students and service users. FAST clinic ran from September 2016 to April 2017, a student-performed, staff-supervised rapid access clinic for non-complex paediatric outpatients. Cases were chosen from General Paediatric clinics waiting lists (n=6).

**Methods:** A retrospective chart review was performed. Details were collected regarding number of patients seen, diagnoses, intervention and final management of patients (followed up in general paediatric clinic, referred to another speciality or discharged). Thematic analysis was conducted on the feedback questionnaires distributed to students and parents at the time.

**Results:** 168 patients attended the 51 FAST clinics. The majority of patients (61%) were discharged with no follow up. 27% were followed up in general paediatric clinic and just 2% were referred to another speciality. The three most common presentations were chronic diarrhoea and/or constipation, abdominal pain and abnormal head growth. There was no interventional management in almost a third of cases.

Respondents to the parental survey were extremely satisfied with waiting times (80%), provision of high quality care (98%) and expressed willingness to participate in future student-led clinics (93%). 107 students were surveyed and the overall response revealed positive perceptions of the experience. Benefits included interactive experiences with paediatric patients, enhanced clinical skills and valuable supervisor feedback. Many suggested continuation of such clinics as well as expansion to other specialities.

**Conclusions:** The FAST clinic demonstrated a dual mission for education and patient care with clear benefits for students and service users. Implementation in other specialities in Cork University Hospital and other university teaching hospitals in Ireland may show similar benefits.

**Presentation Time: 16.40-16.45 – Saturday 9 December**

**AN EVALUATION OF THE EFFECTIVENESS OF USE OF AUDIO-VISUAL MEDIA IN PROMOTING VACCINE UPTAKE.**

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*Bordetella pertussis* occurs as a primary infection in children younger than 10 years of age. Unvaccinated infants (0-8 weeks of age) are at highest risk of developing complications. These include respiratory distress, apnoea, seizures, pneumonia and death. The antenatal pertussis vaccine was introduced in Ireland in August 2012 after a pertussis outbreak in infants in the same year. A previous study has shown poor awareness and uptake of the Pertussis vaccine among Irish pregnant women.(1)

The aim of this study is to assess the efficacy of audio-visual media to promote awareness of ante-natal pertussis vaccine and promote vaccine uptake in this population.

Pregnant mothers attending the Cork University Maternity Hospital (CUMH) antenatal clinics were invited to complete self-administered questionnaires, and then to watch a promotional video. A second questionnaire was administered at a follow-up clinic or by phone call within 4-8 weeks.

A total of 393 women participated. Of these 68% were aware of the vaccine already. 91% of the remainder who were not aware recalled the key message of the video. 51% acquired the vaccine as a result of watching the video. 41% of the remainder acquired the vaccine as a result of recommendation from their GP. Out of the women who did not get the vaccine, 27% were uncertain despite watching the video.

Our findings show the use of audio-visual media in ante-natal clinics is an effective way of promoting vaccine uptake.

1. McSwiney C, Gibson L, editors. A Survey of the uptake of the pertussis (Tdap) vaccination and awareness among mothers of infants (0-24months) in Cork University Hospital (CUH), and among staff of an antenatal clinic in Cork University Maternity Hospital (CUMH)2017: [s.n.

***Presentation Time: 16.45-16.50 – Saturday 9 December***

**OPTIMISING SUGARS AND SAFETY ON THE POSTNATAL WARD IN A TERTIARY MATERNITY CENTRE:  
HOW TO IMPROVE MANAGEMENT OF HYPOGLYCAEMIA**

**CM Moore<sup>1</sup>, CS Costigan<sup>1</sup>, AE Curley<sup>1</sup>**

<sup>1</sup>Department of Neonatology, National Maternity Hospital, Dublin 2, Ireland

**Aim:** Assess compliance with new evidence-based protocol for the management of neonatal hypoglycaemia in order to focus a quality improvement initiative. Initial factors screened as high imperative: percentage high risk infants fed within 1 hour, percentage with screening of sugar 2-3 hours post feed, percentage of babies with capillary glucose (CG) <1.6mmol/l who had immediate admission, percentage of babies admitted to special care baby unit following hypoglycaemia.

**Methods:** Prospective observational study in tertiary maternity hospital with 9000 births annually, using convenience sample of babies who had CG measured on postnatal ward.

**Results:** 25 babies identified in three-week period. Gestation and birthweight were (median/range): 39 (37-42 weeks), 3.7kg (2.8 to 4.6). 40% (n=10) were born by caesarean section. 32% (n=8) were screened for hypoglycaemia due to maternal risk factors, the remainder were screened for infant-related indications, with n=9 (36%) screened due to 'jitteriness'.

Median time to first feed in babies who were identified as high risk for hypoglycaemia was 1.7 hours (0.38-2.22) vs low risk clinically symptomatic 2.05 hours (0.95-3.72). Median time to first CG was 4.17 hours (1.53-5.88) in 'high risk' vs 5.26 hours (1.28-72) in 'low risk' babies. Median CG in 'high risk' was 2.2mmol/l (1.6-2.9), and in 'low risk' 3.1mmol/l (1.6-5.2). No babies had CG <1.6mmol/l. Only one baby in the 'high risk' group was admitted to the neonatal unit following hypoglycaemia.

**Conclusion:** By identifying babies at high risk of hypoglycaemia we have improved time to first feed and number of babies with sugar measured at right time. All babies who required admission to the NICU as per the protocol were admitted appropriately. We will target initiatives to further reduce time to first feed and promote greater compliance with standards

**Presentation Time: 16.50-16.55 – Saturday 9 December**

**INTRODUCTION OF THE BEADS OF COURAGE INITIATIVE TO THE NEONATAL INTENSIVE CARE UNIT.**

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<sup>2</sup>Department of Neonatology, Rotunda Hospital, Dublin, Ireland

**AIMS:** The Beads of Courage (BoC) programme was started in 2003 as a way of helping children cope with the stresses of a serious illness. It serves as a tangible mapping of the individual's journey through illness with brightly coloured beads representing different milestones and achievements. It is primarily used in paediatric oncology departments and is in effect in over 240 children's hospitals worldwide. The aim of this study was to introduce the BoC to the neonatal unit in the Rotunda Hospital, the first neonatal unit in the country to use the programme, and assess the impact on parents and staff.

**METHODS:** The BoC license was approved in October and training of the team leads (CK,ML). The programme was adapted for use within a neonatal unit and local training occurred prior to starting in November 2016. Infants less than 32 weeks were eligible. Parents of participating infants and staff were invited to complete a questionnaire.

**RESULTS:** Over a 12 month period 84 infants were enrolled in the programme. There were 35 (41.6%) girls, the average birth weight was 1.08kg and average gestation was 27+6 weeks. The response from parents and staff was overwhelmingly positive. Some of the parents' comments include '*Filling in the beads of courage journals gave me a focus during the long days spent staring into their incubators. The nurses were a fantastic help, often going through the boys charts to ensure I hadn't missed a feeding transition here or a blood draw there*'. Full audit results to follow.

**CONCLUSION:**

The Beads of Courage programme has proven to be a popular and beneficial initiative with great support from staff and parents alike. Since its introduction to our unit we have provided assistance to other units interested in starting the programme.

**Presentation Time: 16.55-17.00 – Saturday 9 December**

**VIDEO LARYNGOSCOPY DOES NOT ENHANCE THE ABILITY TO INTUBATE PRETERM MANNEQUINS.**

**D Butler<sup>1</sup>, I Stiureniece<sup>1</sup>, L O'Connell<sup>1</sup>, EM Dempsey<sup>1</sup>**

<sup>1</sup>Dept. Of Paediatrics, Cork Maternity University Hospital, Cork, Ireland

**Background:** Prior studies have demonstrated that failed intubation can be detrimental to neonatal outcomes<sup>1</sup>. Similarly, experience influences the likelihood of successful first intubation<sup>2</sup>. Opportunities for trainees to perform procedures, especially intubation are fewer.

**Aims:** The purpose of this study was to examine the potential benefit of a structured approach of teaching NCHDs how to perform intubation of a neonatal mannequin using video laryngoscopy with the McGarh® laryngoscope (VL) versus direct laryngoscopy (DL).

**Methods:** Subjects were NCHDs training in the Neonatology Department, CUMH and Paediatric Department, CUH. Both groups received training consisting of video and other educational materials, as part of a structured learning program over three weeks. One group was randomised to training involving intubation of a term infant mannequin using DL. The second group were taught using VL. Following a minimum of 5 practice sessions on a term infant mannequin, both groups were assessed on their ability to intubate a preterm infant mannequin using DL. The technical abilities of both groups were assessed using a 15 item structured metric. Assessors were unaware of group assignment. Analysis was performed using SPSSv.22.

**Results:** 23 subjects were randomised into groups of 11 (DL) and 12 (VL). Both groups were comparable for prior experience. There was no difference in the success rate for the first attempt (63% vs 59%, p value 0.8) . The Mean intubation attempts were similar between both groups (2.08 vs 1.7, p=1.44). Mean time spent intubating was the same in both groups (43 vs 43.3sec, P=1.16). When assessing technical ability there was no difference between the DL and VL groups, (14.7 vs 13.8, p=0.11).

**Conclusion:** Training using video laryngoscopy is a comparable method of providing trainee education where hands-on experience is becoming less frequent. Further research is suggested in a clinical setting.

1: Endotracheal Intubation in Neonates: A Prospective Study of Adverse Safety Events in 162 Infants. L. Dupree Hatch, MD, MPH, Peter H. Grubb, MD, Amanda S. Lea, RN, BSN, William F. Walsh, MD, Melinda H. Markham, MD, Gina M. Whitney, MD, James C. Slaughter, DrPH, Ann R. Stark, MD, and E. Wesley Ely, MD, MPH 2: Factors Associated with Adverse Events during Tracheal Intubation in the NICU. Elizabeth E. Foglia, MD, MA, Anne Ades, MD, Natalie Napolitano, MPH, RRT-NPS, Jessica Leffelman, BS, Vinay Nadkarni, MD, and Akira Nishisaki, MD, MSCE

**Presentation Time: 17.00-17.05 – Saturday 9 December**

**Reducing errors in hypoglycaemic screens in a tertiary neonatal intensive care unit – Optimising the system**

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**INTRODUCTION:** Diagnostic hypoglycaemic screens guide management, avoid the need for provocative fasts, and prevent the neurological morbidity associated with untreated neonatal hypoglycaemia. However, resource limitations and educational deficits compromise the accuracy with which these critical samples are taken. A baseline audit in a tertiary neonatal intensive care unit (NICU) of 45 critical samples taken on 36 patients between August 2014 and December 2016 showed a mean of five errors per screen. We designed a quality improvement project to reduce the mean number of errors per screen by 50% over six months.

**METHODS:** A series of “Plan, Do, Study, Act” (PDSA) cycles guided the project. The first cycle involved process mapping to understand the sequence of activities defining the system of critical sampling. The second cycle itemised errors associated with individual components of the screens and constructed a Pareto diagram to identify areas of improvement with the greatest potential impact. The third cycle implemented four improvement efforts focused on these areas, guided by a driver diagram. The fourth cycle is ongoing, focusing on improving the sustainability of change interventions.

**RESULTS:** Process mapping revealed the critical sampling process to be multidisciplinary, involving doctors, nurses, biochemists, and lab technicians. A total of 257 errors were made in 45 critical samples performed on 36 patients over a 53-month period. The Pareto diagram revealed the major contributing errors to be delays in receiving results > 1 week, incomplete hypoglycaemic screens, and delays > 15 minutes from the time of hypoglycaemic event to critical sampling.

**CONCLUSIONS**

Improvement efforts targeting key areas were implemented, including standardised checklist to record the formal results of critical samples, hypoglycaemic “packs”, guidelines on timing of hypoglycaemic screens, and educational sessions for the neonatal team. A runchart measuring the impact of our changes over time is showing a trend towards statistically significant improvement.

**Presentation Time: 17.05-17.10 – Saturday 9 December**

## **SURVIVAL AND NEURODEVELOPMENTAL OUTCOMES OF NEWBORNS WITH CONGENITAL DIAPHRAGMATIC HERNIA IN IRELAND**

**A Lynch<sup>1</sup>, S Hardcastle<sup>2</sup>, A Sutton<sup>2</sup>, S Bewick<sup>2</sup>, A McLaughlin<sup>2</sup>, E Molloy<sup>1,3</sup>, J Kelleher<sup>1</sup>**

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**Aims:** Congenital diaphragmatic hernia (CDH) affects approximately 1 in 3000 live births<sup>1,2</sup>. International reports of prevalence of neurodevelopmental delay in survivors range from 16% to 70%<sup>1</sup>. The aim of this study was to assess survival and neurodevelopmental outcomes of infants with CDH born in Ireland at 24 – 36 months corrected age using the Bayley III Scales of Infant Development (BSID).

**Methods:** This was a single centre prospective cohort study of neurodevelopmental outcomes of newborns with CDH at 24 - 36 months corrected gestational age. All newborns admitted to the national surgical referral centre in 2014 with a diagnosis of CDH were eligible for study inclusion. The primary outcome was developmental status at 24-36 months corrected gestational age using the BSID. Hospital medical records were examined for demographic, perinatal and postnatal variables. Data was analyzed using SPSS version 20.

**Results:** 31 newborns were identified using national databases as having been born with CDH in 2014. Of these 2 died prior to transfer to the national surgical centre and 6 died thereafter, with an overall mortality of 25.8% (8/31 newborns). The total mortality for those newborns who were managed at the national surgical centre was 20.7% (6/29 newborns). Table 1 describes some of their clinical variables. To date 21/23 surviving infants have had a complete BSID III assessment at 24-36 months corrected gestational age representing a 91% follow up rate. Table 2 describes their composite BSID scores. Only 1 of these survivors has severe developmental delay in the area of language skills.

**Table 1. Demographic, and clinical variables**

<b>Gender</b>	Male - n = 13 (45%)
<b>Diagnosis</b>	Antenatal diagnosis - n = 21 (72%)
<b>Side of CDH defect</b>	Left sided CDH - n = 26 (90%)
<b>Location of birth</b>	Tertiary neonatal unit - n = 17 (59%)
<b>Gestational age in Completed Weeks</b>	Median (range) - 39 (30-41)
<b>Antenatal Steroids</b>	Beclomethasone - n = 11 (38%)
<b>Mode of Delivery</b>	Vaginal delivery - n = 16 (55%)
<b>Surfactant Use</b>	n = 7 (24%)
<b>Chromosome Abnormalities</b>	n = 0 (0%)
<b>Cardiovascular</b>	Structural cardiac anomalies - n = 3 (10%)
<b>Other systems</b>	Other major congenital anomalies - n = 3 (10%)

**Table 2. Developmental Outcomes at 24-36 months corrected age using BSID III**

<b>Cognitive Composite Score</b>		<b>Total Language Composite Score</b>	<b>Total Motor Composite Score</b>
n=21		n=21	n=21
<b>Mean (SD)</b>	105.5 (14.05)	98.3 (15.18)	103.4 (15.94)
<b>Range</b>	85-135	62-118	79-139

### **Conclusion**

This first ever national study for the Ireland CDH survivors has shown an overall survival of 74% with survival without moderate/severe neurodevelopmental impairment of 69% that is comparable to international published outcomes.

Wynn J, Aspelund G, Zygmunt A, Stolar CJH, Mychaliska G, Butcher J, Lim FY, Gratton T, Potoka D, Brennan K et al. Developmental Outcomes of Children with Congenital Diaphragmatic Hernia: a multicentre prospective study. *Pediatr Surg.* 2013 October ; 48(10) 2. Chukwu, J; Iro, C; Donoghue, V et al. Congenital diaphragmatic hernia: neonatal outcomes following referral to a paediatric surgical centre. *Ir Med J.* 2009 Sep;102(8):260-1.

## DISPLAY POSTER LISTING

(Listed Alphabetically within each category – Where the Presenting Author has submitted an abstract to more than one category, all these will be listed under the Presenting Author name where it first appears)

Lastname	Category	ABSTRACT TITLE	Poster No	Page in Online Abstract Book
Abdelrahim	General Paeds	DOMESTIC VIOLENCE AND ITS IMPACT ON CHILD DEVELOPMENT	1	79
Abdelrahim	Sub-Specialty	DEVELOPMENT OF PAEDIATRIC SPECIALIST MULTIDISCIPLINARY DOWN SYNDROME CLINIC	2	79
Ahmed	General Paeds	KETOTIC HYPOGLYCEMIA AN AUDIT OF ADHERENCE TO LOCAL GUIDELINES	3	80
Alabass	General Paeds	GITELMAN'S SYNDROME: A RARE CAUSE OF HYPOKALEMIA	4	81
Alabass	Neonatal	COMPARISON OF LABORATORY AND ELECTRONIC REPORTS ON CERNER MILLENNIUM IN NEONATAL UNIT, UNIVERSITY HOSPITAL KERRY	5	82
Alam	General Paeds	PAEDIATRIC TRIAGE AUDIT	6	83
Alam	General Paeds	PRESCRIPTION ERRORS IN PAEDIATRIC UNIT PORTIUNCULA UNIVERSITY HOSPITAL BALLIANSLOE CO. GALWAY	7	83
Alam	Neonatal	THE USE OF PARENTERAL NUTRITION AND ASSOCIATED ISSUES IN SPECIAL CARE BABY UNIT (PORTIUNCULA UNIVERSITY HOSPITAL BALLINASLOE CO. GALWAY)	8	84
Ali	General Paeds	INVASIVE GROUP A STREPTOCOCCUS	9	85
Altaf	General Paeds	INSIDE YOUR BRAIN: AN INTRACEREBRAL ABSCESS– A CASE REPORT	10	85
Amin	General Paeds	CAROTENEMIA ASSOCIATED WITH FOOD RICH IN CAROTENES	11	86
Anwar	General Paeds	CONSTIPATION LEADING TO SPLINTING OF DIAPHRAGM AND RESPIRATORY DISTRESS	12	86
Azam	General Paeds	EMERGENCY ADMISSIONS OF CHILDREN AND YOUNG PEOPLE WITH MENTAL HEALTH NEEDS TO THE PAEDIATRIC WARD	13	87
Branagan	General Paeds	SOMETIMES HOOFBEATS ARE ZEBRAS - A CASE OF ATYPICAL KAWASAKI DISEASE	14	87
Brar	General Paeds	USE OF GROWTH CHARTS IN PAEDIATRIC IN-PATIENTS	15	88
Burrington	General Paeds	CLINICAL AND PHARMACOLOGICAL MANAGEMENT OF PNEUMONIA PRESENTING TO A TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT	16	88
Butler	General Paeds	BONE HEALTH AND PREVENTION OF OSTEOPOROSIS IN NON AMBULANT CHILDREN	17	89
Bux	General Paeds	CLINICAL PROFILE OF KAWASAKI DISEASE IN CHILDREN: 15 YEARS EXPERIENCE AT UNIVERSITY HOSPITAL WATERFORD	18	89
Byrne	General Paeds	WHAT SHOULD WE EXPECT? A TWO YEAR REVIEW OF PAEDIATRIC EMERGENCY DEPARTMENT RESUSCITATION CASES	19	91
Byrne	Neonatal	BREAST MILK USE IN VERY LOW BIRTH WEIGHT INFANTS IN THE NEONATAL INTENSIVE CARE: AN AUDIT UPDATE	20	91
Carty	General Paeds	INTERPRETATION OF PYURIA IN CHILDREN WITH URINARY TRACT INFECTION	21	92
Chistol	General Paeds	PAEDIATRIC ASSESSMENT UNIT (PAU) ATTENDANCE AUDIT	22	92

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Chistol	General Paeds	CHOICE OF EMPIRICAL ANTIBIOTICS IN SUSPECTED LOWER RESPIRATORY TRACT INFECTIONS (LRTI):	23	93
Coughlan	General Paeds	FREQUENTLY RELAPSING NEPHROTIC SYNDROME IN A 6-YEAR-OLD BOY	24	94
Coveney	General Paeds	MORNING MEDICAL HANDOVER IN A TERTIARY PAEDIATRIC HOSPITAL: A QUALITY IMPROVEMENT PROJECT	25	94
Coveney	Neonatal	AUDIT OF TIMING OF ADMINISTRATION OF FIRST DOSE ANTIRETROVIRALS TO INFANTS BORN TO HIV INFECTED MOTHERS IN THE ROTUNDA HOSPITAL	26	95
Cronin	General Paeds	HUMAN METAPNEUMOVIRUS IN GENERAL PAEDIATRIC PRACTICE DURING AUTUMN 2017	27	96
Crothers	General Paeds	NOT "JUST A RASH"- A CASE REPORT OF STEVENS-JOHNSON SYNDROME PRESENTING AS ACUTE ASTHMA	28	96
Diaz Rodriguez	General Paeds	HOW SENSITIVE ARE DIPSTICK URINALYSIS AND MICROSCOPY IN MAKING DIAGNOSIS OF URINARY TRACT INFECTION IN CHILDREN?	29	97
Diskin	General Paeds	RESPIRATORY HEALTH IN IRISH CHILDREN WITH DOWN SYNDROME	30	97
Diskin	Medical Mgt	NCHD ATTITUDES TO CHILDHOOD DEVELOPMENT	31	98
Donohue	General Paeds	EPIDEMIOLOGY OF RESPIRATORY SYMPTOMS IN CHILDREN PRESENTING TO A PAEDIATRIC EMERGENCY DEPARTMENT	32	99
El Badri	General Paeds	AUDIT OF CLINICAL HANDOVER	33	99
El Badri	Neonatal	REVIEWING PARENTAL COMMUNICATION WITH NICU STAFF AN AUDIT OF PRACTICE	34	100
Elbadry Ali	General Paeds	LUMBAR PUNCTURE PERFORMANCE AND THE PAEDIATRIC PATIENT, ONE HOSPITAL'S EXPERIENCE.	35	101
Elmamoun	General Paeds	THE IMPACT OF MENINGOCOCCAL B VACCINATION ON INFANT PRESENTATIONS IN THE EMERGENCY DEPARTMENT	36	102
Eves	General Paeds	SCHOOL ATTENDANCE AND CHRONIC ILLNESS	37	102
Falcone	General Paeds	BRONCHIOLITIS: ARE WE GETTING IT RIGHT?	38	103
Finnegan	General Paeds	CEREBRAL MALARIA: BEWARE THE UNRESPONSIVE RETURNED TRAVELLER	39	103
Fitzgerald	General Paeds	LIVING ON THE EDGE.....OF EUROPE. THE UHL EXPERIENCE OF FLIGHT DIVERSIONS DUE TO ON-BOARD PAEDIATRIC MEDICAL EMERGENCIES	40	104
Fitzgerald	General Paeds	APPROACH TO PAEDIATRIC HYPOGLYCAEMIA IN A UNIVERSITY-AFFILIATED EMERGENCY DEPARTMENT (ED) SETTING	41	105
Fitzgerald	Neonatal	HEARING IMPAIRMENT AND HYPOXIC ISCHAEMIC ENCEPHALOPATHY: INCIDENCE AND ASSOCIATED FACTORS	42	106
Fitzsimons	General Paeds	AETIOLOGICAL INVESTIGATIONS OF A COHORT OF CHILDREN DISCHARGED FROM AN EARLY INTERVENTION TEAM.	43	106
Fox	General Paeds	CASE REPORT: CONGENITAL SPIGELIAN HERNIA AND IPSILATERAL CRYPTORCHIDISM, UNUSUAL ABDOMINAL SWELLING IN A NEONATE	44	107
Fox	Neonatal	REVIEW OF ADVERSE VACCINE REACTIONS IN AN IRISH NEONATAL UNIT	45	108

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Gaughan	General Paeds	VITAMIN A DEFICIENCY SECONDARY TO A RESTRICTED DIET RESULTING IN IMPAIRED VISION IN A TEN YEAR OLD WITH AUTISM	46	109
Geoghegan	General Paeds	THE INCIDENCE OF NEUROLOGICAL FEATURES IN ENTEROVIRUS POSITIVE INPATIENTS IN THE ADELAIDE AND MEATH INC NATIONAL CHILDREN'S HOSPITAL	47	109
Geoghegan	Sub-Specialty	CASE REPORT OF NOVEL GENE DYT25 MUTATION CAUSING FAMILIAL MYOCLONIC DYSTONIA WITH TREMOR ON A BACKGROUND OF COMPLEX SOCIAL ISSUES	48	110
Geraghty	General Paeds	AN AUDIT OF OUR ADHERENCE TO ISPAD GUIDELINES IN THE MANAGAEMENT OF CHILDREN WITH DIABETES IN A SECONDARY CARE CENTRE.	49	111
Geraghty	Sub-Specialty	A CASE OF NON-SURGICAL CEREBELLAR MUTISM	50	112
Giva	General Paeds	INDICATION FOR METABOLIC WORK UP	51	113
Haider	General Paeds	THE ROLE OF MICTURITION CYSTOURETHROGRAPHY IN FOLLOW UP INVESTIGATION OF FIRST FEBRILE UTI IN LESS THAN 6 MONTHS AGE	52	113
Haider	General Paeds	ELEVATED AMINOTRANSAMINASES (ALT) AS THE FIRST MANIFESTATION OF SARCOIDOSIS	53	114
Haider	General Paeds	DIAGNOSTIC VALUE OF C-REACTIVE PROTIEIN AND WHITE CELL COUNT TO PREDICT SEPSIS IN PAEDIATRIC POPULATION	54	115
Halpenny	General Paeds	THE MANAGEMENT OF GASTROENTERITIS IN A GENERAL PAEDIATRICS WARD - AUDIT RESULTS	55	115
Halpenny	Neonatal	TRANSIENT NEONATAL DIABETES MELLITUS IN A LATE PRETERM INFANT: CASE REPORT	56	116
Hayes	General Paeds	COULD FABRY'S DISEASE BE THE CAUSE SEVERE FEEDING DIFFICULTIES IN INFANCY?	57	117
Hayes	Sub-Specialty	A STUDY ASSESSING THE CHARACTERISTICS OF PAEDIATRIC PATIENTS WITH TYPE 1 DIABETES MELLITUS AND CO-MORBID COELIAC DISEASE AT UNIVERSITY HOSPITAL LIMERICK	58	117
Hillick	General Paeds	WHAT IS BEING REFERRED TO A GENERAL PAEDIATRIC OPD – LEGIBILITY AND SUITABILITY OF REFERRALS	59	118
Howard	General Paeds	PER-CUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) IN THE MANAGEMENT OF CHILDREN WITH COMPLEX EPILEPSY AND MEDICATION REFUSAL	60	119
Huggard	General Paeds	IMMUNODEFICIENCY IN CHILDREN WITH DOWN SYNDROME	61	119
Hussain	General Paeds	CORRELATIVE MEASUREMENTS OF TRANSCUTANOUS BILIRUBINOMTER AND SERUM BILIRUBIN IN NEONATES ≥ 35 WEEKS OF GESTATION.	62	120
Hussain	Medical Mgt	THE QUALITY OF STANDARDS UTILISED IN PUBLISHED AUDITS BETWEEN YEARS 2007-2015.	63	120
Ijaz	General Paeds	CATAONIA A COMORBIDITY OF AUTISM : A CASE REPORT	64	121
Jenkins	General Paeds	INFECTIOUS MONONUCLEOSIS: OUR PRACTICE TO BEST PRACTICE. FROM AUDIT TO QI IN OUR LADY OF LOURDES HOSPITAL, DROGHEDA.	65	122

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Jenkins	Sub-Specialty	ANTI-PSYCHOTIC MEDICATION IN CHILDREN AND ADOLESCENTS – HOW TO BE CAREFUL PRESCRIBERS.	66	123
Jenkinson	General Paeds	USE OF GROWTH CHARTS FOR ASSESSING AND MONITORING GROWTH IN A GENERAL PAEDIATRIC OUTPATIENT SETTING: AN IRISH PERSPECTIVE	67	123
Joyce	General Paeds	WHY CHILDREN WAIT: A REVIEW OF EXTENDED LENGTHS OF STAY IN THE EMERGENCY DEPARTMENT.	68	124
Joyce	General Paeds	SEEKING THE SOURCE - POSITIVE STAPHYLOCOCCUS AUREUS BLOOD CULTURES AT TWELVE HOURS: TWO CAUTIONARY TALES.	69	125
Joyce	General Paeds	VARIABLE PRESENTATIONS OF LISSENCEPHALY.	70	125
Kelleher	General Paeds	AN AUDIT OF INFORMATION QUALITY INCLUDED IN DISCHARGE COMMUNICATIONS SENT TO GENERAL PRACTITIONERS FROM A PAEDIATRIC UNIT.	71	126
Kelliher	General Paeds	AN OBSERVATIONAL STUDY TO ESTABLISH THE MEASUREMENT AND DISCUSSION OF BMI IN THE PAEDIATRIC OUTPATIENT DEPARTMENT	72	127
Kelly	General Paeds	IMPROVING EFFICIENCY IN A GENERAL PAEDIATRICS CLINIC – CAN WE DO BETTER?	73	127
Keogh	General Paeds	A RETROSPECTIVE AUDIT OF FIRST LINE INVESTIGATIONS PERFORMED IN CHILDREN WITH UNEXPLAINED GLOBAL DEVELOPMENTAL DELAY REFERRED TO A PAEDIATRIC DEVELOPMENTAL ASSESSMENT SERVICE.	74	128
Keogh	Sub-Specialty	THE PREVALENCE OF CASHEW NUT SENSITISATION AND ALLERGY IN CHILDREN PRESENTING TO AN IRISH TERTIARY ALLERGY CLINIC	75	129
Khan	General Paeds	FOLLOW UP CHEST RADIOGRAPHY IN PAEDIATRIC PNEUMONIA: IS IT AVOIDABLE?	76	129
Khan	General Paeds	A REAUDIT OF THE AETIOLOGICAL MEDICAL ASSESSMENT OF INFANTS WITH PERMANENT CHILDHOOD HEARING IMPAIRMENT ( P.C.H.I.) IDENTIFIED THROUGH UNIVERSAL NEONATAL HEARING SCREENING (U.N.H.S.)	77	130
Khan	General Paeds	DO WE ADHERE TO THE ESPGHAN GUIDELINES TO SCREEN SUSPECTED CAELIAC DISEASE IN CHILDREN?	78	130
Kyne	General Paeds	A RETROSPECTIVE AUDIT ON THE MANAGEMENT OF ACUTE WHEEZE IN THE PAEDIATRIC EMERGENCY DEPARTMENT (ED)	79	131
Lagan	General Paeds	IMPLEMENTATION OF MULTIDISCIPLINARY DOWN SYNDROME HEALTH SURVEILLANCE CLINIC- ADHERENCE TO DOWN SYNDROME HEALTH SURVEILLANCE: WHERE ARE WE NOW	80	132
Lane	General Paeds	PARTIAL STEROID RESPONSE IN A 12 YEAR OLD GIRL WITH NEPHROTIC SYNDROME WITH NORMAL RENAL BIOPSY	81	132
Lawler	General Paeds	KNOWLEDGE AND ATTITUDES TOWARD THE CHILDREN'S ARK SCHOOL: SURVEYS OF STAFF, PARENTS, STUDENTS AND TEACHERS.	82	133

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Lawler	General Paeds	AUDIT OF REFERRALS OF HIGH RISK INFANTS TO EARLY INTERVENTION SERVICES	83	133
Loftus	General Paeds	TRACKING CHILDHOOD HEIGHT FOR SMALL FOR GESTATIONAL AGE INFANTS IN IRELAND	84	134
Lyons	General Paeds	ADRENAL INSUFFICIENCY: STAY CALM AND STRESS DOSE: AN AUDIT OF MULTI-CENTRE PAEDIATRIC STEROID THERAPY CARDS	85	135
Maher	General Paeds	AUDIT OF BENZODIAZEPINE USE AS RESCUE MEDICATION FOR TYPICAL FEBRILE SEIZURES AT WEXFORD GENERAL HOSPITAL	86	135
Mahmood	General Paeds	EYES PROTECTION DURING PHOTOTHERAPY IN NEWBORNS	87	136
Mahmood	General Paeds	PATIENT IDENTIFICATION BANDS AUDIT	88	137
Mahmood	General Paeds	AN AUDIT OF PRESCRIPTION CHARTS ON THE PAEDIATRIC WARD.	89	137
Mahmood	General Paeds	SCHISTOSOMIASIS IN IRELAND- A CASE REPORT	90	138
Mahmood	General Paeds	THYROID SCREENING PRACTICES IN CHILDREN WITH DOWN SYNDROME IN THE FIRST YEAR OF LIFE	91	139
Mannion	General Paeds	ABANDONING BAG SAMPLES IN THE ED: IMPACT ON DIAGNOSTIC ACCURACY OF PAEDIATRIC UTI	92	139
McDonnell	General Paeds	SURVEILLANCE OF DEVELOPMENTAL DYSPLASIA OF THE HIPS AT WEXFORD GENERAL HOSPITAL	93	140
McGrath	General Paeds	SKULL FRACTURES AND SAFEGUARDING IN THE UNDER 2'S: A 3 YEAR RETROSPECTIVE STUDY	94	141
Md Nasir	General Paeds	VITAMIN D LEVELS IN IRISH CHILDREN WITH TYPE 1 DIABETES MELLITUS : A CROSS-SECTIONAL STUDY	95	141
Meade	General Paeds	EXPLORING THE GROWTH AND NUTRITIONAL STATUS OF CHILDREN WITH PRADER WILLI SYNDROME (PWS)	96	142
Mohamed	General Paeds	COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN, CHEST X-RAY OR NOT?	97	143
Mohamed	General Paeds	AN AUDIT OF URINE CULTURE RESULTS AND ANTIBIOTIC SENSITIVITIES IN CHILDREN WITH UNCOMPLICATED URINARY TRACT INFECTIONS IN OUR LADY OF LOURDES HOSPITAL	98	144
Mohamed	Neonatal	SERUM C-REACTIVE PROTEIN CUT OFF VALUES FOR PERFORMING LUMBAR PUNCTURE IN NEONATES WITH SUSPECTED EARLY ONSET SEPSIS	99	144
Mohammed	General Paeds	BRIDGING THE GAP FROM ADOLESCENCE TO ADULT CARE; A CLINICAL SURVEY OF TRANSITION SERVICES IN IRELAND	100	145
Moollan	General Paeds	CLINICAL INDICATIONS FOR A MECKEL'S SCAN	101	146
Moore	General Paeds	SENSITIVITY AND SPECIFICITY OF PARENTAL PERCEPTION OF PYREXIA WITHOUT A THERMOMETER IN A PAEDIATRIC EMERGENCY DEPARTMENT	102	146
Moore	General Paeds	IMPROVING THE QUALITY AND SAFETY OF DISCHARGE IN BABIES WITH DOWN SYNDROME	103	147
Moore	Neonatal	MOVING BABIES TO AND FROM A REGIONAL LEVEL 2 NEONATAL CENTRE: OUR TRANSPORT EXPERIENCE	104	147
Murphy O'Connor	General Paeds	INVESTIGATION OF PAEDIATRIC HYPOGLYCAEMIA – A REVIEW	105	148

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Mustaki	General Paeds	A TALE OF TWO WEBS: RETHINKING NON-BILIOUS VOMITING AND METABOLIC ALKALOSIS WITH NORMAL ABDOMINAL ULTRASOUND	106	149
Nagle	General Paeds	MYCOBACTERIUM BOVIS ARACHNOIDITIS: A CASE PRESENTATION	107	149
Ni Chathasaigh	General Paeds	CONVERSION DISORDER: FAIL TO PREPARE, PREPARE TO FAIL	108	150
Nic Aodha Bhui	General Paeds	THE INCIDENCE OF MENINGITIS IN A REGIONAL PAEDIATRIC SETTING: 4 YEARS' EXPERIENCE WITH A PREPONDERANCE OF ENTEROVIRUS	109	151
Nwafor	General Paeds	THE FREQUENCY OF INAPPROPRIATE CHEST X-RAYS IN CHILDREN	110	152
O'Donnell	General Paeds	A CASE OF JUVENILE MYOCLONIC EPILEPSY DIGNOSED BY ELECTROENCEPHALOGRAM IN A PATIENT WITH KNOWN ABSENCE SEIZURES	111	152
O'Donnell	General Paeds	WEIGHING PRACTICES IN THE PAEDIATRIC EMERGENCY DEPARTMENT	112	153
O'Hanrahan	General Paeds	PARENTS' PREFERENCES ON DISCHARGE IN A PAEDIATRIC HOSPITAL	113	154
O'Neill	General Paeds	AETIOLOGICAL INVESTIGATION IN PERMANENT CHILDHOOD HEARING IMPAIRMENT, A RETROSPECTIVE AUDIT	114	154
O'Reilly	General Paeds	CRÈCHE: SOURCE OF COUGHS, COLDS AND KINGELLA	115	155
O'Reilly	Neonatal	MEDICATION RECONCILIATION IN NICU, CAN WE DO BETTER?	116	156
O'Reilly	Sub-Specialty	AN UNUSUAL CAUSE OF A FIRST AFEBRILE SEIZURE IN A TODDLER; PROPIONIC ACIDEMIA	117	157
Martin	Sub-Specialty	AN ULTRARARE CAUSE OF FEEDING DIFFICULTIES IN AN INFANT; TYROSINEMIA TYPE 1	118	157
Othman	General Paeds	A RARE CASE OF CONGENITAL SYPHILIS IN A PRETERM MALE INFANT	119	158
Pathan	General Paeds	DO WE CUT IT? A SNAPSHOT OF PAEDIATRICIANS' VIEWS AND KNOWLEDGE ABOUT TONGUE TIE IN IRELAND	120	159
Pathan	General Paeds	A TODANI TYPE 4B CHOLEDOCHAL CYST IN A 2YO IRISH GIRL: A CASE REPORT	121	159
Powell	General Paeds	MANAGING DIABETIC KETOACIDOSIS: KEEPING WITH THE PROGRAMME	122	160
Power	General Paeds	CO-EXISTING TRANSIENT NEONATAL DIABETES MELLITUS TYPE 1 WITH CONGENITAL CHOLEDOCHAL CYST – COINCIDENCE OR CONNECTED?	123	161
Power	Neonatal	NEONATAL FACIAL LACERATION FROM HIGH-FLOW NASAL CANNULAE.	124	161
Ramly	General Paeds	LANGERHANS CELL HISTIOCYTOSIS – CUTENOUS MANIFESTATION THAT CAUSES CONFUSION IN THE DIAGNOSTIC PROCESS: 2 CASE SERIES	125	162
Ramly	General Paeds	MENINGITIS IN THE POST MEN C VACCINATION ERA	126	163

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Ramly	Medical Mgt	MANAGEMENT OF BRONCHIAL ASTHMA IN HOSPITAL FOR CHILDREN ABOVE 5 YEARS OLD AND CHILDREN 5 YEARS OLD AND YOUNGER- CLINICAL AUDIT	127	164
Ramly	Medical Mgt	QUALITY STANDARD FOR THE EPILEPSIES IN CHILDREN AND YOUNG PEOPLE- CLINICAL AUDIT	128	164
Ramly	Neonatal	THERAPEUTIC HYPOTHERMIA OF THE NEWBORN	129	165
Rawat	General Paeds	GET IT RIGHT WHEN YOU WRITE	130	166
Rizwan	General Paeds	RE-AUDIT OF DIPSTICK URINALYSIS ON NEONATES PRESENTING TO A PAEDIATRIC ASSESSMENT UNIT	131	167
Russell	General Paeds	THE INTRODUCTION OF REFLECTIVE PRACTICE IN TEMPLE STREET HOSPITAL: A PILOT STUDY OF BALINT GROUPS	132	167
Rutkowski	General Paeds	DON'T MISS CONGENITAL HYDROCEPHALUS	133	168
Rutledge	General Paeds	THE ROLE OF THE MONOCYTE:LYMPHOCYTE AND NEUTROPHIL:LYMPHOCYTE RATIO IN THE DIAGNOSIS OF BACTERIAL INFECTION OF THE URINARY TRACT OF CHILDREN	134	169
Scanlon	General Paeds	NEUROENDOCRINE TUMOURS OF THE PAEDIATRIC APPENDIX: TEN-YEAR INCIDENCE AT A TERTIARY REFERRAL CENTRE	135	169
Scully	General Paeds	CONCUSSION MANAGEMENT IN GENERAL PRACTICE: A COMPARISON OF PAEDIATRIC AND ADULT PRESENTATIONS IN PRIMARY CARE	136	170
Semple	General Paeds	NOVEL CYSTIC FIBROSIS MUTATION (C.2805-2810DELINSTCAGA) IN AN INFANT OF INDIAN DESCENT	137	171
Shori	General Paeds	AUDITING CURRENT PRACTICES OF PLOTTING GROWTH CHART IN CHILDREN WEXFORD GENERAL HOSPITAL	138	172
Shori	General Paeds	RE-AUDIT: INTRA DEPARTMENTAL AUDIT IN IMPROVING QUALITY OF WRITTEN INPATIENT DRUG KARDEX 2017, IN WEXFORD GENERAL HOSPITAL, COUNTY WEXFORD, REPUBLIC OF IRELAND.	139	173
Shori	Neonatal	AUDIT OF NEONATAL TRANSFER FROM SPECIAL CARE BABY UNIT, WGH TO TERTIARY CARE IN 2016	140	174
Shori	Neonatal	PREMEDICATION FOR ELECTIVE INTUBATION IN NEWBORN IN SCBU OF WEXFORD GENERAL HOSPITAL	141	175
Shori	Neonatal	AUDIT OF THE PREVENTION OF EARLY ONSET NEONATAL INFECTION – WEXFORD GENERAL HOSPITAL CLINICAL GUIDELINE 000 029	142	175
Stanzelova	General Paeds	USE OF VIRAL PCR FOR RESPIRATORY VIRUSES IN A PERIPHERAL PAEDIATRIC WARD - EXPERIENCE FROM SLIGO UNIVERSITY HOSPITAL	143	176
Stanzelova	General Paeds	AUDIT ON THE USE OF BACTERIAL PCR IN A PERIPHERAL PAEDIATRIC DEPARTMENT OF SLIGO UNIVERSITY HOSPITAL	144	177
Stanzelova	General Paeds	WHEN THINGS DON'T ADD UP - UNUSUAL PRESENTATION OF A PATIENT WITH MENINGITIS B	145	177

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Stanzelova	Sub-Specialty	THE DANGER OF SNUFFLES - CASE SERIES OF 4 INFANTS WITH INVASIVE PARECHOVIRUS INFECTION	146	178
Subhani	General Paeds	PAEDIATRIC HEADACHE AUDIT AT OUR SERVICE, MIDLANDS REGIONAL HOSPITAL PORTLAOISE.	147	178
Swanick Beirne	General Paeds	IS THERE EVIDENCE OF POSITIVE EARLY IMPACT OF ROTAVIRUS VACCINE ON A GENERAL PAEDIATRIC PRACTICE?	148	179
Tamgumus	General Paeds	ADHERENCE TO ANTIMICROBIAL PRESCRIBING POLICY: EFFECTIVENESS OF FLASHCARD AND EDUCATIONAL PROGRAMME	149	179
Tamgumus	General Paeds	COW'S MILK PROTEIN INTOLERANCE IN THE EMERGENCY DEPARTMENT	150	180
Tanweer	General Paeds	AN AUDIT ON MANAGING PROCEDURAL PAIN IN CHILDREN	151	181
Travers	General Paeds	THE FALLING AGE OF MENARCHE AND IMPLICATIONS FOR BREAST CANCER IN IRELAND	152	181
Vainberg	General Paeds	AN AUDIT OF INVESTIGATION RATE IN URGENT PAU ATTENDEES	153	182
Verrelli	General Paeds	EXPLORING A RARE ASSOCIATION OF SYMPTOMS IN NEUROFIBROMATOSIS TYPE 1	154	183
Whitla	General Paeds	RETROSPECTIVE REVIEW OF THE VIRAL AETIOLOGY AND LENGTH OF STAY IN PATIENTS ADMITTED WITH ACUTE BRONCHIOLITIS.	155	184
Yousaf	General Paeds	BRITISH THORACIC SOCIETY (BTS) PNEUMONIA AUDIT: COMPARING LOCAL DATA WITH INTERNATIONAL DATA	156	184
Yousaf	Medical Mgt	COMPLETION OF MEDICAL COMMUNICATION SHEETS IN ROTUNDA NICU + SCBU	157	185
Yu	General Paeds	IS IT A TUMOUR? AN UNUSUAL PRESENTATION OF AN ACUTE UNILATERAL INFLAMMATORY CEREBELAR LESION IN A NINE YEAR OLD BOY.	158	185
Zidaru	General Paeds	COMMON THINGS ARE COMMONLY MISUNDERSTOOD ...	159	186
Altabari	Medical Mgt	ACCURATE ESTIMATION OF CAPILLARY REFILL TIME: IS IT MISSION IMPOSSIBLE?	160	187
Kavanagh	Medical Mgt	A QUALITATIVE AND QUANTITATIVE ASSESSMENT OF THE PAEDIATRIC INTERNSHIP AT UNIVERSITY HOSPITAL LIMERICK OVER 30 MONTHS	161	188
Kavanagh	General Paeds	STUDY OF PAEDIATRIC NEGATIVE APPENDICECTOMY RATES, PATHOLOGIES, RADIOLOGY AND BIOCHEMISTRY AT A TERTIARY CARE CENTRE, IRELAND	162	189
Mallett	Medical Mgt	PROMOTING TECHNOLOGY ENHANCED LEARNING: ASSESSING VIEWS AND EFFICIENCY OF MOBILE PHONES IN CLINICAL PRACTICE.	163	189
O'Dwyer	Medical Mgt	WHATSAPP DOC?	164	190
O'Dwyer	Medical Mgt	COUNTING THE COSTS, DOES IMPROVING KNOWLEDGE OF LABORATORY COSTS INFLUENCE DIAGNOSTIC PATHOLGOY ORDERING PRACTICES AT UNIVERSITY HOSPITAL LIMERICK?	165	191

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Yates	Medical Mgt	INTO THE BLENDER; INTEGRATING CASE BASED LEARNING (CBL) E-LEARNING INTO A TRADITIONALLY TAUGHT PAEDIATRIC ROTATION	166	192
Abdul Halim	Neonatal	CASE REPORT OF CONGENITAL PULMONARY AIRWAY MALFORMATION (CPAM) IN NEWBORN	167	193
Aber	Neonatal	WHEN ARE "STICKY EYES" A NEONATAL EMERGENCY? NEONATAL GONOCOCCAL CONJUNCTIVITIS: CASE REPORT AND LITERATURE REVIEW	168	194
Armstrong	Neonatal	WHITE CELL COUNTS IN EARLY ONSET NEONATAL SEPSIS – ARE THEY USEFUL?	170	195
Armstrong	Sub-Specialty	TIME TO ANTBIOTICS IN PAEDIATRIC FEBRILE NEUTROPENIA - EXPERIENCE OF A REGIONAL UNIT	171	196
Breatnach	Neonatal	THE IMPACT OF MATERNAL GESTATION HYPERTENSION AND ANTIHYPERTENSIVE USE ON NEONATAL MYOCARDIAL PERFORMANCE.	172	197
Breatnach	Sub-Specialty	THE IDENTIFICATION OF SUBCLINICAL ENTERIC PROTEIN LOSS IN CHILDREN WITH UNIVENTRICULAR CIRCULATION FOLLOWING TOTAL CAVOPULMONARY CONNECTION	173	199
Bussmann	Neonatal	DETERMINANTS OF THE NEED FOR TREATMENT IN PREMATURE INFANTS WITH SUSPECTED NECROTISING ENTEROCOLITIS	174	200
Canty	Neonatal	RESPIRATORY RED: A RARE ASSOCIATION OF PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN (PPHN) SECONDARY TO ASPIRATION OF MATERNAL BLOOD.	175	200
Carey	Neonatal	WEIGHT AND OFC GROWTH OF PRETERM BABIES FROM BIRTH TO TWO YEARS CORRECTED AGE COMPARED TO UK-WHO GROWTH STANDARDS	176	201
Casey	Neonatal	TIME MATTERS: AUDITING ASSESSMENT TIMES FOR NEONATES IN A PAEDIATRIC EMERGENCY DEPARTMENT	177	202
Casey	Neonatal	SUSPECTED SEPSIS: AUDITING SEPSIS WORKUP RATES FOR CLINICALLY WELL NEONATES WITH SEPTIC RISK FACTORS	178	203
Caulfield	Neonatal	HYPOGLYCAEMIA IN THE HIGH RISK NEWBORN: AN AUDIT OF CURRENT SCREENING PRACTICE.	179	203
Caulfield	Sub-Specialty	SCOPING PARENTAL ATTITUDES TOWARD AMBULANCE USE IN CHILDREN	180	204
Clifford	Neonatal	NEONATAL OUTCOMES IN TWINS; A RETROSPECTIVE COHORT STUDY	181	205
Costigan	Neonatal	TRENDS IN NICU ADMISSIONS FOR "TRANSIENT TACHYPNOEA OF THE NEWBORN" OVER A 17 YEAR PERIOD.	182	205
Costigan	Sub-Specialty	A SNAPSHOT OF CHILDREN WITH COMPLEXITY IN AN ACADEMIC TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT	183	206

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Cummins	Neonatal	THE SURGICAL NEONATE: THE LINK BETWEEN INTESTINAL DISEASE IN THE NEONATAL PERIOD AND INCIDENCE OF CENTRAL CATHETER-ASSOCIATED INFECTIONS.	184	206
Dann	Neonatal	REVIEW OF ANTIBIOTIC USE IN TERM INFANTS UNDERGOING THERAPEUTIC HYPOTHERMIA	185	207
Darcy	Neonatal	ARTHROGRYPOSIS MULTIPLEX: A CASE REPORT.	186	208
Dunworth	Neonatal	THE ROLE OF BIOMARKERS IN IDENTIFYING HYPOXIC ISCHAEMIC ENCEPHALOPATHY IN NEONATES AND PREDICTING LONG TERM NEURODEVELOPMENTAL OUTCOMES – A LITERATURE REVIEW	187	209
Dwyer	Neonatal	REDUCING PREVENTABLE HARM: ATTITUDES TOWARD PATIENT SAFETY IN AN IRISH TERTIARY NEONATAL UNIT	187a	44
Finnegan	Neonatal	COOL BABIES, NOT SO COOL....	188	210
Flanagan	Neonatal	MICROCEPHALY SECONDARY TO CONGENITAL ZIKA VIRUS INFECTION	189	211
Flanagan	Sub-Specialty	ORKAMBI: THE CORK PAEDIATRIC EXPERIENCE	190	212
Flynn	Neonatal	NEONATAL TFTS: A CHANGE IN PRACTICE	191	212
Fox	Neonatal	EXTREME PREMATURITY - ARE WE HELPING OR HARMING?	192	213
Fyzul	Neonatal	THE FIRST SIX MONTHS OF A NEW SCREENING PROGRAMME TO IDENTIFY SEVERE COMBINED IMMUNODEFICIENCY IN BABIES BORN TO IRISH TRAVELLERS.	193	215
Gorman	Neonatal	DOES THE INTRODUCTION OF DEXTROSE GEL IMPROVE BREAST FEEDING RATES ON POSTNATAL WARDS IN A TERTIARY MATERNITY HOSPITAL?	194	215
Gorman	Sub-Specialty	RADIOLOGICAL FINDINGS OF PULMONARY ASPIRATION IN CHILDREN – INTERIM ANALYSIS	195	216
Hayden	Neonatal	BIFID THUMB	196	217
Hickey	Neonatal	DONOR BREAST MILK – SHOULD IT BE IN ROUTINE USE FOR PRETERM AND LOW BIRTH WEIGHT INFANTS?	197	218
James	Neonatal	THE InSurE (INTUBATION, SURFACTANT ADMINISTRATION AND EXTUBATION) PROCEDURE IN NEONATES WITH RESPIRATORY DISTRESS SYNDROME: A REGIONAL NEONATAL UNIT'S EXPERIENCE.	198	218
Khair	Neonatal	NEONATAL ANTIBIOTICS AND SEPSIS AUDIT	199	219
Khalid	Neonatal	INTRAVENTRICULAR HAEMORRHAGE COMPLICATED BY HYDROCEPHALUS IN A PRETERM DELIVERED CLINICALLY STILLBIRTH.	200	220
Levins	Neonatal	ASSESSMENT OF THE MANAGEMENT OF HYPOGLYCEMIA ON THE POSTNATAL WARDS, IN 'AT RISK' NEONATES.	201	220
Lewis	Neonatal	NEONATAL HYPOGLYCAEMIA: BURDEN OF CARE AND INTRODUCTION OF ORAL DEXTROSE GEL	202	221
Mac Farland	Neonatal	AN AUDIT OF PAEDIATRIC STAFF ATTENDANCE AT PREMATURE DELIVERIES ≤ 32 WEEKS GESTATION IN CAVAN GENERAL HOSPITAL A LOCAL UNIT	203	222
Martin	Neonatal	EXPERIENCE OF INFANTS BORN WITH DOWN SYNDROME: BURDEN OF DISEASE IN THE EARLY NEONATAL PERIOD	204	223

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Martin	Sub-Specialty	ACUTE ENCEPHALOPATHIC CRISIS IN A PRE-SCHOOL CHILD - LATE PRESENTATION OF METHYLMALONIC ACIDAEMIA (MMA)	205	224
Martin	Sub-Specialty	HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH) MASQUERADING AS SEPSIS IN THE PAEDIATRIC EMERGENCY DEPARTMENT (PED); A CASE REPORT	206	225
Mazher	Neonatal	EFFECTIVENESS OF PLASTIC BAGS VERSUS INCUBATOR IN PRETERM AND LOW BIRTH WEIGHT NEONATES	207	226
McGlacken-Byrne	Neonatal	CAN CONTINUOUS GLUCOSE MONITORING SYSTEMS BE SUCCESSFULLY IMPLEMENTED INTO THE ROUTINE MANAGEMENT OF NEONATAL HYPOGLYCAEMIA? – INSIGHTS FROM A QUALITY IMPROVEMENT PROJECT	208	228
McGlacken-Byrne	Neonatal	LABOUR PHYSIOLOGY AND ITS RELATIONSHIP TO ARTERIOVENOUS UMBILICAL CORD GLUCOSE CONCENTRATIONS OF TERM NEONATES	209	228
McGlacken-Byrne	Neonatal	INFLUENCE OF FETAL DISTRESS ON THE ARTERIOVENOUS UMBILICAL CORD GLUCOSE CONCENTRATIONS OF TERM NEONATES EXPOSED TO LABOUR	210	229
McGrath	Neonatal	“CAPILLARY BLOOD GAS ANALYSIS FOLLOWING LOW UMBILICAL CORD PH – A COMPLETED AUDIT CYCLE”	211	230
Meng	Neonatal	PHYSICAL STABILITY OF HUMAN MILK TO PROCESSING AND STORAGE	212	230
Murphy	Neonatal	REVIEW OF THE NEONATAL FALLS ON THE POSTNATAL WARD IN A LEVEL TWO NEONATAL UNIT 2015-2017	213	231
Mustafa	Neonatal	MASSIVE FETOMATERNAL HAEMORRHAGE FOLLOWING MILD MATERNAL ABDOMINAL TRAUMA	214	232
O'Dea	Neonatal	INFLAMMASOME ACTIVATION IN NEONATAL ENCEPHALOPATHY	215	233
O'Rahelly	Neonatal	EVALUATION OF EARLY ONSET E.COLI SEPSIS IN AN IRISH MATERNITY CENTRE	216	233
Power	Neonatal	DONOR BREAST MILK USE IN NEONATAL UNITS: PRACTICES AND OPINIONS IN THE REPUBLIC OF IRELAND	217	234
Power	Sub-Specialty	MITOCHONDRIAL DISEASE DUE TO AN SDHD GENE MUTATION: CASE REPORT AND LITERATURE REVIEW.	218	234
Power	Sub-Specialty	NOVEL SKELETAL FEATURES IN SIBLINGS WITH SCHIMKE IMMUNO-OSSEOUS DYSPLASIA.	219	235
Saviani	Neonatal	INFECTION PREVENTION IN NICU: HH OPPORTUNITIES AND TIME TO PERFORM	220	236
Shaughnessy	Neonatal	SEPTIC WORK UP AND THE USE OF ANTIBIOTICS IN A SPECIAL CARE BABY UNIT	221	237
Smith	Neonatal	AN AUDIT OF NEONATAL RESUSCITAIRE EQUIPMENT IN THE ROTUNDA HOSPITAL	222	238
Smith	Neonatal	A REVIEW OF THE PARENTERAL NUTRITION SUPPLY SERVICE IN AN IRISH NEONATAL UNIT	223	238

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Smith	Neonatal	THE TRIANGULAR SIGN, A USEFUL DIAGNOSTIC MARKER FOR BILIARY ATRESIA: A CASE SERIES OF THREE IRISH INFANTS	224	239
Smith	General Paeds	AETIOLOGICAL EVALUATION OF 42 INFANTS IDENTIFIED WITH A PERMANENT CHILDHOOD HEARING IMPAIRMENT THROUGH THE IRISH NEWBORN HEARING SCREENING PROGRAMME: FINDINGS AND RECOMMENDATIONS	225	240
Stallard	Neonatal	PARENTERAL NUTRITION IN VERY LOW BIRTH WEIGHT INFANTS	226	240
Tabassum	Neonatal	AUDIT OF POSTNATAL CARE FOR BABIES DELIVERED WITH MECONIUM STAINED AMNIOTIC FLUID IN LOW RISK PREGNANCIES & REVIEW OF COMPLICATIONS	227	241
Theubo	Neonatal	AN UNUSUAL CASE OF HYPOCALCAEMIC SEIZURES IN A NEONATE	228	241
Timon	Neonatal	CORD BLOOD LYMPHOCYTE COUNT AS A POTENTIAL SCREENING TOOL FOR SEVERE COMBINED IMMUNODEFICIENCY (SCID)	229	242
Virupachi	Neonatal	INDICATORS OF LUMBAR PUNCTURE IN WELL LOOKING NEONATES WITH EVIDENCE FROM NATIONAL QUESTRIIONNAIRE BASED SURVEY	230	243
Alkhedir	Sub-Specialty	ALLERGY EMERGENCY READINESS TRAINING: HOW ARE WE DOING?	231	243
Almuntaser	Sub-Specialty	POST-MALARIA NEUROLOGICAL SYNDROME: THE FIRST IRISH PAEDIATRIC CASE	232	244
Alsaffar	Sub-Specialty	COELIAC DISEASE IN CHILDREN WITH DOWN SYNDROME	233	245
Balfe	Sub-Specialty	WHO USES A CHILDREN'S HOSPICE. A PROFILE OF SERVICE USERS AT A CHILDREN'S HOSPICE IN IRELAND	234	246
Broderick farrell	Sub-Specialty	CARDIAC MRI VOLUME AND PRE-EXISTING CONDITIONS AMONGST A LARGE PAEDIATRIC CONGENITAL HEART DISEASE POPULATION IN A TERTIARY CENTRE	235	246
Byrne	Sub-Specialty	A RARE CASE OF PANCREATIC PSEUDOPAPILLARY TUMOUR WITH METASTASIS IN A TEENAGE GIRL	236	247
Clarke	Sub-Specialty	THE INCIDENCE AND CLINICAL PRESENTATION OF PAEDIATRIC MALIGNANCIES IN UNIVERSITY HOSPITAL WATERFORD	237	248
Collins	Sub-Specialty	CHILDREN WITH TRACHEOSTOMIES- AN INSIGHT INTO FAMILY LIFE	238	249
Conlon	Sub-Specialty	FACTORS INFLUENCING DISCONTINUATION OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII), IN CHILDREN WITH TYPE 1 DIABETES: A POPULATION BASED COHORT STUDY.	239	249
Conlon	Sub-Specialty	"A VERY SWEET NEONATE" - NEONATAL DIABETES CAUSED BY A RECESSIVELY INHERITED, NONSENSE MUTATION IN THE <i>INS</i> GENE.	240	250
Conlon	Sub-Specialty	FAMILIAL CRANIAL DIABETES INSIPIDUS - IT'S ALL IN THE HISTORY.	241	251

Lastname	Category	ABSTRACT TITLE	Poster No	Page in Online Abstract Book
Conlon	Sub-Specialty	MPO-ANCA ASSOCIATED NECROTISING GLOMERULONEPHRITIS IN AN EIGHT YEAR OLD GIRL, WITH PRECEDING HISTORY OF BILATERAL ORBITAL HYPERPLASIA.	242	252
Corcoran	Sub-Specialty	MEDICAL TOURISM IN THE METABOLIC WORLD!	243	253
Crealey	Sub-Specialty	FOOD REFUSAL IN AUTISM: IS IT UNDIAGNOSED FOOD ALLERGY?	244	254
Cremona	Sub-Specialty	PREGNANCY-RISK AND NEONATAL-COMPLICATIONS AMONGST NEONATES OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS ADMITTED TO UNIVERSITY MATERNITY HOSPITAL LIMERICK (UMHL), IRELAND.	245	255
Cummins	Sub-Specialty	KETAMINE: A REVIEW OF USAGE WITHIN RBHSC PICU.	246	256
Dillon	Sub-Specialty	CASE REPORT: FIRST ISOLATION OF BOCAVIRUS AND <i>PSEUDOMONAS AERUGINOSA</i> IN A BAL SAMPLE FROM A PAEDIATRIC PATIENT WITH CYSTIC FIBROSIS	247	256
Dorrian Buckley	Sub-Specialty	EVALUATION OF THE PERSONAL AND LIFE SKILLS (PALS) PROGRAMME FOR EARLY ADOLESCENTS WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDER (ASD).	248	257
Finn	Sub-Specialty	SUPRAVENTRICULAR TACHYCARDIA AS A COMPLICATION OF SEVERE DIABETIC KETOACIDOSIS IN AN ADOLESCENT WITH NEW ONSET TYPE 1 DIABETES:	249	258
Finn	Sub-Specialty	DIABETIC KETOACIDOSIS PRESENTATIONS IN PATIENTS WITH KNOWN AND NEW ONSET DIABETES AT CORK UNIVERSITY HOSPITAL OVER A FIVE YEAR PERIOD.	250	259
Finn	Sub-Specialty	SUBARACHNOID HAEMORRHAGE AS A COMPLICATION OF SEVERE DIABETIC KETOACIDOSIS IN A PRE-ADOLESCENT WITH NEW ONSET TYPE 1 DIABETES.	251	259
Forde	Sub-Specialty	COELIAC SCREENING IN A HIGH RISK POPULATION; PAEDIATRIC TYPE 1 DIABETES. A REVIEW OF CURRENT GUIDELINES AND PRACTICE	252	260
Forman	Sub-Specialty	TIME TO LOSS OF AMBULATION IN IRISH DUCHENNE MUSCULAR DYSTROPHY BOYS	253	261
Forman	Sub-Specialty	STEROID USE IN THE TREATMENT OF IRISH BOYS WITH DUCHENNE MUSCULAR DYSTROPHY	254	262
Golden	Sub-Specialty	OUTCOMES OF TRANSITIONAL CARE IN CYSTIC FIBROSIS PATIENTS. RETROSPECTIVE REVIEW COMPARING HEALTH OF CF PATIENTS BETWEEN PAEDIATRIC AND ADULT SERVICES.	255	263
Hackett	Sub-Specialty	UNDERSTANDING TYPE 1 DIABETES – TO INCREASE AWARENESS, PROMPT EARLY DIAGNOSIS AND PREVENT DIABETIC KETOACIDOSIS	256	264
Hassan	Sub-Specialty	COULD FABRY'S DISEASE BE THE CAUSE OF A CYCLICAL VOMITING PHENOTYPE IN CHILDREN?	257	265
Jones	Sub-Specialty	THE UTILITY OF KETONES AT TRIAGE	258	265

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Kalim	Sub-Specialty	A REVIEW OF 5 YEARS OF COLONOSCOPY IN A PAEDIATRIC GASTROENTEROLOGY REFERRAL UNIT.	259	266
Koshy	Sub-Specialty	“DOCTOR, DOES MY CHILD HAVE A COW’S MILK ALLERGY?”: AN AUDIT OF OUR UNDERSTANDING IN A TERTIARY CENTRE	260	267
Larkin	Sub-Specialty	GROUP-B STREPTOCOCCAL SEPTICAEMIA IN THE PAEDIATRIC INTENSIVE CARE UNIT	261	267
Lynch	Sub-Specialty	THE SLEEP WALKER	262	268
Lynch	Sub-Specialty	VALIDITY OF AGES AND STAGES QUESTIONNAIRES SOCIAL EMOTIONAL-2 AT PREDICTING BAYEY III SOCIAL EMOTIONAL AND ADAPTIVE BEHAVIOURAL RESULTS IN CHILDREN WITH CONENITAL DIAPHRAGMATIC HERNIAS	263	269
Malone	Sub-Specialty	THE REQUIREMENT FOR TUBE FEEDING IN DOWN SYNDROMES PATIENTS LESS THAN 6 MONTHS OF AGE WHO REQUIRE INTERVENTION FOR A CARDIAC DEFECT	264	270
McCarron	Sub-Specialty	HYPERTENSION IN INFANTS	265	270
McCarron	Sub-Specialty	STEVEN JOHNSON SYNDROME ASSOCAITED WITH MYCOPLASMA PNEUMONIAE	266	271
McCormack	Sub-Specialty	“ON-CALL” TASKS IN THE PAEDIATRIC CARDIOLOGY UNIT - A QUALITY IMPROVEMENT PROJECT	267	271
McCormack	Sub-Specialty	AN AUDIT OF THE PAEDIATRIC CARDIOLOGY WARFARIN CLINIC IN A TERTIARY HOSPITA	268	272
McGovern	Sub-Specialty	ARE NON-AMBULANT CHILDREN WITH SPINA BIFIDA RECEIVING VITAMIN D?	269	273
McGuane	Sub-Specialty	ADHERENCE TO GUIDELINES ON INITIATION OF HUMIDIFIED HIGH FLOW NASAL CANNUAL OXYGEN THERAPY IN CHILDREN ADMITTED TO TSCUH WITH BRONCHIOLITIS	270	273
Obrycka	Sub-Specialty	REFRACTORY HYPERTENSION - THE IMPORTANCE OF ADDITIONAL INVESTIGATIONS AND ACCURATE DIAGNOSIS AS A KEY TO EFFECTIVE TREATMENT	271	274
O'Keefe	Sub-Specialty	A CLINICAL AUDIT OF HEALTH SURVEILLANCE IN CHILDREN WITH PRADER WILLI SYNDROME	273	275
O'Keefe	Sub-Specialty	A REVIEW OF THYROID DISEASE IN A COHORT OF CHILDREN WITH PRADER WILLI SYNDROME	274	276
Philbin	Sub-Specialty	“MAJOR INCIDENTS INVOLVING CHILDREN – TO WHAT EXTENT ARE WE PREPARED?”	275	277
Power	Sub-Specialty	ADOLESCENT AUTONOMY: THE ETHICAL AND LEGAL ISSUES	276	278
Power	Sub-Specialty	INCREASED BODY MASS INDEX AND ITS MANAGEMENT IN PAEDIATRIC ONCOLOGY	277	279
Purcell	Sub-Specialty	DEVELOPING AN MDT MODEL IN NEUROFIBROMATOSIS TYPE 1 (NF1) AS A PARADIGM FOR ENTRY INTO A EUROPEAN REFERENCE NETWORK (ERN).	278	279

<b>Lastname</b>	<b>Category</b>	<b>ABSTRACT TITLE</b>	<b>Poster No</b>	<b>Page in Online Abstract Book</b>
Rafiqullah	Sub-Specialty	CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII) OR INSULIN PUMP THERAPY IN A DISTRICT GENERAL HOSPITAL. IS IT FEASIBLE?	279	280
Rodriguez-Herrera	Sub-Specialty	THE GIP TEST (GLUTEN IMMUNOGENIC PEPTIDES) TO CHECK ADHERENCE TO GLUTEN FREE DIET IN COELIAC DISEASE	280	281
Ryan	Sub-Specialty	DESCRIPTION OF ACUTE-ONSET AUTOIMMUNE ENCEPHALITIS IN A THIRTEEN-YEAR-OLD GIRL.	281	281
Ryan	Sub-Specialty	GLP-1-SECRETING PROBIOTIC IMPROVES METABOLIC DYSFUNCTION IN HIGH-FAT DIET FED ADOLESCENT RODENTS	282	282
Scott	Sub-Specialty	A LITERATURE REVIEW ON THE CUTANEOUS PRESENTATION OF EATING DISORDERS IN CHILDREN AND ADOLESCENTS	283	283
Theze	Sub-Specialty	HERLYN-WERNER-WUNDERLICH SYNDROME A.K.A OBSTRUCTED HEMIVAGINA AND IPSILATERAL RENAL AGENESIS (OHIVRA) SYNDROME, A RARE DIFFERENTIAL FOR ABDOMINAL PAIN	284	284
Tully	Sub-Specialty	CONGENITAL TALIPES EQUINOVARUS: THE RELIABILITY AND READABILITY OF ONLINE RESOURCES	285	285
Usman	Sub-Specialty	LARYNGEAL MASK AIRWAY (LMA) PRIOR TO TRANSFER IS A RELIABLE ALTERNATIVE IN DIFFICULT ENDOTRACHEAL INTUBATIONS.	286	285
Viljoen	Sub-Specialty	THE EFFECT OF CHILD PSYCHIATRY CONSULTATION PERFORMED IN ED ON ADMISSION RATES BETWEEN JANUARY-JUNE 2017 AT TALLAGHT CHILDRENS ED	287	286
Walsh	Sub-Specialty	BURDEN OF DISEASE WITH TUBEROUS SCLEROSIS COMPLEX IN THE REPUBLIC OF IRELAND	288	287
Walsh	Sub-Specialty	AUDIT OF SERVICE PROVISION FOR NEWLY DIAGNOSED DIABETIC PATIENTS IN A SECONDARY CARE CENTRE IN THE REPUBLIC OF IRELAND	289	287
Zareen	Sub-Specialty	NEONATAL ENCEPHALOPATHY: DYSFUNCTIONAL INFLAMMATION AT SCHOOL AGE IS RESPONSIVE TO MELATONIN.	290	288

## Poster No. 1 - General Paediatrics

### DOMESTIC VIOLENCE AND ITS IMPACT ON CHILD DEVELOPMENT

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**Objectives/Background:** Domestic abuse is a public health issue. It is one of the most pervasive human rights challenges of our times. It occurs across societies regardless of age, race, gender, sexuality, wealth or geographic location. The effects on victims can be devastating and children are silent victims of domestic abuse. They can be involved directly and indirectly. Often their voices are not heard and needs ignored. Domestic Abuse accounts for approximately 1 in 5 of all recorded violent crimes in Northern Ireland.

**Method:** An electronic medline search was performed relating to the above title using the terms domestic violence, domestic abuse, child maltreatment. No language restrictions were applied. Reference lists were also searched identifying appropriate articles. Data from the Police Service of Northern Ireland was also used.

**Results:** There has been growing evidence that there are harmful consequences for children and young people living in violent homes. In homes where aggression is present children are at risk of personal injury or death. Exposure can result in a wide range of psychological and physical symptoms that can be long term. Children are at risk for becoming aggressors themselves in future relationships. Individuals, especially infants and toddlers, who are exposed to the stress response over extended periods of time, can suffer distinct changes in brain structure.

**Conclusion:** Tackling domestic violence is a priority in UK government crime control policies, and in policies on child protection and children's welfare. The aim of this presentation is to present statistics, protective factors, prevention and management of domestic violence. The physical and psychological effects of viewing violence on the brain of the developing child will also be addressed.

## Poster No.2 - Sub-Specialty and Special Interest Paediatrics

### DEVELOPMENT OF PAEDIATRIC SPECIALIST MULTIDISCIPLINARY DOWN SYNDROME CLINIC

Z Abdelrahim<sup>1</sup>, A Dooley<sup>1</sup>, A Khan<sup>1</sup>

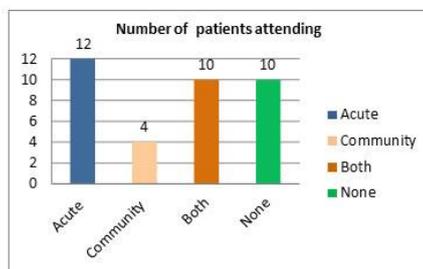
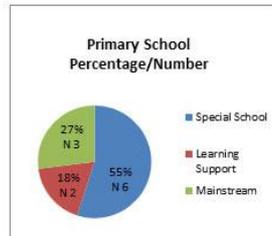
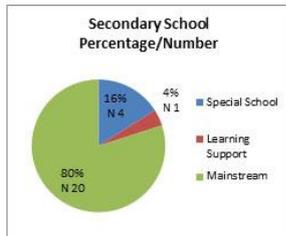
<sup>1</sup>Community Pediatrics Services and Daisy Hill Hospital, Southern Health and Social Care Trust (SHSCT), Newry, Northern Ireland

**Background:** Down syndrome (Trisomy 21) is a chromosomal condition with special health needs and single most common identifiable cause of learning difficulties. Medical conditions such as thyroid dysfunction, structural heart disease. Problems in hearing, vision and growth are significantly higher in these patients. Evidence suggests that early screening, diagnosis and medical management of these problems can significantly reduce secondary illness resulting in improved quality of life. Therefore children with Down syndrome requires long-term follow-up in dedicated specialist clinics.

This Quality Improvement (QI) project was undertaken as medical care for most Down syndrome (DS) children were not met in line with the national standards.

**Aims:** To develop a patient centred, high quality service in a specialist multidisciplinary Down syndrome clinic to ensure standardised, evidence based medical care in line with national standards.

**Methods:** A retrospective audit of current services for children with Down syndrome in Southern health & social care Trust was completed which identified number of deficiencies within existing services. Audit recommendations included; establishing a specialist multidisciplinary DS Clinic and developing local care pathway for improved patient care. QI tools including; Process Flow Analysis, Fish diagram, Purpose to practice, and Parent feedback questionnaire were used during this project.



**Result & Conclusion:** A specialist Multidisciplinary Down Syndrome clinic was established with first clinic in Jan 2017. Pilot of once a month clinic with PDSA cycle for 12 months. A local care pathway was also developed including core clinic members, clinic frequency, templates, referral criterion and MDT communication framework. Children and young people with DS are involved in service development. Number of improvements were made on PDSA cycle. This also Promoted joined up working in partnership with patients and families. A repeat Audit is planned after 12 months.

Guidance for Essential Medical Surveillance for Children with Down syndrome. [www.dsmig.org.uk](http://www.dsmig.org.uk) Pediatric Service Specification. Services for Children & Young people with Down syndrome.RCPCH

**Poster No.4 - General Paediatrics**

**GITELMAN'S SYNDROME: A RARE CAUSE OF HYPOKALEMIA**

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<sup>1</sup>Paediatric Department, University Hospital Kerry, Tralee, Ireland

**Aims:** To report a case of Gitelman's syndrome,a rare cause of hypokalemia.

**Methods:** History,Examination,Investigations,Treatment and follow up.

**Results:** We report a case of seven year old boy who presented to emergency department with complain of four days history of abdominal pain,with no other symptoms.Mother reported complaints of intermittent weakness but otherwise no significant past history. On Examination he was slim build,weight 21.2kg,height 119 cm.His vitals including blood pressure were within normal range.Systemic examination was normal apart from mild periumbilical tenderness.Abdominal X-ray showed fecal loading of colon.Acute abdomen was ruled out by surgeons,referred for paediatrics assessment because of incidental finding of low serum potassium(K 2.4mmol/l).He was admitted,started on movicol and intravenous fluids with added potassium chloride.Repeat blood test showed low serum potassium(K2.7mmol/l),low serum magnesium(Mg 0.6mmol/l)and alkalosis on venous blood gas.ECG showed normal sinus rhythm.Paediatric Nephrology team consulted and he was started on oral potassium and magnesium supplements.Results of other investigations including early morning urine for albumin/Creatinine ratio,calcium/creatinine ratio,urine electrolytes,urine amino acids and urine Retinol binding protien were all within normal range.He was discharged home after his serum potassium improved(K 3.4mmol/l),his blood chemistry was regularly checked on follow up and nephrology team updated.Blood sample sent for genetics confirmed two mutations in the SLC12A3 gene consistent with autosomal recessive Gitelman's syndrome.

Currently he is on Magnesium supplements, off K supplements and doing well. He is under regular follow up with us and paediatric nephrology team.

**Conclusions:** Gitelman syndrome is a rare autosomal recessive renal tubular disorder characterized by hypokalemia, metabolic alkalosis, hypomagnesemia and hypocalciuria. In majority of cases it is caused by mutation in the solute carrier family 12, member 3, (SLC12A3) gene. At present more than 140 different mutations have been identified. Prevalence is approximately 1:40,000 with the heterozygotes prevalence of about 1% in Caucasians, making it most frequently inherited renal tubular disorder. Although a rare disorder, Gitelman's syndrome has to be considered in patients with unexplained hypokalemia. With adequate treatment these patients have an excellent prognosis.

1. Gitelman HJ, Graham JB, Welt LG: A new familial disorder characterized by hypokalemia and hypomagnesemia. *Trans Assoc Am Physicians* 1966, 79:221-235. 2. Riveira-Munoz E, Chang Q, Godefroid N, Hoenderop JG, Bindels RJ, Dahan K, Devuyst O: Belgian network for study of Gitelman syndrome. Transcriptional and functional analyses of SLC12A3 mutations: new clues for the pathogenesis of Gitelman syndrome. *J Am Soc Nephrol* 2007, 18:1271-1283. 3. Cruz DN, Shaer AJ, Bia MJ, Lifton RP, Simon DB: Gitelman's syndrome revisited: An evaluation of symptoms and health-related quality of life. *Kidney Int* 2001, 59:710-717. 4. Knoers NVAM, Starremans PGJF, Monnens LAH: Hypokalemic tubular disorders. In *Oxford Textbook in Clinical Nephrology* Third edition. Edited by: Davidson AM, Cameron JS, Grunfeld J-P, Ponticelli C, Ritz E, Winearls CG, van Ypersele C. Oxford University Press; 2005:995-1004. 5. Lin SH, Cheng NL, Hsu YJ, Halperin ML: Intrafamilial phenotype variability in patients with Gitelman syndrome having the same mutations in their thiazide-sensitive sodium/chloride cotransporter. *Am J Kidney Dis* 2004, 43:304-312. 6. Nine VAM Knoers\* and Elena N Levtchenko: Review Gitelman syndrome. *Orphanet Journal of Rare Diseases* 2008, 3:22.

#### Poster No. 5 - Neonatal

#### COMPARISON OF LABORATORY AND ELECTRONIC REPORTS ON CERNER MILLENNIUM IN NEONATAL UNIT, UNIVERSITY HOSPITAL KERRY

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#### AIM:

To verify accuracy of electronic reporting on Cerner Millennium, which is an electronic record system that has been in practice in Maternity and Neonatal Departments of University Hospital Kerry (UHK) since March 2017, in order to cease paper reporting.

**METHODS:** Using paper results from Hematology, Biochemistry and Microbiology Departments as standard, a retrospective audit was conducted to compare paper reports and electronic uploads in Cerner Millennium from 18/04/2017 to 27/09/2017. Fifty paper reports were randomly selected from Hematology, Biochemistry and Microbiology Departments. A proforma was supplied by the laboratory manager detailing parameters to be satisfied before ceasing paper reporting. The following parameters were compared as per the proforma: patient identifier and location, test results, abnormal results highlighted, specimen type, units, reference ranges, collection date and time, received date and time, and comments/interpretation.

**RESULTS:** Fifty online reports were compared with their corresponding hard copies. All of the parameters audited were found to be accurate.

**Conclusion:** This audit verified that the Cerner Millennium online reporting is a reliable primary reporting system for the Neonatal Department UHK thus, enabling Neonatal Consultants to agree on ceasing paper reporting.

## Poster No.6 - General Paediatrics

### PAEDIATRIC TRIAGE AUDIT

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<sup>1</sup>Paediatric Department, South Tipperary General Hospital, Clonmel, Co. Tipperary

#### AIMS:

Are children attending Paediatric Emergency Room seen within the specified time frame as per Manchester Triage Scale?

#### METHODS:

This was a retrospective audit and data was collected from ED Record book from 01/11/2013 to 07/11/2013. Data was collected for Number of patients, Gender, Age, time of arrival, Time of Triage, Time seen by the Doctor, Category of Triage, Source of referrals, Type of illness and or injury. Manchester Triage Scale was used as a standard.

#### RESULTS:

Total of 55 patients were seen in the Emergency room during the audit period. 27 were male and 28 were female. Mean age was 57 months (Range 0.5 to 180 months). All of patients were assigned to one of the five categories of the Manchester Triage scale. Most patients were placed in category 3 n=38(69%) followed by 6 patients each (10.9%) in category 4 and 5 and 5 patients (9%) were placed in category 2. There was no patient assigned to category 1. Out of 55 children, 25(45.45%) were referred by G.P, 16(29%) self referrals, 9(16.36%) by CareDoc, 2(3.6%) were brought by Ambulance, 1(1.8%) referred from Adult ED. Data was missing for 2 patients for this variable. 18(32.7%) patients presented with respiratory symptoms, 16(29%) with G.I symptoms, 6(10.9%) with febrile illness, 6(10.9%) with neurological symptoms, 3(5.4%) with rashes, 2(3.6%) with musculoskeletal problems, 2(3.6%) with psychosocial issues, 1(1.8%) with cardiovascular complaint and 1(1.8%) with lumps/swelling in the neck. Total 8 patients were excluded as triage time was missing in 5 and time seen by doctor was missing in 4 cases including one patient for whom both triage time and time seen by doctors was not recorded. Out of 47 patients 46(97.8%) were seen within the time frame as per Manchester Triage Scale. 1 patient (2.1%) in category 2 was seen at 20 minutes rather than within 10 minutes of triage time.

#### CONCLUSIONS:

This audit shows that almost all patient (97.8%) except one was seen within the Triage scale time frame.

#### RECOMMENDATIONS:

- 1-Proper documentation in ED Record book with especial emphasis on documentation of arrival time, Triage time and time seen by doctor.
  - 2-If the patients are assigned to category 1 & 2 then Triage nurse should tell the doctor about the time frame within which the patients need to be seen.
  - 3-Education and training session for NCHDs on Triage system.
- Manchester Triage system

## Poster No.7 - General Paediatrics

### PRESCRIPTION ERRORS IN PAEDIATRIC UNIT PORTIUNCULA UNIVERSITY HOSPITAL BALLINASLOE CO. GALWAY

N Alam<sup>1</sup>, P Curran<sup>1</sup>

<sup>1</sup>Portiuncula University Hospital Ballinasloe, Co. Galway

**Aim:** To highlight the common errors occurring in prescribing medication in our pediatric ward Portiuncula hospital Ballinasloe Co. Galway

To educate the newly starting doctors about the safe prescription writing & the outcomes of these results

**Methods:** Retrospective audit of charts on 9<sup>th</sup> of December 2016.

HSE drug Kardex for Paediatric ward Portiuncula hospital Ballinasloe was standard to compare the observations noted in audit.

16 Prescription charts (6 surgical & 10 paediatric) were reviewed during this period.

Total number of patients=16

#### **Results:**

Generic errors = 31% errors

Prescription must not be altered =12% Errors

Metric units as per guidelines =31% errors

Oxygen therapy prescribed = 50% errors

Weight not written in (KG) = 12% errors

Capital only =75% errors

Amount of dose =12% errors

Sign on front page & on page 6 =56% errors

Stop date & sign =6% errors

Not Mentioning drug allergies = 68% errors

#### **Conclusions:**

Recurrent training and education for proper medication prescription

Routine review of Prescription chart for detecting any potential errors

Error should be reported

Safe Prescription of medication should be part of induction of NCHD

Re- Audit (December 2017) after implementation of the above recommendations

In contrast to all other hospital wards, there is no input from the pharmacy depart to check on prescribing practices pharmacy input

**Reference:** Dr Helen Flint Medicines Management Programme Medicines Programmes Directorate Health Services Executive, Dublin Paediatric Prescribing Principles 2016 RCPCH Safe prescribing for doctors RCPI

#### **Poster No. 8 - Neonatal**

##### **THE USE OF PARENTERAL NUTRITION AND ASSOCIATED ISSUES IN SPECIAL CARE BABY UNIT (PORTIUNCULA UNIVERSITY HOSPITAL BALLINASLOE CO. GALWAY)**

**N Alam<sup>1</sup>, NF Nurdin<sup>1</sup>, M Amer<sup>1</sup>, F Neenan<sup>1</sup>**

<sup>1</sup>Paediatric Department, Portiuncula University Hospital, Ballinasloe, Ireland

**Aim of the audit:** Examining the process of care of neonates of all gestations who received parenteral nutrition between November 2015 and 30<sup>th</sup> April 2017. The study aims to identify areas where the care of these patients might have been improved.

**Methods:** Retrospective study of patient charts from May 2017 till 24th October 2017.

Data was collected regarding use of stock TPN (preterm with and without electrolytes, SMOF 20% Lipids and term bags), patient specific TPN, duration of TPN and catheter related infections.

National Clinical practice Guideline on the use of the Parenteral nutrition in neonatal and Paediatric units and Irish society for clinical nutrition and metabolism guidelines was followed as a standard.

**Results:** Total of 33 neonates received TPN during audit period, they all received stock TPN except one who went onto patient specific TPN day 3 secondary to hypoglycaemia (6.8 % of neonatal admissions to SCBU needed TPN)

Average TPN use -3.5 days,

Indications mainly prematurity and delay in establishing feeding,

Main group identified n=22 (Group 2 who were 32<sup>+1</sup> weeks to 36<sup>+6</sup> weeks gestation)

TPN related catheter infections were noted in 6% of patients (n=2),

Only 1 patient needed patient specific TPN.

In this group of 33 patients treated with TPN only 3 had absolute indication to start TPN, the remaining 30 patients fulfilled relative indications only?

Biochemical monitoring was 100% compliant and yielded normal results except for lipid monitoring which was only carried out in 5 patients.

Conclusions: A peripheral Special Care Baby Unit (SCBU) setting such as in PUH can meet the TPN requirements of its neonate from stock TPN almost exclusively. Stock TPN is a cost effective and less labour intensive TPN for our SCBU and similar units.

National Clinical practice Guideline on the use of the Parenteral nutrition in neonatal and Paediatric units. Irish society for clinical nutrition and metabolism. RCPI

#### **Poster No. 9 - General Paediatrics**

##### **INVASIVE GROUP A STREPTOCOCCUS**

**AB ALI<sup>1</sup>, MO SH<sup>1,2</sup>, FR NEENAN<sup>2</sup>**

<sup>1</sup>PEDIATRICS , TALLAGHT HOSPITAL, DUBLIN, DUBLIN

<sup>2</sup>PEDIATRICS , PORTIUNCULA HOSPITAL, BALLINASLOE , GALWAY

<sup>3</sup>PEDIATRICS, PORTIUNCULA HOSPITAL , BALLINASLOE, GALWAY

**AIM:** GROUP A STREPTOCOCCUS IS A BACTERIA THAT CAUSES PHARYNGITIS AND INVASIVE DISEASE . THE AIM OF THIS PRESENTATION IS TO LOOK AT THE INCIDENCE , MORBIDITY AND MORTALITY OF INVASIVE GROUP A STREP .

**METHOD :** THIS DATA OF A PATIENT THAT PRESENTED TO PORTIUNCULA HOSPITAL IN DECEMBER 2016 . DATA ALSO COLLECTED FROM UPTODATE AND HSE HEALTH PROTECTION SURVEILLANCE CENTRE .

**RESULT:** THERE IS INCREASE IN THE INCIDENCE OF INVASIVE GROUP A STREP . A NUMBER OF COMPLICATION CAN HAPPEN AS A RESULT OF THE INVASIVE FORM OF THE DISEASE .

**CONCLUSION:** GROUP A STREP REMAINS A SERIOUS INFECTION THAT CAN LEAD TO MORBIDITY AND MORTALITY

CASE ADMITTED IN DECEMBER 2016 UPTODATE HSE HEALTH PROTECTION SURVEILLANCE CENTRE

#### **Poster No.10 - General Paediatrics**

##### **INSIDE YOUR BRAIN: AN INTRACEREBRAL ABSCESS– A CASE REPORT**

**K Altaf<sup>1</sup>, H O'Reilly<sup>1</sup>, Z Hassan<sup>1</sup>, AP Macken<sup>1</sup>, Z Babiker<sup>2</sup>, D Crimmins<sup>3</sup>, J Walsh<sup>1</sup>**

<sup>1</sup>Paediatric Department, South Tipperary General Hospital, Clonmel, Ireland

<sup>2</sup>Radiology Department, South Tipperary General Hospital, Clonmel, Ireland

<sup>3</sup>Neurosurgical Department, The Childrens University Hospital, Temple Street, Dublin 1, Ireland

**Aims:** We aim to present an unusual presentation of an intracerebral abscess.

**Methods:** We report the history, examination, laboratory, radiological and intraoperative findings for this girl Results:

A ten year old girl presented with vomiting, diarrhoea and flu like symptoms for four days after foreign travel. The next day she developed vomiting, headache and urinary incontinence. CT brain showed a large abscess in her right frontal lobe with evidence of sinusitis with erosion of the roof of the sphenoid sinuses. Shortly after she developed bradycardia, hypertension and decrease level of consciousness requiring ventilation for urgent transfer. Neurosurgery performed two abscess drainage procedures. She was also referred to ENT who performed sinus drainage. She was commenced on a 6 week course of IV ceftriaxone IV and PO metronidazole. Drainage fluid grew Streptococcus Constellatus pharyngis. She has recovered without apparent neurological deficit.

**Conclusion:** This is an unusual presentation of intracerebral abscess. She initially had a clinical picture of gastroenteritis. This is a case where the initial presentation suggestive of a viral illness evolved to manifest an intracerebral abscess. Timely reaction to the clinical picture was imperative for a successful outcome.

## Poster No. 11 - General Paediatrics

### CAROTENEMIA ASSOCIATED WITH FOOD RICH IN CAROTENES

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<sup>1</sup>Paeds,, St. Luke's General Hospital, Kilkenny, Kilkenny, Ireland

9 months old Irish girl presented with yellowish discoloration of skin which started around the nose and face 3 weeks ago initially and then spread to whole body.

She was eating carrots and sweet potatoes with every single meal.

There was no significant past history, her development milestone were age appropriate.

She was born full term via normal vaginal delivery. She was not taking any medications.

On examination:

There was generalized yellow discoloration of skin, palms and soles. There was no scleral icterus.

Systemic examination was unremarkable, there was no hepatosplenomegaly.

Her blood investigations including FBC, U&E and LFTs were normal. Bilirubin was 11.5mmol/L.

She was diagnosed as having Carotenemia and advised to avoid carotenoid-containing foods and her skin colour improved.

Carotenemia in infants and toddlers can be found whose diets consist of large amounts of strained yellow vegetables, particularly carrots and other carotenoid-containing fruits and vegetables.

Carotenoids include alpha- and beta-carotene, and lycopene. They are contained in carrots, sweet potatoes, mangoes, apricots, melons, tomatoes, peppers, and green leafy vegetables. In addition, beta-carotene is frequently used as a food-colouring agent.

Unlike jaundice, the skin color characteristically is more yellow-orange and more noticeable in areas with increased sweat glands (eg. the palms, soles, and nasolabial folds), sparing mucosal tissue and the sclerae. Although diet is a major cause of carotenemia in childhood, some diseases, such as nephrosis, diabetes mellitus, anorexia nervosa, liver disease, and hypothyroidism, also can produce the condition

#### References:

<https://www.uptodate.com/contents/the-pediatric-physical-examination-back-extremities-nervous-system-skin-and-lymph-nodes?source=machineLearning&search=carotenemia&selectedTitle=1~6&sectionRank=1&anchor=H11#H11>

## Poster No. 12 - General Paediatrics

### CONSTIPATION LEADING TO SPLINTING OF DIAPHRAGM AND RESPIRATORY DISTRESS

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**Aim:** Present an unusual case of respiratory distress secondary to massive bowel overload and diaphragmatic elevation.

#### Case reports and Results

Constipation is a common problem in children may lead to severe complication and unusual presentations.

14 years old boy presented to PAU with one day history of shortness of breath with massive abdominal distension associated with nausea and two episodes overflow diarrhoea. On examination abdomen was distended to 93.5cm whereas in this age group and for his weight abdominal girth would be 74 cm\*. On investigation PFA showed marked faecal loading of colon and rectum with marked dilation of large bowel and sigmoid colon was distended to 15.3 cm and proximal colon to 14.5 cm .The distended colon lead to elevation of diaphragm with splinting and then to respiratory distress (see x-ray below). On treatment with enema and clean prep abdominal distension reduced to 80 cm next day with resolution of respiratory distress.

**Conclusion:** Constipation is not expected to be a life threatening condition requiring a quick intervention. Constipation should be a differential diagnosis of respiratory distress with abdominal distension.

#### **Poster No. 13 - General Paediatrics**

##### **EMERGENCY ADMISSIONS OF CHILDREN AND YOUNG PEOPLE WITH MENTAL HEALTH NEEDS TO THE PAEDIATRIC WARD**

M Wallis, **M Azam**, F Akhtar

<sup>1</sup>Department of Paediatrics, Wexford General Hospital, Wexford, Ireland

**Aims:** There is a national shortage of paediatric liaison psychiatry services<sup>1</sup>. We aimed to quantify paediatric emergency admissions with mental health needs, in terms of: type of presentation, staffing requirements, involvement of CAMHS and other services, and discharge plan.

**Methods:** All paediatric emergency admissions (up to the 17th birthday) with mental health and behavioural problems over one year were identified from ward records. Data was extracted retrospectively from the notes.

**Results:** 83 individuals had 111 admissions (475 bed-days). Deliberate self-harm was the main presentation in 44(40%) admissions; symptoms of psychiatric disorders (severe anxiety, depression, psychosis) in 20(18%), challenging behaviour in 22(20%); substance misuse in 19(17%); eating disorders in 4(4%) (occupying 192(40%) bed-days); psychosomatic symptoms in 2(2%). 18 admissions were inappropriate for the paediatric ward due to anti-social behaviour; 14 admissions were requested by Gardai under Section 12, due to aggression or intoxication. In 48 admissions (362 bed-days) there was a high risk to the patient (of self-harm) or to others; 22 (276 bed days) received individual supervision. Secondary CAMHS provided a ward assessment in 40(36%) admissions and an urgent outpatient assessment in 37(33%); 18 referrals went to the substance misuse team, 15 to TUSLA, 4 to community psychology and 3 to tertiary CAMHS. 26(23%) admissions had a discharge plan.

**Conclusion:** Increased provision of secondary CAMHS is needed for a paediatric liaison psychiatry service to cover all admissions and facilitate discharge planning. Guidelines for deliberate self-harm, eating disorders and challenging behaviour would impact the majority of our workload. Primary prevention should also be addressed<sup>2</sup>.

1. A National Model of Care for Paediatric Healthcare Services in Ireland. Chapter 13: CAMHS.(2015) HSE/RCPI 2. School-based suicide prevention programmes: the SEYLE cluster-randomised, controlled trial. Wassermann D, Hoven CW, Wassermann C. Lancet. 2015 Apr 18;385(9977):1536-44

#### **Poster No. 14 – General Paediatrics**

##### **SOMETIMES HOOFBEATS ARE ZEBRAS – A CASE OF ATYPICAL KAWASAKI DISEASE**

Fagan S, **Branagan A**, Purcell C

National Childrens Hospital, Tallaght, Paediatric Department

**Introduction:** Kawasaki's disease is among the most common of vasculitides diagnosed in children. 80-90% of cases of KD occur under 5years. It is an important diagnosis to consider due to the potential for serious cardiovascular complications including coronary artery aneurysms and impaired myocardial function. Kawasaki's disease is caused by widespread inflammation of medium sized arteries. The underlying cause is not yet known.

**Case:** Patient T is a 9 year old girl who presented to ED in a paediatric unit with a history of 7 days pyrexia. Her initial symptoms included rash, sore throat and diarrhoea. She was treated initially in primary care for tonsillitis and later UTI. On presentation to ED these symptoms had settled but she had become increasingly unwell and dehydrated. She had dry cracked lips and bilateral non-purulent conjunctival injection. She was admitted for supportive treatment and although Kawasaki Disease was considered she did not meet criteria. She was discharged home after remaining afebrile for 24 hours

with good clinical improvement. However, she was re-admitted 3 days later due to return of pyrexia and a new onset of desquamation of her fingers. At this point she was commenced on treatment for KD, of IVIG. An ECHO at this point showed coronary artery aneurysm and care was transferred to cardiology in a tertiary centre.

**Discussion:** On review of this case, we can see our patient had only two features of Kawasaki disease, although she had previously also had a rash. We can also note that many of the clinical features of Kawasaki disease can also be seen in routine childhood viral infections. A diagnosis of atypical Kawasaki disease made on initial presentation and instigation of treatment may have prevented the cardiac complications seen in this case. Fortunately, in this case there has been no long-term consequences.

#### **References:**

Yanagihara R, Todd JK, Acute febrile mucocutaneous lymph node syndrome, Am J Dis Childhood 1980; 134:603.

Newburger et Al, Cardiovascular sequelae of Kawasaki Disease, Sept 2016, Uptodate

Sundel et Al, Kawasaki disease: Clinical features and diagnosis, Feb 2016, Uptodate

#### **Poster No. 15 – General Paediatrics**

##### **USE OF GROWTH CHARTS IN PAEDIATRIC IN-PATIENTS**

**Dr. Navdeep Brar**, Dr Nuha Elmamoun, Dr Shoaib Mohammad Iqbal, Ms Aine Slevin, Dr. Sami Elkashif, Letterkenny General Hospital, Donegal

#### **1. Aim of Audit**

To examine measurement of length/height, weight and head circumference where applicable and plotting of same on growth charts by the Doctor in children admitted as in-patients to the Paediatric Ward in Letterkenny University Hospital, and to highlight any deficiencies so that corrective action if required may be taken by the clinicians.

#### **2. Methodology**

##### **2.1. Criteria selection**

Criteria to measure against were selected from HSE guidance on growth monitoring.

##### **2.2. Population/Sample Identification**

Data was collected from the Medical Records of children who had been discharged from the Paediatric Ward during the period Feb to April 2017. Data was collected on children recently discharged and whose medical records remained on the ward and at times to suit with the auditor's other work commitments

**2.3. Data Collection Sources:** Data was collected from the medical record.

**2.4. Data Abstraction Questionnaire:** Data was collected using a short questionnaire.

**2.5. Data Type:** Data was collected on the following areas:

Height/Length recorded

Weight recorded

Head Circumference recorded (where applicable)

Height/Length, weight and head circumference (where applicable) recorded on growth chart.

**2.6. Method of Analysing Data:**

Data was analysed by the auditor using Microsoft Excel.

#### **3. Results:**

- Total number of charts: 103
- Files with growth chart and plotting: 6 (6%)
- Files with growth chart and no plotting: 30(29%)
- Files without growth chart: 67(65%)

**4. Conclusion:** There is poor compliance as per national standard. It is recommended to have proper plotted growth chart within the medical record of each patient.

- 1) Growth assessment is, therefore, an essential part of the examination or investigation of any child (Hoey et al, 1987). It should be performed as part of good routine clinical care.
- 2) **Issue:** It is noted that not all the children admitted as in-patients to the Paediatric Ward in Letterkenny University Hospital are plotted on growth charts.
- 3) **Action:** Audit was done and presented to the Paediatric team to aware the importance of growth measurement. It is then advised that whoever admit patient should plot the weight, height and head circumference where applicable on growth chart. Reaudit was done after 3 months to see the progress.

#### Poster No. 16 - General Paediatrics

##### CLINICAL AND PHARMACOLOGICAL MANAGEMENT OF PNEUMONIA PRESENTING TO A TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT

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<sup>2</sup>Paediatrics, Dublin University, Trinity College Dublin, Ireland

**Aims:** To determine the burden of pneumonia presenting to a tertiary paediatric emergency department, the referral pathway and pre-hospital antimicrobial use. We examined the compliance with best practice in terms of antimicrobial prescribing on admission.

**Methods:** Retrospective analysis of presentations of children 0-16y to a large Paediatric Emergency Departments (PED) for a 3-month period July-September 2017. Diagnoses of lower-respiratory tract infection, community acquired pneumonia and pneumonia were included. Hospital *Symphony* Emergency Department Information System (EDIS and radiology NIMIS) information systems were interrogated. Demographics, CXR ordering, presenting complaint, symptoms, vitals, triage category and discharge destination were recorded. A manual review of doctor's electronic notes was performed. Compliance with local guidelines were checked.

**Results:** Pneumonia was diagnosed in 137 children. Mean age of presentation was 4.02 +/-3.73 years, range (0 - 15), male n=66 (53.7%), mean triage cat was 2.51+/-0.71. GP referral received in 80 children, (57.5%). Of those referred by GP with Oxygen saturation <94%, 22(71%) were admitted. Antibiotics pre-hospital in 13 children (10%). Of presentations, 70 were admitted (51.5%). Of those admitted; respiratory rate was above normative values in 11 (47%), O2 sats <94% in 36 (63%), IV administration in 37(46%) First line IV Amoxicillin in 19 (51.3%). Steroids co-prescribed in 8 (10%), Azithromycin was co-prescribed in 5 (6%). Where treatment at home was prescribed, none re-presented.

**Conclusion:** Antibiotic IV prescribing was out of line with local antimicrobial stewardship. A high proportion of admissions had been referred by their GP.

#### Poster No. 17 - General Paediatrics

##### BONE HEALTH AND PREVENTION OF OSTEOPOROSIS IN NON AMBULANT CHILDREN

Dr Marianne Butler<sup>1</sup>, Dr Siobhan Gallagher<sup>2</sup>

Department of Surgery<sup>1</sup>, Department of Paediatrics <sup>2</sup>, University Hospital Limerick

MB Butler<sup>1</sup>, SG Gallagher

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**Background & Aim:** The American Academy for Cerebral Palsy and Developmental Medicine (AACPDM) published a care pathway in 2016 for the prevention and treatment of osteoporosis in children and youth with non-ambulatory Cerebral Palsy (AACPDM, 2016). Children with physical disability are at risk for fragility fractures secondary to osteoporosis from decreased weight bearing (Henderson, 2002). Risk factors that often co-exist include poor nutrition with decreased calcium and vitamin D intake, vitamin D deficiency from decreased exposure to sunlight and anticonvulsant medications.

**Methods:** A retrospective review of 57 non-ambulatory paediatric patients with complex disability was conducted. Children were identified from a Community Paediatric database. The University of Limerick laboratory system 'iLab' was accessed regarding bloodwork for bone health as outlined in the guideline. The data was collected using an audit tool. Data fields included; Age, Sex, Diagnosis, Calcium, Vitamin D, Phosphate, Parathyroid Hormone levels and frequency of testing.

**Results:** A total of 57 children were analysed in this audit, 35 were male and 22 were female. The age range was 1years-18years, mean age 9.14 years. Diagnosis included Cerebral Palsy, Global Developmental Delay, Spina Bifida, Duchene Muscular Dystrophy, Metabolic and Genetic conditions. 45% were PEG fed, 70% were on anticonvulsants. 89% of calcium levels and 87% of phosphate levels were measured in the patients. Baseline Vitamin D levels were measured in 57% of patients, 24% were repeated at 6 months. Parathyroid hormone levels were assessed in 12% of the patients.

**Conclusion:** This study highlights the need for improvement in assessment of bone health in non-ambulatory children in particular Vitamin D and Parathyroid Hormone. Assessment of risk factors for osteoporosis should be part of an annual Paediatric Assessment for non-ambulatory children as a preventative strategy for fragility fractures. Further evaluation of bone health with DEXA Scans should be considered as part of the assessment in non ambulant children.

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#### **Poster No. 18 - General Paediatrics**

#### **CLINICAL PROFILE OF KAWASAKI DISEASE IN CHILDREN: 15 YEARS EXPERIENCE AT UNIVERSITY HOSPITAL WATERFORD**

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**Aim:** To study the clinical profile of Kawasaki Disease ( KD) in children, diagnosed in Waterford University Hospital

**Methods:** Retrospective review of 12 patients, under 16 years of age, diagnosed between January 2000 to May 2016. Each patient clinical notes were reviewed for the presence or absence of different diagnostic criteria of Kawasaki Disease, laboratory results ,management and echocardiography results as outlined in American Heart Association (AHA) statement on Kawasaki Disease. Data was processed and analysed using Microsoft Office EXCEL.

**Results:** 12 patients were included in the study. Male to female ratio was 1:1. Forty one percent (41%) of the patients were under 1 year of age, 25% between 1-2yrs,16.6% between 2-5 year and 16.6% were older than 5 yrs. While 37.5% of the patients fulfilled **complete** diagnostic criteria for Kawasaki Disease. 65.5% met **incomplete** criteria for Kawasaki Disease. Beside the cardinal symptoms of Fever, rash was noticed in all study patients (100%). Extremity changes were noticed in 62% of them. Bilateral Non-purulent conjunctivitis in 50% of the cases and cervical lymphadenopathy in 37.5%. Others clinical symptoms included: neurological symptoms in 37.5% of the cases ,coloured urine in 8.3% .CRP was high (>30) in 75% of the study population ,abnormal Liver function tests were documented in 37.5%, and sterile Pyuria was a feature in 50% of the cases. All patients responded to a single dose of IVIG (fever resolved within 24 hours of administration) .All underwent Echocardiography and only one case was found to have coronary artery aneurysm (3.1%) .

**Conclusion:** During the study period, 2/3<sup>rd</sup> of patient had clinical features of incomplete **Kawasaki Disease**. Study highlights the importance of early diagnosis and treatment of KD. All patients responded to single dose of IVIG therapy. Only one case (3.1%) showed long term complications.

**Poster No. 19 - General Paediatrics**

**WHAT SHOULD WE EXPECT? A TWO YEAR REVIEW OF PAEDIATRIC EMERGENCY DEPARTMENT RESUSCITATION CASES**

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**AIMS:** To evaluate the paediatric emergency cases that were triaged directly into the resuscitation room of the emergency department at Galway University Hospital over a two year period, focusing on the calibre of cases and the outcomes following resuscitation and medical or surgical care.

**METHODS:** A retrospective review was carried out on all paediatric patients who presented to the emergency department in Galway University Hospital and were triaged directly into resuscitation room from July 2015 to August 2017. Data was obtained from the resuscitation room admission book and the Emergency Department electronic logs.

**RESULTS:** From July 2015 to August 2017 a total of 340 cases were identified. Of these, 24% (82) arrived by ambulance. The most common presentations were of respiratory distress and stridor (34%). Injuries accounted for 19% of presentations and 16% presented with status epilepticus or seizure like episodes. Other presenting complaints included hypoglycaemia (4.1%), diabetic ketoacidosis (1.1%), post tonsillectomy bleeding (2.3%) and allergic reactions or anaphylaxis (1.7%). Of these 340 cases, 13% (47) were admitted to the Intensive Care Unit or High Dependency Unit and 12%(44) were discharged home. Of note there were 8 paediatric cardiac arrests (2.3%) and 6 paediatric deaths (1.7%).

**CONCLUSION:** Paediatric emergencies requiring urgent care and resuscitation are common in Galway University Hospital. Respiratory distress, seizures and injuries comprise of the majority of these cases and focused teaching should be provided in these areas to better prepare staff for these eventualities. This information can be used for the education of new NCHDs commencing work in these areas to encourage development of the knowledge, skills and attitudes needed to best prepare for these situations.

**Poster No. 20 - Neonatal**

**BREAST MILK USE IN VERY LOW BIRTH WEIGHT INFANTS IN THE NEONATAL INTENSIVE CARE: AN AUDIT UPDATE**

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**AIMS:** To evaluate the rates of breast milk use in very low birth weight (VLBW) infants, and if breast feeding support has affected these rates. A review of breast milk use before and after a breast feeding support and awareness campaign was performed to evaluate if such a campaign was effective at increasing breast milk use these neonates.

**METHODS:** A single centre retrospective review was carried out on all infants born less than 32 weeks gestation or less than 1500g birth weight, admitted to the neonatal intensive care unit (NICU) in Galway University Hospital in 2012 and again in 2016.

**RESULTS:** A total of 33 VLBW infants in 2012 and 57 infants in 2016 were included in the analysis. In 2012, 91% of neonates were initially exclusively fed with expressed breast milk. This had reduced to 15% by the time of discharge. In total, 48% were receiving expressed breast milk either exclusively or combined with formula at time of discharge. In 2016, 100% infants commenced on enteral feeds, started with expressed breast milk exclusively for an average of 42 days. 26% of these infants were exclusively fed using breast milk at the time of discharge. In this cohort, 65% of infants were receiving expressed breast milk either exclusively or combined with formula at time of discharge.

**CONCLUSION:** This audit shows that increasing awareness and support of breast milk use in VLBW infants in the NICU increases the use of breast milk in these neonates. Nutrition has been shown to be vital at this early stage in development affecting organ development(1), immune status(2) and gastrointestinal integrity(3). Increasing breast milk use has been shown to reduce cases of necrotising enterocolitis(3,4). Further study needs to be carried out on how this can be further improved.

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#### **Poster No. 21 - General Paediatrics**

##### **INTERPRETATION OF PYURIA IN CHILDREN WITH URINARY TRACT INFECTION**

**E Carty<sup>1</sup>, M Kenosi<sup>1</sup>, L Whitla<sup>1</sup>, N Khan<sup>1</sup>, D Coghlan<sup>1</sup>, R Egan<sup>1</sup>, M Nadeem<sup>1</sup>**

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Urinary Tract Infections (UTI) occurs in up to 7% of febrile infants and young children.(1) The most common uropathogen is Escherichia coli (E.coli).(2) Presence of pyuria ( $\geq 10$  white blood cells per cubic millimetre ( $\geq 10$  WBC/mm<sup>3</sup>)) on urinalysis is essential to diagnose UTI. We aimed to examine whether there is a link between the absence of pyuria and a positive urine culture for a known uropathogen. This was a retrospective cohort study of 248 patients admitted with symptomatic UTI between January 2015 and December 2016. Mean (SD) age was 31.27 (42.54) months and 101 (40.7%) patients were male. Of 248 patients with UTI, E. coli was documented as the causative pathogen in 221 cases (89.1%), Klebsiella species in 8 (3.2%), Proteus species in 8 (3.2%), Pseudomonas species in 7 (2.8%), Enterococcus species in 3 (1.2%) and Group B streptococcus in 1 (0.4%). All patients with UTI due to E.coli infection exhibited  $>10$  WBC/mm<sup>3</sup> on urinalysis (p value 0.001). However, in those with UTI caused by non-E.coli uropathogens,  $<10$  WBC/mm<sup>3</sup> on urinalysis was documented in two of eight (25%) patients with UTI secondary to Proteus infection, two of eight (25 %) individuals with Klebsiella UTI, one of seven (14.3 %) patients with UTI due to Pseudomonas infection and one of three (33.3%) patients with UTI caused by Enterococcus species.

In conclusion, 9 in 10 patients with UTI experienced E.coli uropathogen on urine culture. All patients with UTI due to E.coli infection exhibited  $>10$  WBC/mm<sup>3</sup> on urinalysis. However approximately  $>$ one fifth of patients with UTI due to non-E.Coli uropathogens experienced absence of pyuria on urinalysis. Considering the possibility of absence of pyuria in non-E.coli UTI, reliable adjunctive biomarkers for diagnosis of UTI while awaiting urine culture should be explored through further research.

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#### **Poster No. 22 - General Paediatrics**

##### **Paediatric assessment unit (PAU) attendance audit**

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**AIMS:** To determine if Paediatric Assessment Unit (PAU) appointments were made according to local departmental guidelines.

**METHODS:** This was a prospective audit from 29/05/2017 to 12/06/2017. All appointments made during this period were analysed to see if all the required information were available i.e. name, date of birth, hospital number, consultant name, reason of the attendance (bloods/review), total number of patients per day, meeting the age criteria, if the request was clearly written, who made the request and what follow up is to be done.

Our department acceptance criteria for Paediatric assessment unit:

1-Children  $<$  4 years of age for blood investigations.

2-Children for blood tests which involves parent's written consent.

3-Non acute assessments including children with chronic conditions.

4- 5 patients per day.

**RESULTS:**

Total 73 patients were booked in the PAU(range 5-9 per day).Eight of them were re-scheduled or considered discharge.14(19%)were called for a review including children with chronic conditions, the rest of 59(81%) were called for bloods sampling.26(44%)patients were less than 4 years and 21(36%)more than 4 years of age were booked for blood tests apart from 12(20%)patients booked for special tests including metabolic/genetics/developmental bloods.

19(26%)patients did not have the consultant name written in the book and for 22(30%) patients there was no clear request written for investigations required.

All 73 patients(100%),had as identification the name specified,but only 58(80%)had the date of birth and only 61(84%)had MRN.Most of the requests were made by the consultant.There was no record of any follow-up plan e.g what bloods results are pending or if the bloods results have been faxed to GP or another sub-speciality.

**CONCLUSIONS & RECOMMENDATIONS:**

1-This audit shows overall poor adherence to our department PAU guideline.

2-It also highlighted concern about follow up of the blood investigations being done in PAU.

3-To make sure at educational sessions that the paediatric team is aware of the local PAU guidelines and to discuss the follow up concerns in the clinical governance meeting.

**Poster No. 23 - General Paediatrics**

**CHOICE OF EMPIRICAL ANTIBIOTICS IN SUSPECTED LOWER RESPIRATORY TRACT INFECTIONS (LRTI):**

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**Aims:**

1-To determine the compliance of the antibiotics prescription among paediatric team.

2-To review the antibiotics practice to avoid unnecessary use of broad spectrum antibiotics.

**Methods:**

This was a prospective audit conducted from 14/11/2016 to 29/11/2016.All children who presented with clinical signs of lower respiratory tract infections, that were admitted to our unit, were included in this audit.Initially it was a triage differentiating viral from bacterial infection (according to the blood test and X-ray changes), and the second triage was considered regarding antibiotics used.

Local unit guideline for LRTI in children in University Hospital Kerry extracted from National guidelines of Dublin hospitals ( Paediatric Antimicrobial Guidelines 2015 Temple St & Crumlin Hospital as adopted at UHK Sept 2015).

**Results:**

From a total of 36 children, that were admitted during this two week period, 16 (44.4%) were considered to be viral and they were not treated with antibiotics, and 20 (55.6%) were considered bacterial and treated with antibiotics.From the total of 20 treated with antibiotics, 5 (25%) were treated with Co-amoxiclav, 3 (15%) with Azithromycin, 7 (35%) with Amoxicillin, 1(5%) with Cefotaxime, 4 (20%) with double antibiotics (Amoxicillin and Azithromycin).

**Conclusions and Recommendations:**

1-Although this audit showed prescription compliance rate of 75% to our local antibiotics guidelines but there is still place for improvement.

2.It also highlighted that broad spectrum antibiotics were not frequently used.

3-To make sure at educational sessions that the paediatric team is familiar with the guideline.

4- Regular surveillance of the prescription charts regarding antibiotics adherence to the guideline.

5-To document reason in clinical notes if broad spectrum antibiotics are prescribed.

6-Re- audit in one year with a target to achieve 100% compliance.

Local unit guideline for LRTI in children in University Hospital Kerry extracted from National guidelines of Dublin hospitals ( Paediatric Antimicrobial Guidelines 2015 Temple St & Crumlin Hospital as adopted at UHK Sept 2015)

## Poster No.24 - General Paediatrics

### FREQUENTLY RELAPSING NEPHROTIC SYNDROME IN A 6-YEAR-OLD BOY

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<sup>2</sup>Paediatric Nephrology, Our Ladys Childrens Hospital Crumlin, Dublin, Ireland

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**AIMS:** Nephrotic syndrome is characterized by a triad of features, specifically proteinuria, oedema, and hypoalbuminemia. It frequently presents between the ages of 2-10 years. The majority of children respond to treatment with corticosteroids and have a good prognosis. Of those who respond to steroids, 40% of children will continue to have relapses of their disease. We aim to describe a child with frequently-relapsing nephrotic syndrome.

**METHODS:** We report the history, examination, laboratory findings and clinical course of this 6 yo boy.

**RESULTS:** A 6yo presented with a relapse of nephrotic syndrome. He developed coryza with subsequent 3+ proteinuria and periorbital oedema. Nephrotic syndrome was diagnosed at 2yo. Initial remission after high dose corticosteroids was followed by frequent relapses. Now he is steroid dependent. He takes tacrolimus following trials of cyclophosphamide and cyclosporine. Renal biopsy was suggestive of minimal change disease (MCD). Multidisciplinary input is needed to optimise compliance and social factors in view of frequent relapse patterns.

#### CONCLUSION:

Nephrotic syndrome can have wide ranging negative impacts on a child's life and school performance. The appropriate management of a complex presentation requires multidisciplinary input and understanding and cooperation from the patient's primary caregivers.

## Poster No. 25 - General Paediatrics

### MORNING MEDICAL HANDOVER IN A TERTIARY PAEDIATRIC HOSPITAL: A QUALITY IMPROVEMENT PROJECT

J Coveney<sup>1</sup>, S Lewis<sup>1</sup>, C Diskin<sup>1</sup>, K Shanahan<sup>1</sup>, J Foran<sup>1</sup>, C Hensey<sup>1</sup>

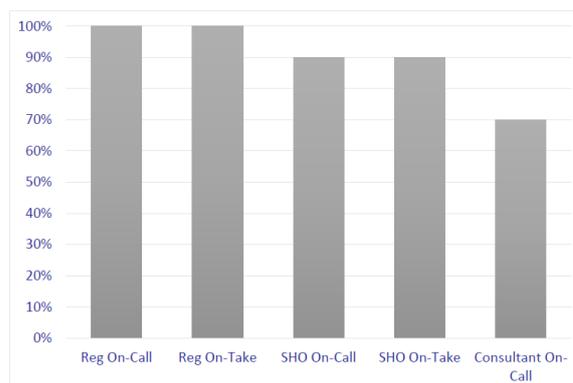
<sup>1</sup>Department of General Paediatrics, Temple Street Children's University Hospital, Dublin, Ireland.

**Aims:** Clinical handover has been described as "the transfer of professional responsibility and accountability for some or all aspects of care for a patient or a group of patients, to another person or professional group on a temporary or permanent basis"<sup>1</sup>. Good clinical handover has been shown to reduce preventable clinical adverse events<sup>2</sup>, reduce healthcare costs<sup>3</sup> and to increase clinician job satisfaction<sup>4</sup>.

**Methods:** Morning medical handover practices were audited against a national guideline<sup>1</sup> and a quality improvement project, which aimed to improve handover in line with the guideline was implemented.

Following 3 cycles of change, clinical handover was directly observed on 10 consecutive weekdays and a free-text questionnaire asked clinicians of all grades for positive and/or negative feedback following the changes. Questionnaires were distributed at a clinical education session in order to capture a suitable sample.

**Results:** Prior to the implementation of this project morning medical handover occurred on an ad-hoc basis. The time, location, clinicians in attendance and format varied from day to day. Following 3 cycles of change, a 10-day review revealed that morning medical handover occurred in a consistent place (100% of days) and at a set time (90% of days). Clinician attendance is displayed in Figure 1. Median duration of handover was 14 minutes



(range: 6-24). 14 clinicians, including SHOs, registrars and consultants completed the questionnaire. Frequently cited positive effects of the change in handover included: The ability to formally highlight patient concerns or outstanding tasks; consistency of location; perceived improved patient safety. Frequently cited negative effects included: No negative effects; earlier start to the working day.

**Conclusion:** Morning medical handover has been formalised in-line with national guidelines, with significant buy-in from clinicians across all grades and with positive clinician feedback. Next, we plan to trial the ISBAR3 communication tool (Identify, Situation, Background, Assessment, Recommendation, Read-back, Risk) to formalise the structure of handover.

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**Poster No. 26 - Neonatal**

**AUDIT OF TIMING OF ADMINISTRATION OF FIRST DOSE ANTIRETROVIRALS TO INFANTS BORN TO HIV INFECTED MOTHERS IN THE ROTUNDA HOSPITAL**

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**Introduction:** Between January 1999 and December 2008 (10 years) there were 874 live births to HIV infected mothers in Ireland, with a Mother to Child Transmission (MTCT) rate of 1.09%<sup>1</sup>. Strategies to limit MTCT include; maternal screening for HIV, antenatal and intrapartum ARVs, viral load monitoring to determine mode of delivery, early neonatal ARVs and avoidance of breast feeding<sup>2</sup>.

National guidelines recommend that first dose ARVs should be administered within 4 hours of birth<sup>2</sup>.

**Methods:** Management of all HIV exposed live born infants, born over a one year period (July 2015 to June 2016) was audited against the national guideline<sup>2</sup>. Data captured for each infant, via retrospective chart review, included: gestational age, mode of delivery, time of birth, time of first paediatric review and time of first dose ARV.

**Results:** In a one-year period, 25 infants were born to HIV infected mothers. This included 2 twin pregnancies. Five infants (20%) were born pre-term (2 sets of twins, 1 singleton). Mode of delivery is displayed in figure 1.

Timing of the first review and of administration of first dose ARV is displayed in Figure 2.

In one case the first dose was delayed. Of note, in this case, the first paediatric note was made forty-nine minutes after delivery. The infant was born on a weekday, in the early afternoon, during the third week of a neonatal SHO rotation.

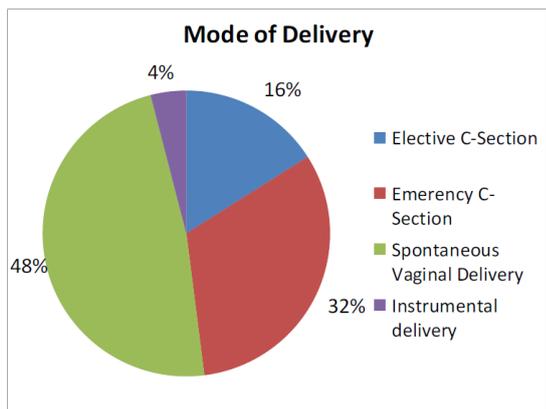


Figure 1. Mode of Delivery

Timing of the first review and of administration of first dose ARV is displayed in Figure 2.

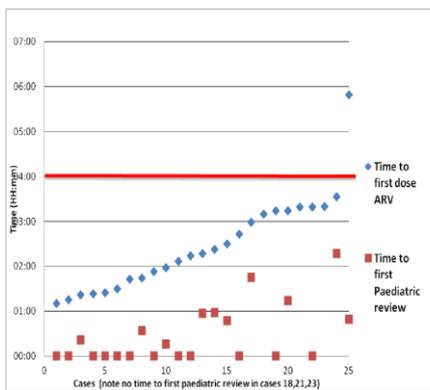


Figure 2: Timing of the Paediatric Review first review and of administration of first dose ARV.

**Conclusion:** This audit shows excellent adherence to the guidelines within our institution. Poor understanding of the guideline by a neonatal NCHD is hypothesised as a potential cause of the delay in ARV administration. In our institution, paediatric NCHDs receive training on the management of infants exposed to HIV within the first week of their rotation. Pre-audit those unable to attend training were not followed-up. We now plan to formally record attendance at training and repeat training for all those initially unavailable.

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#### **Poster No. 27 - General Paediatrics**

##### **HUMAN METAPNEUMOVIRUS IN GENERAL PAEDIATRIC PRACTICE DURING AUTUMN 2017**

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**Background:** Human metapneumovirus (hMPV) is a contagious viral pathogen that primarily infects children and immunocompromised adults. This respiratory virus is capable of causing a wide range of symptoms from fever, cough, hypoxia and wheeze to severe bronchiolitis. hMPV is an RNA virus, a member of the *Paramyxovirinae* family and is the third pathogenic member along with Respiratory syncytial virus (RSV) and Parainfluenzavirus (PIV). Even though hMPV symptoms overlap with RSV, subtle differences can occur for example, fever is most commonly associated with hMPV, while rhinorrhea is more prevalent in RSV infections. Currently at University Hospital Limerick, human metapneumovirus is not part of the in-house viral diagnostic scope.

**Aims:** To identify the prevalence and phenotype of human metapneumovirus within the Paediatric department in UHL from September-October 2017.

**Method:** This is a prospective study looking at an eight week period from the 1<sup>st</sup> September to the 31<sup>st</sup> October 2017. It included children <16 years of age attending the Paediatric department in whom human metapneumovirus infection was proven using PCR assay on viral nasal swab, when specifically requested.

**Results:** A total of 8 microbiologically confirmed cases were seen during the period of this study. The median age was 20 months old. There were 3 female and 5 male patients. 4 of the 8 children have complex co-morbidities and 3 of the 8 children had concomitant infections. A high grade fever was seen in all cases and often the only manifestation. Mean WCC and CRP on admission were 12 and 61 respectively. 7 of the 8 children received antibiotics. No ICU or HDU admissions.

**Conclusion:** By introducing routine prompt in-house testing of human metapneumovirus and considering it as part of your differential in treating children with fever we can avoid unnecessary antibiotic use and investigations, parental anxiety and decrease length of hospital stay.

#### **Poster No. 28 - General Paediatrics**

##### **NOT "JUST A RASH"- A CASE REPORT OF STEVENS-JOHNSON SYNDROME PRESENTING AS ACUTE ASTHMA**

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**Background:** A previously healthy 7 year old female with a background of well controlled atopic asthma presented with a systemic illness with multi-organ involvement consistent with Stevens-Johnson Syndrome. The aetiology is yet to be defined.

**Case Report:** A 7 year old female presented to the Emergency Department with a sudden onset of oral blisters, bilateral conjunctivitis, a bright red erythematous rash on her face, torso, lower limbs and genitalia. Laboratory tests were initially normal with a subsequent elevation of inflammatory markers and neutropenia. She was treated with supportive care but deteriorated with an increased work of

breathing, stridor and desaturations requiring oxygen therapy and nebulisation. There was significant progression of the rash with swelling, blistering and desquamation. She was transferred to a tertiary centre for management in the Intensive Care Unit. No aetiological cause has been found to date however ibuprofen was ingested two days prior to symptoms developing, a drug she had been exposed to in the past. Nasopharyngeal Aspirate was positive for Rhinocytovirus, Mycoplasma PCR was negative. Skin swabs were positive for Pseudomonas Aeruginosa. The patient was extubated on Day 11 and is recovering well with supportive therapy.

**Discussion:** Stevens-Johnson syndrome (SJS) is a severe mucocutaneous reaction, commonly triggered by medications, characterized by blistering and epithelial sloughing<sup>1</sup>. SJS has an estimated incidence of 1 to 7 cases per million per year<sup>2</sup> and can be a devastating disease with systemic complications. The mortality of SJS is <10%<sup>3</sup> however survivors often develop long-term co-morbidities.<sup>4</sup>

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### Poster No. 29 - General Paediatrics

#### How sensitive are dipstick urinalysis and microscopy in making diagnosis of urinary tract infection in children?

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**Aim:** Urinary tract infection (UTI) is a common reason for referral to the emergency department especially in unwell infants. Rapid dipstick urinalysis and microscopy are often used in unwell children as a screening tool to guide early diagnosis and treatment. The aim of this study was to evaluate the sensitivity of dipstick urinalysis and microscopy in the diagnosis of UTI.

**Methods:** A retrospective review of children, aged 16 years and below with positive urine culture over a 3-year period was done. The results of urine dipstick and microscopy were compared with the positive urine culture and sensitivities calculated.

**Results:** Dipstick urinalysis and microscopy of 262 children were studied. Female-to-male ratio was 1.8:1. Median age was 0.79 (range: 0.02–15.95) years. The sensitivity of nitrite, blood and leucocyte esterase (LE) were 54%, 74%, and 86% (95% CI = 46-62, 68-80, and 82-91) respectively. The sensitivity of pyuria of  $\geq 100$  cells/mm<sup>3</sup> was 92% (95% CI = 89-95). The presence of any of the 3 dipstick parameters increased the sensitivity to 97% (95% CI = 95-99). The lowest sensitivity 49% (95% CI = 40-58) was found with combined positive LE and nitrite. There was a significant comparison between positive LE dipstick test and pyuria ( $P = 0.000004$ ).

**Conclusions:** Dipstick urinalysis may not be reliable in ruling out UTI in children. However, combining both positive dipstick and pyuria will be more useful in making the diagnosis.

### Poster No. 30 - General Paediatrics

#### Respiratory Health in Irish Children with Down Syndrome

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<sup>2</sup>Down Syndrome Ireland, Sandyford, Dublin.

**Purpose:** A significant proportion of children with Down Syndrome (DS) frequently suffer from respiratory conditions such as Obstructive Sleep Apnoea (OSA). International guidelines recommend screening for OSA in all children with DS. The prevalence of respiratory conditions in Irish children with DS is unknown.

**Methods:** A respiratory health questionnaire was distributed to all parents with children with DS in Ireland registered with Down Syndrome Ireland (DSI).

**Results:** Three hundred and ninety three (393) surveys were returned. OSA was reported in n(27%) of parents surveyed with many describing poor compliance with prescribed therapy (n(43%) never use night-time CPAP). In children who have not received a diagnosis of OSA, parents reported two or more symptoms in greater than n(50%) of completed surveys. One quarter of parents reported recurrent chest infections.

**Implications:** The data collected from this survey demonstrates that children with DS have a high burden of respiratory health issues. The significant proportion of children with symptoms of OSA on the questionnaire suggests that children with DS should be referred onto paediatric services for review and screening for OSA. This survey highlights the need for increased awareness and services for children with DS who are at a higher risk of developing respiratory disorders.

**Poster No. 31 - Medical Education, Management and Laboratory Medicine**  
**NCHD ATTITUDES TO CHILDHOOD DEVELOPMENT**

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**Introduction:** Between 1-3% of children are affected by global developmental delay. Early recognition and referral improves outcome.

We aimed to evaluate non-consultant hospital doctors (NCHDs) attitudes and knowledge towards childhood development, documentation of development within charts and make recommendations for postgraduate education.

**Methods:** An audit tool was developed and revised. A focus group reflective of frontline ownership ethos and supported by liberating structure methodology was facilitated with 10 NCHDs. A re-audit of 30 charts was undertaken 2 weeks later.

**Results:** Developmental milestones was documented in 4/30 (13%) and not documented in 16/30 (53%) of charts. "No concerns" was documented in 10/30 charts (33%). Interpretation of this phrase was uncertain. If not documented at time of admission, it is not.

The following themes were identified using TRIZ model:

- Poor understanding of development and onward assessment and referral
- Active avoidance of topic during history taking
- Timing i.e. unwell child, other clinical priorities

Re-audit demonstrated some changes in behaviour. "No concerns" was noted less often with increased reporting of milestones.

**Conclusion:** Development is an important and neglected area of paediatrics. Suggestions include:

- Provide additional relevant teaching including clarity of referral pathways
- Opportunity to attend developmental clinics.

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## Poster No. 32 - General Paediatrics

### EPIDEMIOLOGY OF RESPIRATORY SYMPTOMS IN CHILDREN PRESENTING TO A PAEDIATRIC EMERGENCY DEPARTMENT

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#### INTRODUCTION/AIMS

Respiratory symptoms are very common in children, with almost a third of children aged 1 to 5 years experiencing recurrent cough, wheeze or shortness of breath during winter months<sup>1</sup>. Furthermore, >90% of infants experience respiratory symptoms in their first year<sup>2</sup>. Indeed, breathing difficulty and cough ranked first and fifth respectively in the commonest presenting complaints in a retrospective analysis of children aged between 0 and 15 years<sup>3</sup>. In our study we investigated the epidemiology of children presenting to a paediatric emergency department with cough and/or wheeze. To this end we aimed to analyse 5 parameters relating to the presenting children, namely; age, source of referral, time of presentation, diagnosis and whether the child was admitted or discharged home.

#### METHODS

This was a retrospective study of all children aged less than 16 years who presented to the paediatric ED of Galway University Hospital during an 80 day period from 1<sup>st</sup> July until 18<sup>th</sup> September 2017 with cough and/or wheeze. Their medical notes were reviewed and the following information collected: age, time of presentation, source of referral, diagnosis and whether the child was admitted or discharged.

#### RESULTS

The average age of children presenting with respiratory symptoms was 3.5 years. 39% were female and 61% male. 22% of females and 17% of males were admitted. 63% of referrals were from a GP and the remaining 37% were self-referrals. Of those referred by the GP, 14% were admitted; while 29% of self-referrals were admitted. 49% presented out-of-hours. The most common diagnoses were viral URTI (24%), virus-induced wheeze (21%), acute exacerbation of asthma (17%), croup (8%) and bronchiolitis (6%).

#### CONCLUSION

Respiratory symptoms are common in children. Most patients attend their GP prior to presentation to the ED. Interestingly, boys more commonly attended our ED with respiratory symptoms than girls. Viral illnesses account for the majority of these presentations.

1. Prevalence of Asthma-Like Symptoms in Young Children *Pediatr Pulmonol.* 2007; 42:723-728. 2. Prospectively Assessed Incidence, Severity, and Determinants of Respiratory Symptoms in the first year of life. *Pediatr Pulmonol.* 2007; 42:41-50. 3. Medical problems presenting to paediatric emergency departments: 10 years on. *Emerg Med J* 2012; 29:379-382.

## Poster No.33 - General Paediatrics

### AUDIT OF CLINICAL HANDOVER

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#### Introduction

•Clinical handover is the transfer of responsibility & accountability for some or all aspects of care for a patient to another person or professional group on a temporary or permanent basis

- High risk step in a patient's journey
- Vital element of patient's safety
- Already an explicit & scheduled part of nursing practice

Barriers to effective handover:-

- Informal structure
- Lengthy duration
- Unnecessary content
- Disturbances
- Second hand handover
- Absence of staff

## **Aim**

- In line with the National Clinical Guideline, audit is recommended to ensure handover positively impacts patient care
- To optimise the process of handover
- To improve patient safety

## **Methods**

- From 01/09/2016 to 30/09/ 2016
- 22 handovers
- Weekends excluded as no formal handover in place
- Questionnaire included:-
  - Location
  - Duration of handover
  - Starting time
  - Staff numbers
  - Use of ISBAR
  - Safety pause
  - Discussion of staffing & bed occupancy
  - Written handover

## **Discussion**

- 50% of the handovers started after 9:05 with the latest starting time at 9:13
- Almost 60 % of the handovers lasted for 11-20 minutes
- Consultant attendance is generally good with 90% of the handovers having 2-3 consultants
- Nurses were absent in 2 handovers.
- Minimum number of registrars should be 5 & that was met in only 27% of the handovers, & there were only 2 registrars in 27% of the handovers.
- Minimum number of SHO attending the handover should also be 5 & this was met in 63 % of the handovers
- In 72% of the handovers , there were 1 – 3 staff members arriving late.
- With regards to ISBAR the average compliance was 82%.
- Safety pause, staff allocation & bed occupancy were discussed in 60-72% of the handovers.

## **Recommendations**

- The starting time for handovers should not be later than 9:05
- The duration should not exceed 15-20 minutes.
- The minimum no. of consultants attending should be 2 including post call consultant.
- All handovers should be attended, ideally by a paed ward nurse & a SCBU nurse.
- The minimum no. of SHO & Reg should be 5 each at every handover, most essentially the post call, SCBU & paed ward SHO & Reg.
- Ensure full compliance to ISBAR communication tool.
- Written or electronic record should be kept after each handover.

Communication (Clinical Handover) in Acute and Children's Hospital Services - National Clinical Guideline

## **Poster No. 34 - Neonatal**

### **REVIEWING PARENTAL COMMUNICATION WITH NICU STAFF AN AUDIT OF PRACTICE**

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<sup>1</sup>Paediatrics, Our Lady of Lourdes Hospital, Drogheda, Ireland

## **Introduction**

Communication between parents and NICU staff is considered essential for several reasons, these includes:-

- Involving parents in decision making
- Ensuring their understanding of their baby's condition and progress
- Reducing their emotional stress
- Building trust and confidence between parents and NICU staff
- Obtaining parents input on their babies care

## **Objective**

The aim of this audit is to describe parents experiences of communication with NICU staff.

- Trust and confidence in staff
- Knowledge and information sharing
- Active care
- Empowered decision making
- Privacy for breastfeeding
- Co-ordinated discharge planning
- Interaction with staff

## **Methods**

\*Parents NICU stay experience audit questionnaire

- From 1st September 2017 – 31st October 2017
- Babies in NICU/SCBU
- Including term & preterm babies

## **Poster No. 35 - General Paediatrics**

### **LUMBAR PUNCTURE PERFORMANCE AND THE PAEDIATRIC PATIENT, ONE HOSPITAL'S EXPERIENCE.**

#### **DEPARTMENT OF PAEDIATRICS, MAYO UNIVERSITY HOSPITAL**

**MH Elbadry Ali<sup>1</sup>, HK Stokes<sup>1</sup>, MP O'Neill<sup>1</sup>**

<sup>1</sup>Department of Paediatrics, Mayo University Hospital, Castlebar, Ireland

**Aim:** To evaluate the frequency, indications, success rate and clinical impact on the performance of lumbar punctures (LP) in a paediatric population attending a general hospital.

**Methods:** Utilising the Mayo University Hospital Microbiology database the number of CSF samples analysed was determined over a 1 year period. Failed LPs were determined using blood Polymerase Chain Reaction (PCR) testing as a surrogate marker of sepsis. Data abstracted included 1) age 2) indication for LP 3) physician performer 4) procedure quality 5) number of attempts 6) CSF analysis and 7) final diagnosis. The charts of those patients with blood PCR requested were reviewed to discern the indication for the test and an evaluation of why the LP procedure failed.

**Results:** The number of procedures where CSF was obtained was 18, the indications for LP were a) 5 newborns with suspected sepsis, b) 2 neonates from home with fever without focus, c) 8 infants (29-90 days) with fever without focus and irritability, d) 3 over 3 months of age; 1 with 3 afebrile seizures and 2 with fever and an unwell appearance. The distribution of performers was Consultant 1 (6%), Registrar 17 (94%). Only 1 SHO attempted a LP but had a failed attempt. The numbers of LP with 1 attempt was 15 (83%), 2 attempts 3 (17%). The number of atraumatic CSF was 15 (83%). The final diagnoses on the CSFs were: 13 sterile cultures and 5 positive for viruses. Of the 7 children who had Blood PCR performed, 1 had LP attempted and failed after 2 trials in a child who later proved to have pneumococcal sepsis.

**Conclusion:** LP is performed in infants rather than children. Consequently, attaining competency in LP performance will elude many Basic Specialist Trainees on their general paediatric rotations. Teaching LP performance using simulation techniques is required.

**Poster No. 36 - General Paediatrics**

**THE IMPACT OF MENINGOCOCCAL B VACCINATION ON INFANT PRESENTATIONS IN THE EMERGENCY DEPARTMENT**

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**INTRODUCTION:** Neonatal presentations in the Emergency Department (ED) have been increasing due to shorter maternal postnatal admissions in maternity hospitals in Dublin. The introduction of the meningococcal vaccination has been associated with an anecdotal increase in presentations due to vaccine reactions.

**AIM:** Determine the frequency of infants who developed pyrexia and/or irritability within 48 hours after Meningococcal B vaccination.

**METHOD:** Retrospective observational chart reviews on Symphony EDIS of all infants aged between 8 and 10 weeks of age seen in Tallaght during two 9-month time periods before (Jan 2016-Oct2016) & after (Oct 2016 -Aug2017) vaccine introduction. The clinical impact of these presentations was assessed by comparing investigations and treatments on these infants

**RESULTS:** Before the introduction of the new vaccine 175 infants (64 admitted) were seen in ED and this increased to 192 patients (67 admitted) after the new vaccine was introduced. Vaccine reactions occurred in three infants in the first time period. Only one of these infants required investigations and admission to inpatient ward. In the post meningococcal B vaccine period, 11 infants presented with vaccine reaction. 7/11 patients were admitted. All seven admissions had blood tests while one also had a lumbar puncture. Three of the infants required treatment with intravenous antibiotics. Of the discharged patients, two patients also had blood tests performed.

**CONCLUSION:** The rate of vaccine reactions remains low after the introduction of meningococcal B vaccination. Differentiating between serious illness and simple vaccine reactions is difficult in this age group and this results in admission to inpatient wards and pre-emptive treatment with antibiotics pending culture results.

**Poster No. 37 - General Paediatrics**

**SCHOOL ATTENDANCE AND CHRONIC ILLNESS**

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**BACKGROUND:** School absence is an objective, valuable indicator of child wellness. Chronic illness impairs school attendance, and both impair cognitive functioning, social relationships and behaviour. School absence leads to academic under-performance and a higher drop-out rate. Many health, social, and economic factors affect attendance rates. The purpose of this study was to establish the extent of school absence in children with a chronic illness and to ascertain associated factors that may influence school absence.

**METHODS:** Questionnaires were distributed to parents of children visiting a regional university hospital. A convenience sample of 28 children with a chronic illness (CI) and a control sample of 28 children without medical conditions was obtained.

**RESULTS:** Mean school absence was higher in the CI group (mean 10.4days, median 9days, range 0-56days) than in the control group (mean 7.7days, median 5days, range 0-28days), as was absence due to medical appointments (1.85days vs. 1.3days mean). Children with asthma were absent for mean 11.4 days, children with headaches 11days, and children with diabetes 5.3 days. Children who were absent for > 20 days of school were more likely to have a chronic illness, to have been bullied in the preceding year, to have learning support in school, and to have a psychiatric disorder than children who missed <5 days of school. The need for learning support in school, academic non-proficiency, psychiatric co-morbidity, and bullying were associated with an increase in school absence.

**CONCLUSION:** Children with chronic illnesses miss more school than healthy peers. Children with asthma are absent more than children with other chronic conditions. Any intervention designed to reduce school absence should focus on children in these high risk groups, and should involve healthcare professionals, families, and schools working together.

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## Poster No. 38 - General Paediatrics

### BRONCHIOLITIS: ARE WE GETTING IT RIGHT?

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**Aim:** Bronchiolitis is the most common diagnosis that presents to Paediatric Units in winter. Respiratory Syncytial Virus (RSV) and other respiratory viruses are the known cause(s) and all patients should get a nasopharyngeal aspirate (NPA) when admitted. Management is generally supportive. Infants aged 0-6 months are most vulnerable. This study aims to determine whether Bronchiolitis is appropriately managed overall, and review antibiotic use in the 0-6 month population.

**Methods:** All patients admitted during the winter 2016/17 season with a diagnosis of Acute Bronchiolitis were included. Data points involved age on admission, length of stay, respiratory and feeding supports, investigations (chest x-ray [CXR], NPA) and medications (including nebulizers and antibiotics).

**Results:** 227 patients were included in the study. NPA was taken in 175 of all patients; 72% were RSV+. 163 admitted patients were aged 0-6 months; 136 (83%) of them had NPA's taken, 105 (77%) were RSV+, and 13 had 2/more viruses detected. In this youngest cohort, 67 (41%) had CXR's, and 85% were reported as normal/viral.

27/163 (17%) patients aged 0-6 months were treated with antibiotics. Concerns regarding sepsis or pyrexia in this cohort were noted in 9 (33%) patients, and 6 were commenced on triple antibiotics as a result. 8 (30%) patients were also covered with antibiotics for secondary infection concerns. 24/27 patients had an NPA, and 20 (74%) were RSV+. 24 had CXR's; 75% normal. 7 of these patients were admitted to the High Dependency Unit.

**Conclusion:** Bronchiolitis management guidelines are recognized but not strictly adhered to in our Centre. 17% of patients (0-6 months) may have unnecessarily received antibiotics despite a typical clinical presentation with bronchiolitis, and excessive numbers had CXR's. NPA's should be taken in all admitted patients with acute bronchiolitis, but was only done in 83% of cases. This study demonstrates that antibiotic stewardship and continued education is key.

'Bronchiolitis Guidelines', Adelaide & Meath Hospital, incorporating the National Children's Hospital, Dublin

## Poster No. 39 - General Paediatrics

### CEREBRAL MALARIA: BEWARE THE UNRESPONSIVE RETURNED TRAVELLER

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**Introduction:** The WHO estimate over 200 million cases of malaria worldwide in 2015 with over 400,000 deaths<sub>1</sub>. 10% of cases occur in the paediatric population<sub>2</sub>. 67 cases of malaria were reported in Dublin paediatric hospitals between 1999 and 2006<sub>3</sub>. Incidence in non-endemic regions is increasing. Signs of infection are non-specific and include fever, headache, general malaise and GI symptoms.

#### Cases

A 12-year-old girl was found unresponsive at home on a background of three days of vomiting and pyrexia.

GCS was 5, and she was stabilised with IV fluids and empiric broad-spectrum antibiotics. As she had recently returned from a malaria-endemic area, cerebral malaria was suspected and confirmed within 30 minutes by rapid antigen test and thick and thin films. She was diagnosed with plasmodium falciparum infection with parasitaemia of 20%. Quinine and doxycycline therapy were commenced. She was transferred to PICU in a tertiary centre requiring ventilation and inotropic support.

Her 8-year-old brother was reviewed. He had a 3-day history of vomiting and pyrexia. He had tachycardia and thrombocytopenia with deranged LFTs. Rapid testing showed infection with plasmodium falciparum with parasitemia of 4.9%. He was admitted for IV artesunate therapy. Their 11-year-old brother was also seen. He had been unwell on holiday and was clinically diagnosed and treated for malaria. He was asymptomatic on review. P falciparum was detected on blood PCR. He was treated with oral artemether-lumefantrine.

**Discussion:** 75% of cases of malaria in the UK are caused by plasmodium falciparum. Severe infection is defined by parasitaemia >2%. Cerebral malaria is one of the main presentations of severe malaria in children. First line therapy is artesunate<sub>2</sub>. Quinine should be used where artesunate is not available.

**Recommendations:** Malaria should be high on the differential list of a returned traveller presenting with fever. Travellers and healthcare workers should be educated about chemoprophylaxis.

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## Poster No.40 - General Paediatrics

### LIVING ON THE EDGE.....OF EUROPE. THE UHL EXPERIENCE OF FLIGHT DIVERSIONS DUE TO ON-BOARD PAEDIATRIC MEDICAL EMERGENCIES

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Shannon Airport is a common destination for diverted flights crossing the Atlantic and is served by The University Hospital Limerick. The Paediatric Department in UHL consists of 48 beds including a 3 bed Paediatric HDU and a dedicated Paediatric ED.

This study catalogues the seriously unwell children on flights diverted to Shannon Airport over a 12 month period. During the study there were 14 medical diversions to Shannon Airport, of these 6 were due to acutely unwell children, as outlined below:

1. A 5month old girl, who developed bloody diarrhoea and a rectal prolapse
2. A 12 week old ex-25 week preterm infant boy, who developed respiratory distress and apnoea.

3. A 3½ year old girl with ROHHAD Syndrome, who developed respiratory distress.
4. A 13 year old girl, who became acutely psychotic.
5. A 17 month old boy with a history of severe dilated cardiomyopathy, who developed cardiogenic shock.
6. A 10 year old girl, who developed cardiogenic shock.

Two (33%) of the above children died. Two (33%) required transfer to another hospital in Ireland for further treatment before continuing their journey. A further two (33%) were treated in UHL prior to continuing their journey. The two children who died were acutely unwell prior to commencing their journey and their deaths may have been avoided had their clinical condition been acknowledged and acted upon prior to their departure.

This study highlights a need for the aviation industry to re-examine its policy regarding the transport of acutely unwell children. The frequency and diversity of paediatric medical diversions to Shannon Airport reflects modern availability of transatlantic travel and has resulted in a peripheral Irish hospital acting as an international medical centre. Fortunately equipped with dedicated staff and acute care facilities UHL has risen successfully to this challenge.

#### **Poster No. 41 - General Paediatrics**

#### **APPROACH TO PAEDIATRIC HYPOGLYCAEMIA IN A UNIVERSITY-AFFILIATED EMERGENCY**

#### **DEPARTMENT (ED) SETTING**

**MF Fitzgerald<sup>1</sup>, S ul Azam<sup>1</sup>, AM Murphy<sup>1</sup>, C O'Gorman<sup>1</sup>**

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**Background:** Hypoglycaemia is frequently seen in paediatric patients presenting to ED. As Paediatricians our concern regarding hypoglycaemia is two fold. Firstly we know that children especially newborns can be at risk of neurological dysfunction including seizures. Children with symptomatic hypoglycaemia need to have their hypoglycaemia promptly treated to ameliorate this risk. Secondly children with undiagnosed endocrine or rare and potentially fatal inborn errors of metabolism can present with hypoglycaemia during intercurrent illness or fasting.

Ideally and for completeness, investigations for hypoglycaemia need to be performed when the child's blood glucose level (BGL) is low.

There has been a lack of consensus in our centre, regarding which children merit endocrine or metabolic tests to further investigate the cause of their hypoglycaemia.

**Aim:** This study proposed to establish the incidence, treatment and investigation of hypoglycaemia (BGL<2.6mmol/L) in the Paediatric Emergency Department at UHL. The objective was to use this information to establish a local guideline in an effort to standardise the treatment, investigation and follow-up of these patients.

**Methods:** A prospective observational study was undertaken from February 1-28 2017. Paediatric patients presenting to ED with a BGL <2.6 mmol/L were identified by the Paediatric team on call and included. The only exclusion criterion was having a known metabolic or endocrine disorder.

**Results:** During the study period, five children met the inclusion criteria. All received a diagnosis of gastroenteritis. The mean age was 19months and the average BGL was 2.2mmol/L. Three patients were admitted to hospital for IV glucose-containing fluids and observation; two tolerated oral rehydration in ED and were discharged. Two children (both admitted) had metabolic investigations performed (one subsequently cancelled, the other showed no pathological findings). None of the five patients had a history of recurrent hypoglycaemia.

**Conclusion:** Following on from our study a local clinical guideline for the management of paediatric hypoglycaemia has been created.

## Poster No. 42 - Neonatal

### HEARING IMPAIRMENT AND HYPOXIC ISCHAEMIC ENCEPHALOPATHY: INCIDENCE AND ASSOCIATED FACTORS

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<sup>3</sup>Neurology Department, Childrens University Hospital, Temple Street, Dublin 1, Ireland.

<sup>4</sup>HSE Community Audiology Services, Russell Building, Tallaght, Dublin 24, Ireland.

**Objective:** To establish the local incidence of hearing loss in newborns with Hypoxic Ischaemic Encephalopathy(HIE) and to identify associated risk factors.

**Design:** Retrospective Cohort Study

**Setting:** Rotunda Hospital, Neonatal Intensive Care Unit.

**Patients:** Newborns with moderate/severe HIE treated with therapeutic hypothermia between June 2012 and March 2016.

**Interventions:** Therapeutic Hypothermia for the treatment of HIE.

**Main outcome measures:** Neonatal Intensive Care Unit (NICU) dual stage hearing screening protocol, including automated otoacoustic emissions (AOAE) and automated auditory brainstem response (AABR) testing.

**Results:** 57 newborns received therapeutic hypothermia for HIE. Twelve babies (21%) died in the initial neonatal period. Audiology data was incomplete in a further 3 babies. Complete data was available for 42 babies, 4 (9.5%) of whom had hearing impairment. The development of hearing loss was associated with abnormal blood glucose levels ( $p=0.006$ ), low Apgar score at 1 minute ( $p= 0.0219$ ) and evidence of multi organ dysfunction [high creatinine on days 1 and 2 of life ( $p= 0.0172$  and  $0.0198$ ) and raised liver function tests (AST  $p= 0.0012$ , ALT  $p=0.0037$ )]. An association with gentamycin was not found.

**Conclusions:** This study confirms that hearing impairment is common in term infants who have undergone therapeutic hypothermia for moderate/severe HIE. Blood glucose should be monitored carefully in these infants and developmental surveillance should include formal audiology. Further larger studies are needed to clarify the role, if any, of hypothermia per se in causation of hearing loss and to fully identify risk factors for hearing impairment in this population.

## Poster No. 43 - General Paediatrics

### AETIOLOGICAL INVESTIGATIONS OF A COHORT OF CHILDREN DISCHARGED FROM AN EARLY INTERVENTION TEAM.

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**Aims:** To evaluate the aetiological investigations of children discharged from Carlow/Kilkenny Early Intervention (EIT) services prior to implementation of Irish guidelines.

**Methods:** Retrospective chart analysis of all children discharged from Carlow/Kilkenny EIT in 2015 and comparison to published Irish guidelines.

**Results:** 42 Males and 20 Females were discharged from EIT with cognitive abilities ranging from Average (29), Borderline (10), Mild (10), Moderate (8) and Severe/Profound (5).

Aetiological investigations complimented or confirmed clinical diagnosis in 14 children. Karyotype confirmed two cases of Downs Syndrome, one Russel-Silver Syndrome. One case of Emanuel Syndrome was confirmed on Array CGH and Karyotype. Array CGH detected two significant imbalances in children with ASD (16p11.2 del, 15p11.2 del). MRI was abnormal in four cases of Cerebral Palsy, three of Spina Bifida and one case of Emanuel Syndrome. EEG diagnosed Epileptic Encephalopathy in one child. Of 23 children with ASD, two had confirmed chromosomal imbalances, eight had normal Array CGH and six had normal Karyotype.

Where indicated 14 children were not offered array CGH (13 ASD, 1 EBD) and four children (3 ASD, 1 Speech Delay) were not offered Fragile X analysis. No case of Fragile X was detected and six children had Fragile X analysis outside of guideline recommendations. Neither Serum Amino Acids nor Urinary Organic Acids aided diagnosis but six children with Learning Disability were not offered either.

**Conclusions:** Adherence to Irish guidelines aided the diagnosis of 22.5% of children. Children with Autism were less likely (only 34%) to receive indicated investigations. Only two children without Autism (5%) did not receive full aetiological investigations. Since 2015 the Irish guidelines have been adopted and analysis of the 2017 cohort will complete the audit loop.

#### Poster No. 44 - General Paediatrics

#### CASE REPORT: CONGENITAL SPIGELIAN HERNIA AND IPSILATERAL CRYPTORCHIDISM, UNUSUAL ABDOMINAL SWELLING IN A NEONATE

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A 3 week old boy presented to the Emergency Department (ED) for review in January 2017. He attended for urinalysis after being discharged from the ED the previous night. He was clinically very well and urine microscopy was negative.

During routine newborn examination before his discharge he was found to have a right sided lower abdominal mass and ipsilateral cryptorchidism. The mass was soft, reducible and non tender. The mass was located in the right lower quadrant, not extending into the inguinal region. Clinical examination was otherwise unremarkable.

Abdominal ultrasound showed a mass measuring 3.9cm transverse x 0.9cm AP x 3.4cm craniocaudal diameter. The appearance was consistent with a spigelian hernia and contained unobstructed bowel and a normal appearing right testicle. There was a small left hydrocele confined to the scrotum.

Spigelian hernias can be difficult to diagnose and hard to differentiate from other intra abdominal pathology on clinical examination. Ultrasound is the modality of choice to confirm.

This case was discussed with paediatric surgical team in a tertiary centre and the patient was seen as an outpatient the following day with plan for elective surgical reduction and orchidopexy.

Spigelian hernia is rare in children. A 2015 review of the literature reported 78 cases in total.<sup>1</sup> 75% of cases in males are associated with cryptorchidism and Spigelian hernias are considered to be congenital in the paediatric population.<sup>2</sup> The testis is found in the hernia sac in 87% of cases associated with cryptorchidism.



Hernia containing right testicle

Undescended testes had not been documented in the medical notes prior to this presentation and the abdominal swelling had been described as inguinal hernia.

The neonates population are frequent users of our Emergency Department. This case highlights the importance of performing comprehensive newborn examination on all patients who attend regardless of presenting complaint.

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2. Durham MM, Ricketts RR. Congenital Spigelian hernias and cryptorchidism. J Pediatr Surg. 2006;41:1814-7.

## Poster No. 45 - Neonatal

### REVIEW OF ADVERSE VACCINE REACTIONS IN AN IRISH NEONATAL UNIT

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**Aims:** Babies who are inpatients at 60 days of age will receive their first childhood immunisations in the neonatal unit. We were interested in identifying which babies had documented adverse reaction after first vaccines in the neonatal unit. We wanted to see if vaccines had been clearly prescribed and if administration of the vaccines had been clearly documented in the medical notes.

**Methods:** We looked at babies who received their first 6 in 1 and PCV vaccines in the neonatal unit between 2013 and 2015. Notes were analysed and the following were documented: birth gestation, birth weight, Apgars, gestation at vaccine, weight at vaccine. We reviewed medical notes for any adverse event documented, type of event and action taken.

**Results:** 16 babies were included. One baby had first vaccine administered at a different institution and was excluded. The birth gestation ranged from 24+6 to 29+5 and birth weights between 650g and 2.45kg. Six babies had events post vaccination documented as adverse vaccine reaction. Three of these babies had elevated temperatures secondary to vaccine documented.

One baby had increased desaturations and bradycardias 11 hours post vaccine. He required septic work up (SWU) and IV antibiotics. A second baby had apnoea requiring IPPV which occurred 7 hours post vaccine. He was described as floppy and appeared septic looking. A third baby was described as lethargic 19 hours post vaccine and was started on IV antibiotics. (See table 1)

**Conclusion:** Mild adverse reactions such as local reaction at injection site are common. There was no association found between weight and adverse reactions and no correlation between gestation and adverse event. Adverse events secondary to vaccine administration in this patient group are relatively uncommon.

There was clear documentation in all 6 charts of babies with recognised adverse event and clear management plan.

Table 1

Patient initials	Birth gestation	Birth weight	Gestation vaccine	Weight at vaccinations	Required septic work up y/n
1 LR	26+2	920g	36+2	2.8kg	Y
2 LL	27+4	1.03kg	37+3	2.78kg	Y
3 AM	24+6	670g	35+1	2.15kg	N
4 AR	29+1	1.02kg	37+4	2.05kg	N
5 CJ	27+6	1.01	37+4	2.71kg	Y
6 AK	27+1	1.07kg	35+3	2.32	N

**Poster No. 46 - General Paediatrics**

**VITAMIN A DEFICIENCY SECONDARY TO A RESTRICTED DIET RESULTING IN IMPAIRED VISION IN A TEN YEAR OLD WITH AUTISM**

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**Introduction:** Vitamin A deficiency is rare in developed countries and is usually seen in developing nations due to malnourishment. Cases reported in the developed world are typically caused by malabsorption or an avoidant or restrictive food intake, usually associated with psychiatric or developmental disorders. Vitamin A deficiency presents in a variety of manners such as visual impairment (particularly night blindness), anaemia and infection. Left untreated it can eventually lead to complete blindness.

**Case report:** A ten year old boy with a known diagnosis of autism spectrum disorder presented to the emergency department with a six-week history of gradual deterioration of vision. His parents reported dry crusting eyes and difficulty watching television. Previous assessment of his eyes had diagnosed allergic conjunctivitis and the patient had been using regular eye drops with no improvement. There was no past medical history of note and the patient's diet consisted predominantly of starch-based foods and poultry.

On examination the pupils were dilated with a poor reaction to light. The conjunctiva were dry and hazy and the fundi appeared pale. Routine blood tests and a CT Brain demonstrated no abnormality. Ophthalmological review found conjunctival xerosis and keratinization. Following on from this serum vitamin A levels were tested and found to be markedly low.

A diagnosis of xerophthalmia due to vitamin A deficiency was made and the patient was commenced on 50,000 units of Vitamin A daily.

**Discussion:** Vitamin A deficiency is a rare disorder but has significant implications if not diagnosed and treated promptly. Practitioners should consider this diagnosis in any patient who presents with visual loss and particularly for those at risk from a restrictive diet.

**Poster No. 47 - General Paediatrics**

**THE INCIDENCE OF NEUROLOGICAL FEATURES IN ENTEROVIRUS POSITIVE INPATIENTS IN THE ADELAIDE AND MEATH INC NATIONAL CHILDREN'S HOSPITAL**

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**Aims:** In 2016 it was noted anecdotally that there was a number of cases of acute disseminating encephalomyelitis (ADEM) and transverse myelitis admitted to the paediatric ward in Tallaght hospital. We suspected that this may have been related to enterovirus. We aimed to test this theory by describing the incidence of neurological features in paediatric inpatients who were enterovirus positive over an eight month period.

**Methods:** A list of paediatric inpatients from January to September 2016 who had been tested for enterovirus from the stool, throat or CSF was compiled. Data was collected by chart review of those with a positive result and recorded on an excel spreadsheet.

**Results:** 81 patients were tested for enterovirus of which 12 were positive. 75% (9) were less than 3 months of age. 83% (10) presented with fever, 58% (7) had irritability and 50% (6) had meningitis as defined by high white cell count (WCC) in the CSF which ranged from 23 – 2090 white cells. One patient (0.1%) presented with a seizure and had a normal CT brain and WCC in the CSF. Interestingly, this patient tested negative for enterovirus PCR in the CSF. The patient with the highest CSF white cell count had no features of meningitis recorded. No patients presented with cerebellitis, transverse myelitis or ADEM. The most common strain of enterovirus identified was enterovirus type B.

**Conclusions:** There was no evidence of neurotoxic enterovirus in our patient cohort. Fever and irritability were common features recorded which is to be expected considering a high proportion of the patients were less than 3 months of age. A high WCC in the CSF didn't indicate more severe manifestation of neurological symptoms. Further studies may be of value to ascertain whether or not neurotoxic enterovirus is as prevalent here as it is in other countries.

1. Thong WY et al Enterovirus infections in Singaporean children: an assessment of neurological manifestations and clinical outcomes. Singapore Med J. 2016 Jun 1. doi: 10.11622/smedj.2016099

**Poster No. 48 - Sub-Specialty and Special Interest Paediatrics**

**CASE REPORT OF NOVEL GENE DYT25 MUTATION CAUSING FAMILIAL MYOCLONIC DYSTONIA WITH TREMOR ON A BACKGROUND OF COMPLEX SOCIAL ISSUES**

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**Aims:** Isolated dystonia refers to dystonia that occurs in the absence of a primary cause and without a central nervous system lesion. A small number of genetic mutations have been identified as causing isolated dystonia. Mutations in the DYT1, DYT6 and DYT25 (GNAL) genes have been reported. We aimed to report the discovery of a new mutation in the DYT25 gene in patient KF who presented with a case of familial myoclonic dystonia in the context of complex social issues.

**Methods:** Genetic testing for KF revealed a novel mutation which prompted chart review and further testing for family members.

**Results:** KF presented at the age of 19 months with progressive action tremor. By age 12, KF had developed dystonic, involuntary movements of the leg. By age 16, KF was noted to have worsening tremor and dystonia. CSF and MRI were normal. Testing for Huntington's and Wilson's were negative.

KF's mother had presented with progressive tremor at age 14. By age 28, her examination showed dysarthria, torticollis, dyskinesia and tremor. Her symptoms improved with alcohol which she became dependent on. KF's mother had difficulty engaging with services and as KF was under the care of her aunt, it was difficult to undertake a full family assessment of neurological signs and symptoms. Once genetic testing advanced, a novel mutation was discovered in the DYT25 gene in both mother and daughter providing a long awaited diagnosis.

**Conclusions:** GNAL mutations can present with a variety of phenotypes. Many cases have significant family history, however de novo mutations are also reported which highlights the importance of genetic testing in cases of isolated dystonia. Knowledge of specific genetic mutations can help tailor treatment for each patient.

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**Poster No. 49 - General Paediatrics****AN AUDIT OF OUR ADHERENCE TO ISPAD GUIDELINES IN THE MANAGAEMENT OF CHILDREN WITH DIABETES IN A SECONDARY CARE CENTRE.**LE Geraghty<sup>1</sup>, P Gallagher<sup>1</sup><sup>1</sup>Department of Paediatrics, Midland Regional Hospital, Portlaoise, Ireland

**AIMS:** We sought to audit our practice of assessing patients with Type 1 Diabetes Mellitus (T1DM) in the outpatient department (OPD) to that recommended by the International Society for Pediatric and Adolescent Diabetes (ISPAD) with particular focus on monitoring for complications. Our primary aim was to improve our unit's adherence to best practice. Secondary aims included investigating insulin regimens in use among our patient population.

**METHODS:** We conducted a retrospective audit of the information recorded in charts of 38 patients who attended clinics in August, September, October & November 2016. We compared these to the most up to date ISPAD Clinical Practice Consensus Guidelines 2014 Compendium.

**RESULTS:** We reviewed 38 charts in total, of 17 girls & 21 boys. Average HbA1c was 68 mmol (8.4%).

INSULIN REGIMENS	% PATIENTS USING
MDI	55
BD	32
BD + trial of pump	3
TDS	5
Pump	5

GUIDELINE CRITERIA	MEETING TARGET (%)
Attended for review 4 times in last year	79.3
HBA1C Aim <7.5%	11% Target Range
Height Recorded	100
Height Plotted	71
Weight Recorded	100
Weight Plotted	74
BMI recorded	74
BMI plotted	47
Retinopathy screening	63
Nephropathy screening	95
Neuropathy Screening	13
BP recorded	100
BP centile plotted	0
Dyslipidaemia Screening	76
TSH at diagnosis	82
Anti-TPO Antibody at diagnosis	16
TFTs annually past 2yrs	62
Screening for celiac disease at diagnosis	62
Screening for Primary Adrenal Insufficiency	95
Injection sites examined	71
Considered for screening for Vitamin D deficiency	0
Asked about physical activity	37

**CONCLUSION:** Clinical guidelines can be useful in the management of Type 1 Diabetes to help ensure that potential complications and co-morbidities are diagnosed and treated early.

Our audit was retrospective, so limited to what had been documented in each patient's chart. We found that in some areas our compliance was appropriate, in others we were both under- & over-investigating our patients.

This audit also highlights the need for more children to be placed on MDI and insulin pump therapy. The recent addition of dedicated paediatric diabetes dietetic support and the rollout-out of the CHOICE CHO Counting Programme will make this possible.

We recommend a reconfiguration of our clinics to include an annual review for each patient. We have formulated a short guideline for each NCHD to reference at Diabetes Clinic to ensure appropriate screening questions are asked, evidence-based investigations are requested and appropriate MDT management carried out, with the ultimate aim of improving the quality of care provided to our patients.

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## **Poster No. 50 - Sub-Specialty and Special Interest Paediatrics**

### **A CASE OF NON-SURGICAL CEREBELLAR MUTISM**

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#### **Case:**

A 10 year old, previously healthy & developmentally normal boy presented with sudden onset aphasia & ataxia following a 2-day history of vomiting & headache. He was unable to sit, stand nor walk. He was dependant on family for feeding and toileting needs. On examination he was agitated & disorientated and vocalising only with grunts & screams. He was hypotonic and had dysmetria. His cranial nerves were normal.

Neuroimaging demonstrated diffuse cerebellitis with leptomeningeal enhancement and increased cerebellar perfusion. Examination of CSF revealed the presence of oligoclonal bands and elevated protein. Infectious, autoimmune & toxin testing were negative.

He was treated with immune modulation therapy. Intensive rehabilitation therapy with an emphasis on combined speech & music therapy has lead to a dramatic but incomplete improvement to date. Ongoing issues include a delay in linguistic processing, altered voice quality & motor planning difficulties.

#### **Discussion:**

Posterior Fossa Syndrome (PFS) is characterised by partially reversible decreased production of speech, associated with ataxia, axial hypotonia & prominent emotional lability with irritability & apathy. It is a well recognised post-operative syndrome particularly post medulloblastoma resection. Non-surgical cerebellar mutism is rare, with only 3 case reports identified on literature review, all with evident causation.

This case emphasises the need to recognise PFS/ Cerebellar Mutism as a medical entity as opposed to a post-operative phenomenon alone, and highlights the importance of cerebellar function in linguistic processing. Further research is required to establish a best practice for treatment & aid prognostication. Music therapy may be beneficial in aiding recovery of verbal communication in PFS. We expect this child to continue to improve with likely long-term complications of ataxic dysarthria & executive functioning deficits.

(1) Apraxia of speech & cerebellar mutism syndrome: a case report. De Witte et al *Cerebellum & Ataxias* 2017 4:2 Published 6/1/17 (2) Huber et al: Long-term effects of transient cerebellar mutism after cerebellar astrocytoma or medulloblastoma tumour resection in childhood, *Childs Nerv Syst* 22:132-138, 2006. (3) Gelabert-Gonzalez M, Fernandez-Villa J. Mutism after posterior fossa surgery: review of the literature. *Clin Neurol Neurosurg* 2001; 103; 111-4. (4) "Non Surgical Cerebellar Mutism in two children". Mewasingh et al, *Neuropath Unit, Brugmann University Hospital, Belgium. Ped Neurol* Vol 28 2002

**Poster No. 51 - General Paediatrics**  
**INDICATION FOR METABOLIC WORK UP**

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**Aim:** To identify the indications for performing a metabolic work-up in a peripheral hospital and the frequency of abnormalities diagnosed with these investigations.

The final aim of this audit is to determine whether guidelines should be developed for patients that may warrant metabolic investigations.

**Methods:** A retrospective analysis of all the metabolic work-ups performed over a 6 month period. A template was designed in order to look at indication, type of work-up performed and results.

**Results:** 48 patients had a metabolic work-up performed between January and July 2017. 58% of patients were aged 1 to 5 years of age (n=28).

The main indications for performing a metabolic work-up included autistic spectrum disorder (48.3%, n=21), developmental delay (35.4%, n=17, 11 patients had delay in more than one category) and seizures (10.4%, n=5)

47 patients had serum aminoacids and 46 patients had urine organic acids performed. Only 21 patients had a sample for acylcarnitine profile. 10 patients had ammonia, 4 had creatinine kinase and 4 had a venous blood gas performed.

Only 2 patients had significant abnormalities detected: one patient had methylmalonic acid in the urine and abnormal serum aminoacids and has been referred to the metabolic team, one patient had abnormal urine organic acids consistent with vitamin B12 deficiency.

The main indications for performing a metabolic work-up in our cohort were ASD (43.8%) and developmental delay (35.4%).

**Conclusion:** Content of the metabolic work-up was variable. The yield of metabolic investigations was low. To our knowledge there is no current national guidelines on the indications for performing a metabolic work-up in ASD and developmental delay. There is a need for evidence-based guidelines on the indications for metabolic investigations and the required tests according to the clinical features.

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**Poster No. 52 - General Paediatrics**

**THE ROLE OF MICTURITION CYSTOURETHROGRAPHY IN follow up INVESTIGATION OF FIRST FEBRILE UTI IN LESS THAN 6 MONTHS AGE**

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**Background:** Diagnosis and treatment of urinary tract infection (UTI) are important in infants given the long-term associations such as renal scarring, vesicoureteral reflux, hypertension and chronic renal failure. There is an ongoing debate over the role of micturating cystourethrogram (MCUG) in UTI. Currently, The National Institute of Clinical Excellence (NICE) guidelines reserves MCUG only for those children who have atypical UTI, abnormal renal ultrasound (US) or recurrent UTI below 6 months of age and does not recommend doing MCUG on children with normal US and no symptoms of atypical UTI below 6 months of age.

**Aims:** Aim of this study was to find out is there any benefit of doing MCUG on the all the infants who had normal renal Ultrasound Scan and typical UTI.

Inclusion criteria:

age < 6months, first febrile typical UTI, Children with Normal Renal US scan and had MCUG performed

Exclusion criteria:

age >6 months, atypical UTI, abnormal renal US scan, normal renal ultrasound scan but no MCUG

**Methods:** Retrospective cohort study was done, charts were reviewed of the patients less than 6 months who presented to St. Luke's General Hospital, Kilkenny from January 2007 to December 2016, data for demographics, microbiology and radiological investigations was obtained.

**Results:** Total 186 presented with UTI in this time, total 34 patients met inclusion criteria, 24 (71%) were male and 10 were female, 5 (14.7%) had abnormal MCUG.

**Conclusion:** 14.7% of patients with normal US and no features of atypical UTI showed abnormal results on MCUG, if we do not order MCUG for these children, we are at a risk of missing these abnormal MCUG results.

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#### **Poster No. 53 - General Paediatrics**

#### **ELEVATED AMINOTRANSAMINASES (ALT) AS THE FIRST MANIFESTATION OF SARCOIDOSIS**

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8 years old boy presented with 8 months history of intermittent fevers, headaches, tiredness and lethargy. He had no systemic symptoms like cough, diarrhoea, vomiting, joint pain or joint swelling or rash.

He was born in Ireland and had African ethnicity. He had uneventful Perinatal period. His vaccines were up to date. He was on no regular medications. There was not significant family medical history particularly no family history of autoimmunity and immune deficiency  
His parents are from Mali but he himself has never left Ireland.

#### **On Examination:**

He had no initial hepatomegaly at first presentation but at second presentation after 5 months he had hepatomegaly with no splenomegaly. His inguinal and axillary lymph nodes were palpable but small and non-tender. His LFTs and FBC at initial presentation showed raised ALT, GGT and Anaemia, Hepatitis B and C serology were negative, his globin fraction, platelets and IgG were elevated. Based on these results we initially thought the possibility of auto immune hepatitis

Later on his other bloods showed elevated ESR and CRP, serum Amyloid A , serum ACE, Serum Immunoglobulins. Quantiferon and Mantoux were negative. Serology for Toxoplasma, Bartonella, Brucella was negative. Serology for Measles, Mumps, Rubella and Varicella demonstrated protective antibody titers. There was no evidence of haemoglobinopathy.

Then liver biopsy showed florid granulomatous hepatitis which prompted to do CT thorax which showed features suggestive of Sarcoidosis.

The definitive diagnosis of Sarcoidosis was made as compatible clinical findings were associated with histopathological evidence of noncaseating granulomata on Liver biopsy and CT findings.

He was treated with IV methylprednisolone initially followed by oral prednisolone, omeprazole, Iron and Vitamin D supplementation, along with steroid eye drops. Now he is getting Adalimumab injections. [uptodate.com](http://uptodate.com)

## Poster No. 54 - General Paediatrics

### DIAGNOSTIC VALUE OF C-REACTIVE PROTEIN AND WHITE CELL COUNT TO PREDICT SEPSIS IN PAEDIATRIC POPULATION

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**Aims:** C-reactive protein (CRP) and white cell count (WCC) are the most commonly performed inflammatory markers in suspected sepsis, there is not much evidence about accuracy of predicted value of these markers in literature. This study was designed to

1. Determine the correlation of CRP and WCC in confirmed positive blood culture patients
2. Evaluate the usefulness of these markers to predict sepsis.

**Methods:** A retrospective cohort study was done, data was obtained from microbiology laboratory for those patients who had positive blood cultures from 1<sup>st</sup> of January 2014 to 31<sup>st</sup> of December 2015 for age group 0 to 15 years. CRP and WCC were obtained from online lab web inquiry and data was analysed using SPSS, Pearson correlation test was applied to determine the correlation between CRP and WCC. Sign test was applied on values of CRP and WCC using online calculator. P value of <0.05 was considered significant.

**Results:** Total 131 patients (n=131) were included in this study, correlation between WCC and CRP was found to be 1:0.137 with p value of 0.118 which is not statistically significant. Sign test was applied to compare which of these markers significantly was rising on most occasions, CRP showed positive sign 89 times as compared to 42 times for WCC. P value is 0.00004 which is statistically significant.

**Conclusion:** It can be concluded from the above results that CRP and WCC are not correlated to each other. They are independent variables. Rising CRP as a sign of sepsis predictability marker is twice as compared to white cell count. Therefore, we conclude that CRP is a better inflammatory marker predicting sepsis as compared to WCC in paediatric population.

1. Zarkesh M, et al Diagnostic Value of IL-6, CRP, WBC, and Absolute Neutrophil Count to Predict Serious Bacterial Infection in Febrile Infants, Acta Medica Iranica, Vol. 53, No. 7 (2015) 2. Chacha et al.: Utility of qualitative C- reactive protein assay and white blood cells counts in the diagnosis of neonatal septicaemia at Bugando Medical Centre, Tanzania. BMC Pediatrics 2014 14:248. 3. Buoro S, Mecca T, Azzarà G, Apassiti Esposito S, Seghezzi M, Vavassori M, Crippa A, Marchesi G, Castellucci E, Ottomano C, Lippi G. Extended leukocyte differential count and C-reactive protein in septic patients with liver impairment: diagnostic approach to evaluate sepsis in intensive care unit. Ann Transl Med 2015;3(17):244. doi: 10.3978/j.issn.2305-5839.2015.09.41 4. A Nosrati et al. Diagnostic markers of serious bacterial infections in febrile infants younger than 90 days old Pediatrics International (2014) 56, 47–52 5. Coline Mahende et al. Profile of C-reactive protein, white cells and neutrophil populations in febrile children from rural north-eastern Tanzania Pan African Medical Journal. 2017; 26:51 doi:10.11604/pamj.2017.26.51.10264

## Poster No. 55 - General Paediatrics

### THE MANAGEMENT OF GASTROENTERITIS IN A GENERAL PAEDIATRICS WARD - AUDIT RESULTS

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**Background:** Gastroenteritis is a common presentation in paediatrics, with potentially serious consequences, however it is a usually mild and self resolving illness.

**Aim:** To determine if medical staff are correctly identifying, classifying and documenting hydration status, and if correct management was implemented based on this grading.

**Methods:** This was a retrospective audit, using a criteria form to collect data. Our target population was children admitted with a working diagnosis of gastroenteritis between 1/1/2016 - 31/8/2016. 92 charts were included in the audit.

Performance was measured against Our Lady's Children's Hospital Crumlin guidelines for Management of Gastroenteritis. These guidelines advise categorising patients according to hydration status, and recommends oral rehydration as first line management for those with mild to moderate dehydration. It also advises blood tests are not routinely indicated.

**Results:** Of the 92 children admitted with gastroenteritis 31.5% had no documentation of hydration status or clinical features relating to hydration in their chart. Only 26% had a hydration status documented.

Regarding investigations, 88% of children had bloods taken on admission for gastroenteritis, and 30.4% had stool cultures taken.

74 of the 92 children included received IV fluid hydration as part of their first line management, with only 18 being rehydrated orally. Zero children received NG rehydration as part of their management.

**Conclusion:** We found that compliance with the OLCHC guidelines was poor overall. Documentation of hydration status was poor, and there was overuse of laboratory investigations.

IV rehydration was regularly part of the management plan, with oral and NG routes under-utilised.

We identified a need for education and review of clinical guidelines for paediatric staff. We held education sessions with ward staff, and updated our resources to include NICE guidelines for the management of gastroenteritis, placing the treatment algorithm in clinical areas on the ward. We planned to re-audit following these interventions.

1. Diarrhoea and vomiting caused by gastroenteritis in under 5s: diagnosis and management. NICE Clinical Guideline. 2009. <https://nice.org.uk/guidance/cg84?unlid> 2. Our Lady's Children's Hospital, Crumlin - Management of Gastroenteritis guidelines.

## Poster No. 56 - Neonatal

### TRANSIENT NEONATAL DIABETES MELLITUS IN A LATE PRETERM INFANT: CASE REPORT

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**Introduction:** Neonatal diabetes mellitus is defined as hyperglycaemia occurring within the first month of life, which requires exogenous insulin and persists longer than 2 weeks.<sup>1</sup> Transient neonatal DM remits spontaneously during infancy, however may relapse later.<sup>2</sup>

**Case Report:** Baby H was delivered by emergency LSCS at 34+3 weeks, due to a non-reassuring CTG and growth restriction on antenatal scanning. Maternal history was significant for CMV IgG and IgM positivity, and oligohydramnios.

Apgars were 9 at 1 minute, and 10 at 5 minutes. Birth weight was 1200g (<0.4th centile), HC 28cm (0.4th-2nd centile), length 39cm (0.4th centile). Examination was otherwise unremarkable. She required CPAP for 1 day.

On day 2, blood glucose was raised (laboratory value - 48mmol/L). An IV insulin infusion was commenced, and the infusion rate was titrated according to blood glucose levels, which were persistently labile.

Baby H developed anaemia on day 16, requiring transfusion. Frequent phlebotomy was felt to contribute to this. Continuous Glucose Monitoring was explored, however was not feasible due to paucity of subcutaneous tissue.

Genetic testing for TNDM showed paternal uniparental isodisomy of chromosome 6, with complete loss of methylation at the PLAGL1 locus on chromosome 6q24, confirming TNDM.

Baby H was transferred to a tertiary centre on day 42 for ongoing endocrinology input and treatment planning. She required one further RCC transfusion. She was discharged on a subcutaneous insulin infusion pump on day 59 of life.

**Discussion:** TNDM results from insulin deficiency due to insufficient production by beta cells.<sup>3</sup> Overexpression of paternally expressed imprinted genes including PLAGL1 causes 70% of cases. Approximately 2/3 subsequently relapse.<sup>4</sup>

Management is challenging, due to paucity of subcutaneous tissue, miniscule insulin doses used, and sensitivity to insulin leading to hypoglycaemia risk. Insulin pump therapy has provided effective in managing these infants.<sup>5</sup>

1. Park JH, Kang JH, Lee KH, Kim NH, Yoo HW, Lee DY, Yoo EG. (2013). Insulin pump therapy in transient neonatal diabetes mellitus. *Ann Pediatr Endocrinol Metab* 18:148-151. 2. Docherty LE, Kabwama S, Lehmann A, Hawke E, Harrison L, Flanagan SE, Ellard S, Hattersley AT, Shield JPH, Ennis S, Mackay DJG, Temple IK. (2013). Clinical presentation of 6q24 transient neonatal diabetes mellitus (6q24 TNDM) and genotype-phenotype correlation in an international cohort of patients. *Diabetologia*. 56:758-762. 3. Bharucha T, Brown J, McDonnell C, Gebert R, McDougall P, Cameron F, Werther G, Zacharin M. (2005). Neonatal diabetes mellitus: Insulin pump as an alternative management strategy. *J Paediatr Child Health*. 41: 522-526. 4. Greeley SAW, Tucker SE, Naylor RN, Bell GI, Philipson LH. (2010). Neonatal Diabetes Mellitus: A Model for Personalized Medicine. *Trends Endocrinol Metab*. 21(8):464-472. 5. Passanisi S, Timpanaro T, Lo Presti D, Mammi C, Caruso-Nicoletti M. (2014). Treatment of Transient Neonatal Diabetes Mellitus: Insulin Pump or Insulin Glargine? Our Experience. *Diabetes Technologies & Therapeutics*. 16(12):880-884.

**Poster No. 57 - General Paediatrics**

**COULD FABRY'S DISEASE BE THE CAUSE SEVERE FEEDING DIFFICULTIES IN INFANCY?**

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**Background:** Fabry disease is a rare X-linked disorder caused by deficient activity of the lysosomal enzyme alpha-galactosidase A. Progressive accumulation of the substrate globotriaosylceramide in cells throughout the body leads to major organ failure and premature death.<sup>1</sup> The gastrointestinal symptoms are often the presenting features of the disease in childhood, but can be misdiagnosed by Paediatricians and Gastroenterologists for many years due to their nonspecific presentation. As the chief treatment for Fabry is enzyme-replacement therapy that has been shown to stabilize and possibly reverse disease course, recognition of these symptoms and early diagnosis in an attempt to prevent progression with treatment, is critical.

A significant number of patients are treated for complex, challenging gastrointestinal symptoms in childhood without any etological medical findings.

**Aims:** Our aim was to consider Fabry (and thus raise awareness of this rare disorder) as a potential cause of pain around feeds in cohort of children with severe feeding difficulties who otherwise appear well and in whom symptoms do not settle with standard treatment.

**Methods:** Ours was a prospective study carried out over the 6 month period 01/01/2017-01/07/2017. Informed consent was obtained from parents for blood sampling to measure the activity of the alpha galactosidase enzyme and for full GAL A gene analysis on a cohort of otherwise normal pre-school children with severe unresolved neonatal onset feeding difficulties presenting for review during our study period and having phlebotomy for other reasons.

**Results:** Five patients met the criteria for inclusion in our study. Consent was declined in one case on the grounds that the child was unlikely to have the disorder. Testing was negative in the other 4 cases (one sibship pair)

**Conclusion:** While our small study had negative findings we suggest that Fabry, although rare, is a differential diagnosis to consider in children who present with unexplained and unresolving feeding difficulties.

1. Eur J Clin Invest. 2004 Mar;34(3):236-42. Fabry disease defined: baseline clinical manifestations of 366 patients in the Fabry Outcome Survey. Mehta A1, Ricci R, Widmer U, Dehout F, Garcia de Lorenzo A, Kampmann C, Linhart A, Sunder-Plassmann G, Ries M, Beck M 2. Zar-Kessler C, Karaa A, Sims KB, Clarke V, Kuo B. Understanding the gastrointestinal manifestations of Fabry disease: promoting prompt diagnosis. Therapeutic Advances in Gastroenterology. 2016;9(4):626-634. doi:10.1177/1756283X16642936 3. Genetics in Medicine (2007) 9, 34–45; doi:10.1097/GIM.0b013e31802d8321 Raymond Y Wang<sup>1,2</sup>, Alicia Lelis<sup>1</sup>, James Mirocha<sup>3</sup> and William R Wilcox<sup>1,2,4</sup>

**Poster No. 58 - Sub-Specialty and Special Interest Paediatrics**

**A STUDY ASSESSING THE CHARACTERISTICS OF PAEDIATRIC PATIENTS WITH TYPE 1 DIABETES MELLITUS AND CO-MORBID COELIAC DISEASE AT UNIVERSITY HOSPITAL LIMERICK**

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**Background:** The association of Type 1 Diabetes Mellitus (T1DM) and Coeliac Disease(CD) is well recognised. CD is about 6-fold higher in T1DM.<sup>1</sup> Having a CD diagnosis for >15 years is associated with a 2.8 fold increased risk of death in individuals with T1DM.<sup>3</sup>

UHL has a large cohort of children with T1DM and is the only Irish paediatric T1DM centre with a Paediatric Gastroenterology service.

**Methods:** Institutional ethics approval was obtained. A list of all patients with T1DM and comorbid CD was compiled using the T1DM database. A search of all referrals made to the paediatric gastroenterology regarding patients with T1DM was also carried out, as well as a retrospective chart review of those identified. A telephone interview was conducted with consenting parents of confirmed T1DM and comorbid CD.

**Results:** A total of 21 patients (11%) were identified as having/possibly having comorbid CD. Mean time to CD diagnosis from T1DM diagnosis was 3 years.

Of these 8/21 (38%) were being treated for CD, 6 confirmed by endoscopy, 2 by symptomatology only. A further 5(23%) were awaiting gastroenterology review or endoscopy.

Overall Confirmed / Suspected CD 7(53%) had gastrointestinal symptoms. Of those with no diagnosis of CD 6(75%) were symptomatic.

All 21 patients had IgA transglutaminase (TTG) checked. All 13(100%) of confirmed CD/treated as CD/awaiting review/endoscopy had positive TTG. Of remaining 8, 4(50%) had positive TTG despite no convincing clinical evidence of CD.

5/8 patients (71%) found CD more restrictive and had a greater impact on quality of life than T1DM.

**Conclusions:** A diagnosis of T1DM in a child is recognized as a significant condition, however the impact of comorbid CD is less well characterized. Recommendations for serologic screening in patients with T1DM vary considerably.<sup>3</sup>

These results indicate the significant medical and quality of life challenges for this group of patients.

1. Systematic review with meta-analysis: associations between coeliac disease and type 1 diabetes P. Elfström, J. Sundström, J. F. Ludvigsson 2. Celiac disease: A review Issue: BCMJ, Vol. 43, No. 7, September 2001, page(s) 390-395 Articles Hugh Freeman, MD, FRCPC, FACP, FCG 3. J Pediatr Gastroenterol Nutr. 2017 Feb;64(2):175-179. doi: 10.1097/MPG.0000000000001388. Celiac Disease and Diabetes: When to Test and Treat. Weiss B1, Pinhas-Hamiel O. 4. Am J Gastroenterol. 2003 May;98(5):1079-87. Reliability of antitransglutaminase antibodies as predictors of gluten-free diet compliance in adult celiac disease. Vahedi K1, Mascart F, Mary JY, Laberrenne JE, Bouhnik Y, Morin MC, Ocmant A, Velly C, Colombel JF, Matuchansky C

## Poster No. 59 - General Paediatrics

### WHAT IS BEING REFERRED TO A GENERAL PAEDIATRIC OPD – LEGIBILITY AND SUITABILITY OF REFERRALS

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**Aim:** Given the ever increasing workload in the Paediatric OPD of UHG we undertook a review of the type and quality of referral letters received over a 3-month period commencing August 1<sup>st</sup> 2017.

**Methods:** Study period from August 1<sup>st</sup> to October 31<sup>st</sup>. All available referrals have been reviewed. Data collected included patient demographics, letter origin, and referral complaint. Ethnicity was defined as Irish or non-Irish as based on the patient name. Letter quality was dependent on legibility and the HSE referral template.

**Results:** To date (mid October), 109 referral letters were available for review; the majority, 91% (99) from General Practice, 8% (9) from the Emergency Department with only 1% (1) from a paediatrician. The majority (58%) originated from Galway county, 32% from Galway city and the remainder from outside counties; 20% were non-Irish. There were 55% (60 females) referred, 98% (107) ≤ 14 years. Outside of General Paediatrics, the three most common sub-speciality reviews sought were cardiology (13%), allergy (12%) and developmental paediatrics (8%). Laboratory testing alone was requested for 5% (5) of GP referrals. Computer based referrals accounted for 83% (90), 32% (29) of these used a HSE referral template. Of the handwritten letters, 32% were poorly legible. Clinical exam findings and past medical history were absent in approximately 25% of letters. Family and social history were poorly recorded, absent in 61% and 49% respectively; 36% (39) had no reference to medications.

**Conclusion:** The majority were demographically appropriate. Those from outside counties were referred for specialist opinion. 20% were non-Irish, in keeping with the 2016 census. (*Cso.ie, 2017*) While electronic referrals were preferred in term of legibility, those from ED contained more information yet were handwritten. An electronic template would be the preferred method, provided reference to all aspects of history and examination was made.

References 1. Cso.ie. (2017). Ethnicity - CSO - Central Statistics Office. [online] Available at: <http://www.cso.ie/en/releasesandpublications/ep/p-cp8iter/p8iter/p8e/> [Accessed 24 Oct. 2017]

#### **Poster No. 60 - General Paediatrics**

##### **PER-CUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) IN THE MANAGEMENT OF CHILDREN WITH COMPLEX EPILEPSY AND MEDICATION REFUSAL**

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**Aims:** Current guidelines for PEG/PEJ placement focus largely on maintaining enteral feeding when oral feeding is no longer possible or adequate with an emphasis on nutrition and quality of life. Previous publications have also alluded to the potential benefits in therapy compliance, for example in children with HIV, renal disease and neuro-disability. We describe a cohort of children with complex epilepsy who refused or were unable to tolerate oral medication and in whom PEG tube placement was initiated for the purpose of drug administration.

**Methods:** We identified children from the medical records of two Tertiary Paediatric Units who had PEG tube placement intended primarily for administration of antiepileptic drug (AED) therapy and collected demographic and clinical details from chart reviews. We assessed parent-reported changes in seizure control and quality of life using a structured questionnaire.

**Results:** Ten patients met the inclusion criteria. All families reported an improvement in ease of administering medications and 8 reported improvement in quality of life (QOL) as significant. Seven children had a decrease in seizure frequency (for more than 12 months) post PEG tube placement, five of whom had either a decrease in the number of drugs administered or their doses. Four children went on to receive fluids and nutrition through their tube on a regular basis. Seven had some degree of PEG complication.

**Conclusion:** This case series of children with complex epilepsy demonstrates a significant improvement in seizure control and QOL following PEG tube placement for AED administration.

#### **Poster No. 61 - General Paediatrics**

##### **IMMUNODEFICIENCY IN CHILDREN WITH DOWN SYNDROME**

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**AIMS:** Down Syndrome (DS) is the most common genetic syndrome associated with abnormal immune function and immune defects. There is an increased susceptibility to both bacterial and viral infections. We aimed to examine the degree of immunodeficiencies in children with DS.

**METHODS:** Children who attended the specialist multidisciplinary DS clinic in Tallaght were included, and medical details collected especially in relation to infections, recurrent respiratory tract infections (RTIs), hospital admissions and vaccinations. Results of Full blood counts, T & B cell subsets and immunoglobulins were analysed and compared to age specific reference ranges.

**RESULTS:** Twenty-eight children (age range 1-12 years) were included and 16/28 (57%) had recurrent RTIs. Hospitalization at least once was necessary in 15/28 (54%) patients, and 6/28 (21%) required multiple admissions. All but one patient's routine immunisations were up to date (96%). Although 22 children had a normal white cell count (WCC), Neutrophil and lymphocyte levels, T & B cell subsets (n=13) revealed decreased CD3+, Helper T, Cytotoxic T and CD19+ B cells, with the latter being significantly reduced. IgA and IgG levels were normal or high in all cases, and levels were either normal or low for IgM.

**CONCLUSION:** We found that children with DS were at increased risk of infections, especially recurrent RTIs, with a significant hospitalization rate. Vaccination compliance was very high, however the CD19+ B cells were found to be low, which may point to a poor memory B cell response. Further research to evaluate individualised vaccination and prophylactic programmes would be valuable in this cohort.

#### **Poster No. 62 - General Paediatrics**

##### **CORRELATIVE MEASUREMENTS OF TRANSCUTANEOUS BILIRUBINOMETER AND SERUM BILIRUBIN IN NEONATES $\geq$ 35 WEEKS OF GESTATION.**

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Aims: To know the exact correlative measurements of Serum Bilirubin (SBR) by laboratory method and Transcutaneous Bilirubinometer (TCB) in Neonates  $\geq$  35 weeks of gestation.

Methods: Serum Bilirubin should be checked in all case if the TCB readings are,  $>200$  mmol/L for the infants  $\geq 38/40$ ; or  $>150$  mmo/l for the infants  $\geq 35/40$  or  $\leq 38/40$  and  $> 48$  hours of age. The blood sample should be taken within 1 hour of doing the TCB. The Maximum age for TCB check is day 14 of life. TCB should not be used on neonates who is undergoing or has undergone phototherapy. In addition to it, TCB should also not to be used on any baby with Rh incompatibility.

Results: Total 100 samples were collected in one year duration (from 1<sup>st</sup> July, 2016 to 1<sup>st</sup> July, 2017). The minimum difference between TCB & SBR readings were  $\pm 05$   $\mu$ mol/L and maximum  $\pm 50$   $\mu$ mol/L. The average difference noted between TCB & SBR readings were  $\pm 30$   $\mu$ mol/L.

Conclusions: Non-invasive transcutaneous bilirubinometers (TCB) have sufficient diagnostic accuracy for assessing bilirubin level in low risk clinical settings, at measured TCB levels below 200 micromols /litre. Always check the result of TCB with a blood test (SBR) if reading is  $>200$  mmol/L for infants  $\geq 38/40$ ; or  $>150$  mmo/l for infant  $\geq 35/40$  OR  $\leq 38/40$  and  $> 48$  hours of age. The average difference noted between TCB & SBR readings were  $\pm 30$   $\mu$ mol/L (in our Audit).

1. Neonatal Bilirubin Measurement by Transcutaneous Bilirubinometer, Clinical Guideline, Royal Cornwall Hospitals NHS Trust, UK. 2. Jana Grabenhenrich, Linus Grabenhenrich, at el, Transcutaneous Bilirubin After Phototherapy in Term and Preterm Infants; Paediatrics, Nov, 2014, Vol:134/5.

#### **Poster No. 63 - Medical Education, Management and Laboratory Medicine**

##### **THE QUALITY OF STANDARDS UTILISED IN PUBLISHED AUDITS BETWEEN YEARS 2007-2015.**

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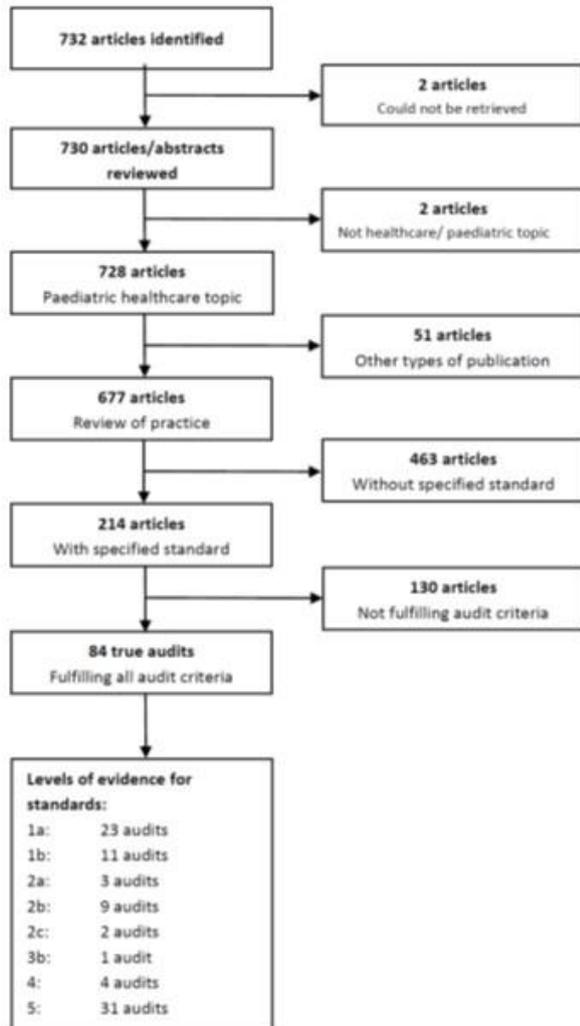
#### **Background and aims:**

Clinical audit is a process that has been defined as "a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change". This study was undertaken to evaluate the quality of explicit audit criteria in published paediatric audits.

**Methods:** The PUBMED, MEDLINE and CINAHL databases were searched for paediatric audits published in English using a combination of key words and MeSH headings between the years 2007-2015. Each article was reviewed by 2 authors and if a disagreement occurred the article was reviewed by at least 3 authors. The quality of the standards used in the audits was evaluated utilising the Oxford Centre for the Evidence-based Medicine Levels of Evidence (March 2009).

**Results:** Seven hundred and thirty-two articles were identified and 730 were retrieved. Two articles were excluded as they were 'not healthcare related' and did not deal with a predominant paediatric population. Ninety three percent (677 articles) were classified as 'reviews of practice'. Of these 214 articles (29%) had a defined standard. Only 84 (11%) fulfilled the criteria of an audit (Fig.1). Fifty two percent of audits were from the UK.

Thirty-four (40%) audits used standards of high quality of evidence (1a-1b). Those were mostly international or national guidelines. Thirty-seven percent standards were based on the 'expert opinion' (level 5).



**Conclusions:**

Only 11 percent of studies described as 'audits' fulfilled the actual definition of an audit. Prior to undertaking audits clinicians should evaluate the quality of the standards that they intend to use. The increasing numbers of evidence based guidelines should make this process easier.

**Poster No. 64 - General Paediatrics**

**CATAONIA A COMORBIDITY OF AUTISM : A CASE REPORT**

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**Aims:** We report a case of catatonia in 14 years old girl with background of Autism Spectrum Disorder and Moderate Learning Disability.

**Method:** B presented with progressive regression of adaptive skills with unusual behaviour over a number of weeks. B's activity level had slowed down; she had delayed response when spoken to, with starring episodes, drooling, and mutism. B required prompts to do simple tasks as swallowing of saliva and had difficulty initiating and completing actions. She became dependant for activities as feeding,

dressing and toileting for which she was previously independent. On examination she had pyrexia, tachycardia and hypertension. She had waxy flexibility and would hold her arms above her head for prolonged periods. Her neurological examination was normal. Her gait lacked normal automaticity, she had reduced spontaneous movements.

**Results:** Her investigations Full blood count, Thyroid function, Liver function, Toxicology screen, ASOT, Copper, lactate, porphyrins, urine protein creatinine ratio, urine catecholamines, Lyme, Syphilis, HIV serology were normal. Her Creatine Kinase was elevated at 2766 IU/L. EEG was normal. CT brain showed no acute pathology. Her MRI brain showed an area of focal cortical dysplasia in left temporal lobe.

A diagnosis of Catatonia was made clinically. B was jointly managed by Paediatrics, Child Psychiatry, Speech-Language and Occupational Therapy. She was treated with oral Lorazepam in gradual increasing doses. Over a number of weeks her symptoms improved. She regained her ability to do everyday skills, was discharged from hospital and returned to school. At 12 months follow up B remains on low dose oral Lorazepam.

**Conclusion:** Catatonia is disorder of movement, behaviour and responsiveness that can occur in individuals with Autism. The overlap of features of both conditions raises diagnostic challenges. Management includes therapeutic intervention with benzodiazepines, and supportive therapeutic measures with goals for remission to baseline behaviour and function.

#### **Poster No. 65 - General Paediatrics**

#### **INFECTIOUS MONONUCLEOSIS: OUR PRACTICE TO BEST PRACTICE. FROM AUDIT TO QI IN OUR LADY OF LOURDES HOSPITAL, DROGHEDA.**

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**Background:** Monospot is a readily available diagnostic test however evidence suggests that its sensitivity is poor at extremes of age. Best practice guidelines now recommend clinical examination, FBC with differential and EBV serology in children under 12 yrs (NICE 2017),

A retrospective audit carried out in Paediatric ED in OLOLH from 01/01/2016 to 31/12/2016 demonstrated poor sensitivity in monospot test as against gold standard EBV serology.

#### **Aims:**

To audit the use of monospot in children < 16 yr ,

1. To audit the use of EBV serology in children < 16 yr,
2. To assess the sensitivity and specificity of monospot using EBV serology as the gold standard.

**Methodology:** A literature review evaluated current evidence for use of monospot in a paediatric population. With co-operation from the laboratory retrospective data was collated for both Monospot and EBV serology. The sensitivity and specificity of monospot test in the study population was analysed.

**Results:** During the study period there was 18 625 presentations to Paediatric ED in OLOLH. Of these 150 children (< 1%) were tested for Infectious Mononucleosis, 101 children were tested with monospot, 49 were tested with EBV serology and 30 were tested with both.

Monospot yielded a 10% positive test result; 81% of children tested were < 12 yrs. EBV serology yielded at 51% positive test result; 71% of children tested were < 12 yrs. The monospot test had a sensitivity of 30% and a specificity of 100%.

#### **Discussion:**

The audit found monospot test to have poor sensitivity in children < 12 yrs. In light of this a Quality Improvement initiative has been outlined to revise the use of monospot in the study population.

## Poster No. 66 - Sub-Specialty and Special Interest Paediatrics

### ANTI-PSYCHOTIC MEDICATION IN CHILDREN AND ADOLESCENTS – HOW TO BE CAREFUL PRESCRIBERS.

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#### Aims and Objectives

- To audit practice for the commencement of anti-psychotic medication in children and adolescents in CAMHS in-patient unit Jan - June 2015.
- To compare to previous audit of 2011- 2013.
- To compare to NICE guideline CG 155: Psychosis and Schizophrenia in children and young people (Jan 2013)

#### Methods

- A retrospective chart review of patients discharged from Jan – June 2015.
- Patients prescribed anti-psychotic medication were identified.
- Patient records reviewed for evidence of best practice as outlined in NICE guideline.

#### Results

- 12 patients were prescribed anti-psychotic medication during the study period.
- 100% documented discussion of indication, side effects and consent.
- 100% documented baseline weight and height but documentation of other baseline data such as growth charts was not evident.
- Baseline blood monitoring of fasting glucose, lipids, prolactin and HbA1C had improved since the 2011-2013 study period however did not meet the standard outlined in NICE guideline.
- 100% of patients had a cardiovascular assessment however family history of CVS risk was poorly documented.
- Adherence to medication was well documented through the patient's Kardex but efficacy and side effects were not reported in a structured way.
- 17% patients experienced difficult and challenging side effects.

#### Discussion and Conclusions

The prescribing of anti-psychotic medication is increasing N = 20 (2011 – 2013) N = 12 (Jan – June 2015).

- The recording of baseline physical assessment and blood monitoring had improved but standards fell short of those outlined in the NICE guideline.
- Side effects, tolerability and efficacy were not documented in a structured way.
- Some patients were already on anti-psychotic medication at time of admission; all patients were discharged on anti-psychotic medication. Safe prescribing requires careful communication between hospital and community health care providers.
- More research is needed into the tolerability, side effects and efficacy of these medications.

## Poster No. 67 - General Paediatrics

### Use of growth charts for assessing and monitoring growth in a general paediatric outpatient setting: an Irish perspective

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**Introduction:** Growth assessment is the single most useful tool for defining health and nutritional status at both the individual and population level.(1) Growth charts are a universal standard used for growth assessment in paediatrics, enabling comparison with population based normative data and permitting identification of trends over time (1, 2)

Great Ormond Street Hospital (GOSH) has a standard of practice that any child attending a clinic appointment or review should have growth assessed through centile plotting. This is in line with

recommendations in The Health Service Executive Training Manual on Growth Monitoring. Two recent studies have shown that rates of documentation of growth parameters in the teaching hospital setting were unacceptably low.(2, 3)

The aim of this retrospective study was to ascertain rates of growth assessment in children in an Irish healthcare context and to define the frequency of placement of growth data on appropriate growth charts.

**Methods:** A prospective audit of 200 charts of children from a general paediatric outpatient setting was performed from July 2017-August 2017. Data collected included the presence of growth charts, the frequency of documentation of centiles and the accuracy of the documentation.

**Results:** The cohort consisted of 176 return patients, and 24 new patients. Growth charts were present in only 118 (59%) charts, and were incorrectly located in 25% of cases. Only 44% of patients had their centiles plotted on the day of their clinic visit.

**Conclusion:** There was an under reporting of growth parameters. This constitutes a missed opportunity for the assessment of nutritional status. In particular, it is a missed opportunity at a time when overweight and obese children are a major public health concern. This is in addition to the child who may be failing to thrive or have faltering growth, for a variety of medical and potentially psycho-social reasons

1. Use of growth charts for assessing and monitoring growth in Canadian infants and children: Executive summary. *Paediatrics & Child Health*. 2004;9(3):171-3. 2. Ramsden L, Day AS. Paediatric growth charts: How do we use them and can we use them better? *Journal of Paediatrics and Child Health*. 2012;48(1):22-5. 3. Cummings EA, John H, Davis HS, McTimoney CAM. Documentation of growth parameters and body mass index in a paediatric hospital. *Paediatrics & Child Health*. 2005;10(7):391-4.

#### **Poster No. 68 - General Paediatrics**

##### **WHY CHILDREN WAIT: A REVIEW OF EXTENDED LENGTHS OF STAY IN THE EMERGENCY DEPARTMENT.**

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**Aims:** To evaluate the reasons for lengths of stay of greater than 6 hours in children attending the emergency department of a general hospital over a 4-month period.

**Methods:** All children (aged < 15 years) presenting between November 2016 and February 2017, with an emergency department (ED) length of stay greater than 6 hours, were evaluated, having been identified through the hospital's patient administration system. All emergency department triage cards, patient charts, laboratory results and radiology were reviewed. Data extracted included: age; sex; date of presentation; GP referral letter; primary complaint; triage category; and times for the following assessments inclusive of first medical review; laboratory testing; plain x-ray radiology; other radiology; consult from second or third team; admission or discharge.

**Results:** 190 patients were identified for inclusion. The mean age was 6.89 years (range 7 days-14 years). 53.3% of patients were male. 128(67.4%) patients had GP referral letters. Primary complaints were categorised as: Trauma (18.4%); Abdominal pain (29.5%); Pyrexia (7.4%); Respiratory (13.2%); Vomiting/Diarrhoea (7.4%) and Other (18.4%). Breakdown of initial medical reviews were: ED staff 55.3%(n=105), paediatrics 43.2%(n=82) and psychiatry 1.6%(n=3). Outcomes data revealed the following: Admission total 43(22.6%); 18(9.5%) following first consult; 16(8.4%) following second consult and 9(4.7%) following third consult. Discharge total 143(77.3%); first consult alone 14(7.4%), first consult plus bloods only 28(14.7%), first consult plus x-ray only 37(19.5%); first consult plus bloods plus radiology 25(13.2%); second consult plus bloods plus radiology 13(6.8%); third consult plus bloods plus radiology 6(3.2%). Waiting times to first medical reviews were: 2-4 hours (35.3%); 4-6 hours (29.5%). 23(12.1%) patients were identified as having an actual length of stay less than 6 hours.

**Conclusion:** In patients receiving multiple interventions the 6-hour rule may not be an appropriate key performance indicator.

## Poster No. 69 - General Paediatrics

### SEEKING THE SOURCE - POSITIVE STAPHYLOCOCCUS AUREUS BLOOD CULTURES AT TWELVE HOURS: TWO CAUTIONARY TALES.

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**Introduction:** *Staphylococcus aureus* (SA) remains a leading cause of invasive disease in children. SA bacteraemia has an incidence of approximately 6 per 100,000 population, with most cases attributable to a localised infection source. [1]

**Case 1:** A twelve-year-old boy, with type 1 diabetes mellitus, presented with isolated high-grade fever, vomiting and hyperglycaemia of one-day duration. Initial examination was normal, but CRP and ESR were elevated at 120. Blood cultures grew methicillin-sensitive staphylococcus aureus(MSSA) at twelve hours. Symptom complex progression included left clavicular pain and tender erythema at the left sternoclavicular joint. MRI confirmed clavicular osteomyelitis, with a 1cm abscess anteroinferior to the proximal clavicle. Echocardiogram was normal. He underwent incision and drainage, and completed two weeks of intravenous flucloxacillin followed by high dose oral cephalexin.

**Case 2:** A six-year-old girl presented with isolated high-grade fever, vomiting and upper abdominal pain of six-days duration. Initial examination, chest x-ray and urine microscopy were normal. CRP was 207. Blood cultures grew MSSA at twelve hours. Subsequently, she developed right hip pain and MRI revealed early osteomyelitis of the right femur. A painful purplish lesion developed on a left toe, consistent with an Osler's node and Janeway lesions were evident on her soles. Echocardiogram demonstrated a hyperechogenic vegetation in the juxta ductal aorta and CT confirmed an underlying aortic coarctation. She completed six weeks of intravenous flucloxacillin, with full recovery.

**Discussion:** In paediatric community-acquired SA bacteraemia, the most common foci include osteo-articular (30-60%) and skin and soft tissue (15-30%) disease [2, 3, 4]. Sites of osteomyelitis are commonly femur (23-29%) and tibia (19-26%) with clavicle representing only 1-3% [5]. Endocarditis occurs in less than 5% of cases, with aortic coarctation a rare site [1, 3]. Positive SA blood cultures must prompt a targeted search for an infection source.

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## Poster No. 70 - General Paediatrics

### VARIABLE PRESENTATIONS OF LISSENCEPHALY.

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**Introduction:** Lissencephaly describes a group of rare brain malformations characterised by absence or incomplete development of cortical gyri [1]. Classical (type 1) lissencephaly incidence is approximately 1 in 100,000 births [2]. We describe three varying presentations from our population.

**Case 1:** A four-month-old male presented following a seizure episode, characterised by generalised stiffening, limb jerking, trunk flexion and cyanosis. Antenatal, birth and developmental history were unremarkable. Inpatient observation demonstrated abnormal posturing, hypotonia, automatisms and further 'salaam' attacks. EEG showed modified hypersarrhythmia and MRI brain demonstrated extensive lissencephaly. Genetic studies confirmed sporadic LIS1 deletion.

**Case 2:** A three-month-old male presented following several, partial seizure episodes, characterised by lip smacking, groaning and subtle right sided limb jerking. Examination was normal, and history was unremarkable. Metabolic investigations were normal. MRI showed lissencephaly and genetic studies confirmed sporadic LIS1 deletion. At six months of age, he developed typical infantile spasms with associated hypsarrhythmia on EEG.

Case 3: A 2-month-old female presented with extreme irritability and frequent startling, in the context of a subsequently confirmed parainfluenza type three infection. Examination revealed mottling, tachycardia and increased tone. A sepsis evaluation was performed, and empiric antimicrobial therapy commenced. Ongoing irritability and increased tone prompted CT brain, which incidentally noted lissencephaly. Genetic studies detected 17p13.3 deletion consistent with Miller-Dieker syndrome. Progression to first seizures, with EEG supportive of epileptic encephalopathy, occurred at four months of age.

**Discussion:** Clinical features of classical lissencephaly include: microcephaly; developmental delay; severe psychomotor disability; infantile spasms; and spasticity. Aetiology may be isolated or syndromic. Genetic associations include: LIS1; DCX; and 17p13.3 deletion (Miller-Dieker Syndrome) [2]. We describe three different presentations: typical infantile spasms, subtle partial seizures and incidental diagnosis during intercurrent illness. All three subsequently followed a typical clinical course, highlighting the importance of early recognition for parental counselling and supportive care.

[1] G. JG, "Lissencephaly," 2012. [Online]. Available: <https://rarediseases.org/rare-diseases/lissencephaly/>. [Accessed 24 October 2017]. [2] E. M. G. M. L. A. G. P. Verloes A, "[Genetic and clinical aspects of lissencephaly]," *Rev Neurol (Paris)*, vol. 163, no. 5, pp. 522-47, 2007. [3] d. R.-v. A. J. H. D. P. P. A. W. d. C. I. M. G. de Wit MC, "Long-term follow-up of type 1 lissencephaly: survival is related to neuroimaging abnormalities," *Developmental Medicine and Child Neurology*, vol. 53, no. 5, pp. 417-421, 2011.

#### **Poster No. 71 - General Paediatrics**

##### **AN AUDIT OF INFORMATION QUALITY INCLUDED IN DISCHARGE COMMUNICATIONS SENT TO GENERAL PRACTITIONERS FROM A PAEDIATRIC UNIT.**

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**Aims:** To audit the quality of information included in discharge communications sent to general practitioners from a Paediatric Unit.

**Methods:** Phase 1 – Thirty randomly selected discharges from the Paediatric service at St. Luke's General Hospital, Kilkenny across one month were audited against recommendations for minimal data to be included in discharge summaries as per national guidelines (HIQA). Data was collected, tabulated, and analysed using MS Excel. Outcomes reported as per results section. In addition, a discharge template incorporating findings from the initial phase was introduced and has been in use since November 2012. Phase 2 – Thirty randomly selected discharges across a single month will be audited against the same criteria employed in Phase 1. Phase 2 data collection and analysis is ongoing. It is envisaged that this exercise will be completed and results available for presentation (poster, or otherwise) by the time of the IPA Conference in December 2017.

**Results:** Phase 1 revealed that primary and secondary diagnoses were listed in 73%, and 27%, of correspondence, respectively. The referral source was highlighted in 27%. Procedures (57%) and investigations – completed (60%) and pending (0%) – were reported. Follow-up and treatment/medications were detailed in 70%, and 27%, respectively. Based on eight recommendations arising from Phase 1, a standardised discharge letter template was introduced for use.

**Conclusion:** Phase 1 data suggests sub-optimal informational content inclusion in discharge summaries to primary care practitioners across a range of identified minimal data-set recommended criteria. Phase

2 will audit the impact of introduction of minimal data-set recommendations on practice, i.e. do discharge communications sent to general practitioners (GPs) contain the necessary and relevant information. Where applicable, the current template will be amended to address any issues identified from Phase 2 in order to strengthen current practice and ensure robust discharge information transmission to GP colleagues.

<https://www.hiqa.ie/system/files/National-Standard-Patient-Discharge-Summary.pdf>

**Poster No. 72 - General Paediatrics**

**AN OBSERVATIONAL STUDY TO ESTABLISH THE MEASUREMENT AND DISCUSSION OF BMI IN THE PAEDIATRIC OUTPATIENT DEPARTMENT**

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**Aims:** Growth parameters are an important indicator of a child's health and an abnormal trajectory can flag problems<sup>1</sup>. Given the current global obesity epidemic, monitoring child growth parameters is of particular interest and pertinence<sup>2</sup>. Our primary aim was to investigate the frequency of anthropometric measurement and subsequent calculation of BMI (Body Mass Index) in the paediatric outpatient setting. Our secondary aim was to examine if clinicians offered subsequent intervention where appropriate.

**Method:** In Temple Street Children's Hospital, we attended 96 outpatient consultations (51 surgical and 45 medical). We noted whether or not the patient's height, weight and BMI had been measured. We also noted the discussion of results with the patient and their guardian. If BMI was not calculated in clinic, we retrospectively calculated and plotted the result. Neither the consultants nor the NCHDs were informed of the nature of the study.

**Results:** Only 36.5% (35/96) of patients had both weight and height measured in clinics. Of this group, results were discussed with 40%(14/35). In surgical clinics, 2%(1/51) of patients were measured and only height was assessed. In medical clinics 77.77%(35/45) of patients had height and weight measured. Of the patients for which weight and height were measured, 20%(7/35) of patients were classified as obese or overweight; 11.4%(4/35) and 8.6%(3/35) respectively. Of this subset, the results were discussed with 57.1%(4/7). BMI was not calculated or discussed in any clinical scenario observed.

**Conclusions:** We conclude that current practice does not meet the 2017 Endocrine Society Clinical Practice Guidelines which suggest 'calculating, plotting and reviewing a child or adolescent's BMI percentile'<sup>3</sup>. Adherence to these guidelines is essential to promptly identify and intervene in cases of overweight and obese children, especially given the important role of doctors in health education, promotion and prevention of disease.

1.Stuart B, Panico L. Early-childhood BMI trajectories: evidence from a prospective, nationally representative British cohort study. *Nutr Diabetes*. 2016 Mar 7;6:e198. 2.BMC Public Health. WHO European Childhood Obesity Surveillance Initiative: body mass index and level of overweight among 6-9-year-old children from school year 2007/2008 to school year 2009/2010. 2014 Aug 7; 14:806. 3.Dennis M. Styne, Silva A. Arslanian, Ellen L. Connor, Ismaa Sadaf Farooqi, M. Hassan Murad, Janet H. Silverstein, Jack A. Yanovski; Pediatric Obesity—Assessment, Treatment, and Prevention: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab* 2017; 102 (3): 709-757. doi: 10.1210/jc.2016-2573

**Poster No. 73 - General Paediatrics 7**

**IMPROVING EFFICIENCY IN A GENERAL PAEDIATRICS CLINIC – CAN WE DO BETTER?**

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**Aims:** General paediatrics clinics enable access to medical expertise for children following referral from primary care. However, current waiting times are often over 9 months. Such delays are unacceptable. We conducted a detailed review of a single general paediatrics clinic to identify measures that could improve waiting time, did not attend (DNA) rates, and parent and child satisfaction.

**Methods:** Data relating to attendee profile, referral type, number of new appointments, DNA rates, and waiting times were recorded for a six-week period from January to February 2017. A parent satisfaction survey was also performed. OPD referrals and attendance patterns over the previous 12 months were studied.

**Results:**

In 2016, general paediatrics clinics in Temple Street had 6,408 attendances with a DNA rate of 21%. The new to review ratio was 1:2. 2,586 were on the waiting list with 170 waiting over 15 months. Over the 6-week period, 118 children were seen. The most frequent indications were constipation, developmental concerns, behavioural concerns, asthma, speech delay, seizures, and UTIs. 53 (45%) were new referrals. 4 (3.4%) did not attend.

The median appointment waiting time was 7 months (IQR: 2-12). The median clinic waiting time was 32 minutes (IQR: 20-50). Mean consultation duration was 20 minutes (SD: 8). Median parent satisfaction was 9/10 (IQR: 8-10). Parent satisfaction was inversely related to clinic waiting time. 57 (48%) were discharged following their appointment.

**Conclusions:**

An efficient clinic requires excellent teamwork involving administration and text reminders. Ensuring the medical team arrive 30-minutes before the first allotted appointment shortens waiting times and improves clinic efficiency. Our study demonstrates that a busy clinic can run efficiently with high parent satisfaction. However, waiting times remain too long. Enhanced general practitioner/parental support and education as well as rapid access clinics for urgent referrals are planned.

**Poster No. 74 - General Paediatrics**

**A retrospective audit of first line investigations performed in children with unexplained global developmental delay referred to a paediatric developmental assessment service.**

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**Methods** A retrospective chart review was conducted of all patients attending the new developmental outpatient clinics between July 2015 and January 2016. Data outlining patient diagnoses and investigations performed was collected and analysed.

**Results** 244 patients were included in our audit with 6 excluded due to lack of available data. 54 patients met the criteria for global developmental delay or unexplained learning disability (GDD/LD). 9 of these patients had a previously identified cause for their GDD/LD. 27% of all GDD/LD patients had a diagnosis of autistic spectrum disorder (ASD). Of the 45 unexplained GDD/LD patients, 69% had an array CGH, 51% had fragile X testing, 60% had at least a partial metabolic screen, 40% had thyroid function testing and 16% had an MRI brain performed. Only 1 patient had all first line investigations recommended in the consensus statement. The data collected highlighted considerable variability between clinicians in the investigation of these patients.

**Conclusion** There is significant variability in the utilisation of first line investigations for GDD/LD both within diagnostic groups and between the investigating clinicians. With better awareness of the guidelines available, this variability would likely decrease. Further education of clinicians on recommended investigations and re audit could be completed to formally assess inter rater reliability in the diagnosis and management of these patients.

O'Byrne JJ, Lynch SA, Treacy EP, King MD, Betts DR, Mayne PD, Shariff F. Unexplained developmental delay/learning disability: guidelines for best practice protocol for first line assessment and genetic/metabolic/radiological investigations Ir J Med Sci 2015.

**Poster No. 75 - Sub-Specialty and Special Interest Paediatrics**

**THE PREVALENCE OF CASHEW NUT SENSITISATION AND ALLERGY IN CHILDREN PRESENTING TO AN IRISH TERTIARY ALLERGY CLINIC**

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**Introduction** Cashew nut allergy, associated with a high risk of anaphylaxis, is increasing worldwide<sup>[1]</sup>. A recent UK study revealed a differential prevalence in cashew allergy between Caucasian and Asian populations<sup>[2]</sup>. This study explored the prevalence of cashew sensitisation in moderate/severe eczematous Irish children and any identifiable ethnic differences.

**Method:** A retrospective review was performed on a database of patients 6mth to 17yr attending the tertiary allergy clinic between June 2015 – April 2016. SPT of  $\geq 3$ mm was considered a positive result. SPT of  $\geq 8$ mm was considered “likely allergic”. Ethical approval was obtained to contact families to establish ethnicity, as per Irish census criteria, and to confirm tolerance or reactions to cashew.

**Results** The database contained 306 patients. 123(40.1%) were sensitised to cashew by SPT. 88 Of 123 had moderate to severe eczema. 65(52.8%) had a history of asthma. 96(78%) were co-sensitised +/- clinically allergic to peanut. 93 (75%) were co-sensitised to egg. 15% of sensitised patients were confirmed to tolerate cashew. In contrast, 16.8% of sensitised patients had had confirmed allergic reactions to cashew. There was a significant association between wheals $>8$ mm and a previous reaction; Relative Risk(RR) 2.5094(95%CI: 1.0996-5.7266 p=0.0288). The data shows 16% of the total cohort were either sensitised SPT  $>8$ mm or had had an allergic reaction to cashew. Chinese and Other Asian account for 19.5% of the cohort. These 2 ethnicity groups together compared with White ethnicity groups collectively were more likely to have wheals  $>8$ mm RR1.7727 (95%CI:1.0856-2.8948 p 0.0221).

**Conclusion** This data shows cashew sensitisation and allergy as a common finding in atopic Irish children. Furthermore, our cashew sensitised/allergic cohort appears to be over represented by Chinese/Asian children. In the 2016 Irish census only 2.1% of the population identified themselves as Chinese or Other Asian. Thus preventative strategies in this group should be a priority.

1. Van der Valk JPM, Dubois AEJ, Gerth van Wijk R, Wichers HJ, De Jong NW. Systematic review on cashew nut allergy. *Allergy* 2014; 69: 692–698. 2. Luyt DK, Vaughan D, Oyewole E, Stiefel G. Ethnic differences in prevalence of cashew nut, pistachio nut and almond allergy, *Pediatr Allergy Immunol* 2016; 27: 645–659.

**Poster No. 76 - General Paediatrics**

**Follow Up Chest Radiography in Paediatric Pneumonia: Is It Avoidable?**

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**Aims:** We set out to examine the outcomes and timing of follow-up CXR in children with pneumonia.

**Methods:** This is a retrospective review of 161 patients admitted to paediatric ward with radiological evidence of consolidation between 01<sup>st</sup> January 2016 and 30<sup>th</sup> October 2016.

**Result:** Mean (SD) age was 55.9 (48.5) months. Of 161 patients, 93 (57.8 %) had follow-up CXR, of whom 24 (25.8%) had both consolidation and atelectasis. Follow-up CXRs, within four weeks of initial imaging, were normal in 9 of 14 (64.3%). However, follow-up CXRs, at or after eight weeks, were normal in 37 of 39 (94.9%). Notably, 24 of 38 patients with radiological features of both consolidation and atelectasis underwent follow-up CXR and residual changes were reported in 4 (16.7%).

**Conclusion:** Clinical follow up with CXR being recommended in those with persistent symptoms. If indicated, follow-up chest radiograph should be deferred until at least six weeks after initial diagnosis unless otherwise clinically indicated.

**Poster No. 77 - General Paediatrics****A REAUDIT OF THE AETIOLOGICAL MEDICAL ASSESSMENT OF INFANTS WITH PERMANENT CHILDHOOD HEARING IMPAIRMENT ( P.C.H.I.) IDENTIFIED THROUGH UNIVERSAL NEONATAL HEARING SCREENING (U.N.H.S.)**

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**Background and Aims**

Babies diagnosed with PCHI following UNHS are referred to Paediatricians for an etiological medical assessment. Paediatricians at UHL follow the guidelines published by the British Association of Audiological Physicians (BAAP) . We audited this practice in our department in July 2016.

Three areas were highlighted as sub-optimal- Testing for CMV was completed in only 62 per cent of cases, Confirmation of a diagnosis of CMV would have occurred past the timeframe for treatment . No governance structure for patients born and screened outside our jurisdiction but recently relocated here was in place.

Our aim was to reaudit our practice in relation to etiological medical assessment in the 12 month period (July 6<sup>th</sup>2016-july 2017) since and bearing in mind the deficits noted during our original audit. 4400 Babies were screened during our reaudit period.

**Methods**

Patients were identified from the Department of Audiology. Case files were reviewed. Information regarding investigations and results were collated and compared with BAAP recommendations.

**Results**

A total of 6 patients (4 male, 2 female) were diagnosed with PCHI between 06/07/2016 and 06/07/2017. Of these, 1 patient was diagnosed weeks before the end of our study period. The referral letter is enroute to the Paediatrician. 2 patients have received appointments from Paediatricians but have not yet been seen. 3 patients were born and screened outside our jurisdiction (France, London, Wexford) .The London patient had been diagnosed with congenital CMV and was appropriately referred to our services and seen . The French patient was admitted to our Paediatric unit with feeding difficulties in the newborn period . The parents (Consanguineous Irish Travellers) reported the failed newborn hearing test in France and a family history of deafness. The Paediatrician arranged investigations immediately. As of 06/07/2017, the Wexford patient has failed to attend .

**Conclusion**

In our unit, BAAP recommendations are followed .

**Poster No. 78 - General Paediatrics****DO WE ADHERE TO THE ESPGHAN GUIDELINES TO SCREEN SUSPECTED CAELIAC DISEASE IN CHILDREN?**

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**AIMS:**

Are we adherent to the ESPGHAN guidelines while screening children for suspected coeliac disease.

**METHODS:**

This was a retrospective study performed between 09/08/2017 and 18/10/2017. Data was collected from online hospital laboratory system for children under 16 years of age who were screened for suspected coeliac disease from 01/01/2016 to 31/12/2016. Data was collected for various variables e.g. Date of birth, Age, Gender, immunoglobulin A anti tissue transglutaminase antibodies (anti TTG), Total serum IgA and endomyseal antibody (EMA). If a patient was found to be IgA deficient, IgG anti EMA were checked.

**RESULTS:**

Total 758 patients, less than 16 years of age, were screened for coeliac disease during audit period. 361 (48%) of the patients were males and 397 (52%) were females. Out of 758 patients, 627 (83%) were tested only for IgA anti TTG levels and not checked for IgA levels. 97 (13%) patients were checked for IgA anti TTG along with serum IgA levels, 19 (2.5%) patients were tested for both IgA anti TTG and EMA antibodies and in 15 (2%) both IgA levels and anti EMA screening was done along with IgA anti TTG levels. Out of 758 IgA anti TTG screenings done, only 16 (2%) were positive, 3 (0.4%) were equivocal and

733 (97%) were negative. In total 34 (4%) patients tested for anti EMA, 24 (71%) were positive, 1 (3%) was equivocal and 9 (26%) were negative. In these patients, the IgA anti TTG values were positive for 16 (47%) patients, 6 (18%) were IgA deficient and were tested for IgG EMA instead. Other immunoglobulins (IgG, IgM) were tested in 98 (13%) children.

#### **CONCLUSIONS:**

This study shows that we are poorly compliant (only 15%) against the standards of ESPGHAN guidelines for screening of coeliac disease. It also highlighted unnecessary testing of other immunoglobulins and anti EMA.

ESPGHAN guideline 2012 for screening and diagnosis of coeliac disease was taken as standard tool for this audit

#### **Poster No. 79 - General Paediatrics**

##### **A RETROSPECTIVE AUDIT ON THE MANAGEMENT OF ACUTE WHEEZE IN THE PAEDIATRIC EMERGENCY DEPARTMENT (ED)**

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**Aims:** Our aim in carrying out this audit was to assess the management of acute wheeze presenting to the Paediatric ED in UHG and to see if the management was in keeping with the current UHG Guidelines.

**Methods:** A retrospective analysis was carried out of children under sixteen presenting to the ED in UHG with complaints of “wheeze” or “cough” on triage between the 1<sup>st</sup> July and 18<sup>th</sup> of September 2017. There were 114 cases in total. ED records were examined to see how many patients had a wheeze on presentation, the severity of the wheeze and subsequent management of the wheeze in the acute setting.

**Results:** In total 46 cases of reported “wheeze” or “cough” at triage had a presentation of acute wheeze. Of these cases; 12 were severe, 15 were moderate and 19 were mild based on UHG guidelines. Compliance with treatment guidelines was 78%. Mild and severe wheeze presentations showed a better compliance with current guidelines compared to 46% for moderate wheeze. Link in with Senior Staff was seen in 59% of cases over the three groups. Overall, 74% of these children were discharged home with an asthma action plan and education regarding red flag symptoms.

**Conclusion:** Wheeze and Cough are common complaints to the Paediatric ED in UHG. Many children were diagnosed with different conditions which did not need acute wheeze management and subsequently went down different treatment paths. There was a concern that there may be an over-use of nebulisers in the ED setting however, this study was very re-assuring that the management and understanding of acute wheeze, particularly mild and severe, is well understood by nursing, SHO and Registrar staff. Further education is required regarding the management of acute moderate wheeze in children.

**Poster No. 80 - General Paediatrics**

**Implementation of multidisciplinary Down Syndrome Health Surveillance Clinic- Adherence to Down Syndrome Health Surveillance: Where are we now**

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**Background:** A 2015 audit; "Adherence to Down Syndrome Health Surveillance- How good are we?"; reviewed compliance to the Down Syndrome (DS) Medical Management guidelines in patients attending both a Community based Disability Service, and a paediatric clinic in an acute Children's Hospital. Deficiencies in the audiology service and screening for symptoms for obstructive sleep apnoea (OSA), arthropathy, coeliac disease and cervical instability were highlighted in both groups. The implementation of a hospital clinic based multidisciplinary DS Health Surveillance Clinic was recommended to provide a 'one stop clinic' with access to phlebotomy, audiology, medical and nursing support.

**Aims:** To determine if compliance to the DS Medical Management guidelines has improved with the implementation of the multidisciplinary DS Health Surveillance Clinic.

**Methods:** Retrospective chart review of children attending the DS Health Surveillance Clinic. The Medical Management of Children and Adolescents with DS in Ireland were used as the standard including additional health recommendations by the Down Syndrome Medical Interest group.

**Results:** Twenty-eight children with DS were included and 39% (n=11) were female, mean (range) age 5.6 (0.3-12) years. All children had a cardiac review before the age of 6 weeks, assessed for symptoms of OSA, annual screening for thyroid dysfunction and coeliac disease. There was an improvement in regular ophthalmology and audiology assessment (92% (n=26) and 96% (n=27) respectively) compared with the pre-clinic audit, 65% had regular audiology assessment. Further improvement is required in assessing symptoms of cervical spine instability and inflammatory arthropathy.

**Conclusion:** The implementation of a multidisciplinary DS clinic has led to improved compliance to the national guidelines. A clinic proforma has been developed including examination for evidence of arthropathy, neurodevelopmental and atlanto-axial stability assessment. Further development of the service is planned to include play therapy to support children and families through the clinic journey.

**Poster No. 81 - General Paediatrics**

**PARTIAL STEROID RESPONSE IN A 12 YEAR OLD GIRL WITH NEPHROTIC SYNDROME WITH NORMAL RENAL BIOPSY**

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**AIM:** Nephrotic syndrome is a clinical syndrome showing specific features of heavy proteinuria. It is caused by increased permeability of serum protein through the damaged basement membrane in the renal glomerulus. We present a young girl with a newly diagnosed nephrotic syndrome of unclear aetiology with partial response to steroid therapy.

**METHODS: Case:** A previously well 12 year old girl who presented with pedal and periorbital oedema of 7 days. She had a very mild self-limiting cough one week prior to the development of the oedema. She had one episode of vomiting, which was projectile and woke her from sleep. The abdomen was markedly distended consistent with ascites. She had oedema of the lower limbs extending to the sacrum and pelvic area. She was well otherwise with no signs of significant dehydration.

**RESULTS:** Urinalysis showed microscopic haematuria, and gross proteinuria. There were no red cell casts on further urine testing. Bloods confirmed significant hypoalbuminaemia and hyperlipidaemia with normal renal function. Immunology tests were normal. Varicella and measles titres were also within acceptable range. EBV serology was consistent with previous exposure. She was commenced on high

dose glucocorticoid to induce remission. Renal biopsy was delayed as she showed clinical improvement after commencement of oral steroids, but she did not go into full remission despite high dose steroid therapy. After 6 weeks of steroid treatment she still only had partially responded. A renal biopsy was performed which did not reveal any sclerosis. Early Focal Segmental Glomerulosclerosis (FSGS) was still suspected. Tacrolimus, an immunosuppressive agent, was added to treatment to try to further induce remission.

## **CONCLUSION**

The diagnosis of nephrotic syndrome is usually straight forward but determining the aetiology can be a huge challenge in older children where biopsy is unremarkable and where there is a partial response to steroid therapy.

## **Poster No. 82 - General Paediatrics**

### **KNOWLEDGE AND ATTITUDES TOWARD THE CHILDREN'S ARK SCHOOL: SURVEYS OF STAFF, PARENTS, STUDENTS AND TEACHERS.**

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**Aim:** The Children's Ark School was opened in University Hospital Limerick in December 2006. Surveys of staff, parents and students were undertaken in 2013 and in 2016 a further survey was sent to teachers in primary and post-primary schools in Limerick, Clare and Tipperary. The aim was to assess attitudes of the groups towards the school and identify areas for improvement.

**Methods:** In 2013 three questionnaires were distributed in The Children's Ark to evaluate the work of the school. One was given to staff, another to parents and a third to the students. They focused on four main topics: the importance of having a hospital school, perceptions of whether the children enjoyed their experiences, what the school did well and what areas could be improved. A fourth questionnaire was sent to schools in the region in 2016, this was to obtain feedback from teachers regarding communication with The Children's Ark School.

**Results:** There were 135 responses obtained across the four surveys. Attitudes towards the school were markedly positive with almost all participants advocating the value of the school. Parents felt that their children enjoyed the experience and this was confirmed by the students themselves. The main benefit identified was the ability to continue children's education during hospital admissions. The original survey further highlighted the already identified need for more space and a separate post-primary school teacher, both of which were secured in the following years. The teachers requested greater communication between the home and hospital schools and a provision for this is now in place.

**Conclusions:** The opening of The Children's Ark School has had an overwhelmingly positive impact on the children who have attended it. Its work has evolved over the last decade partly in response to the surveys conducted. Future plans include greater integration of children who remain in isolation during hospitalisation.

## **Poster No. 83 - General Paediatrics**

### **AUDIT OF REFERRALS OF HIGH RISK INFANTS TO EARLY INTERVENTION SERVICES**

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**Aim:** The Bright Horizons Clinic (part of the Early Intervention Teams (EIT) specifically for developmental follow up high risk neonates) was a pilot project launched in 2014 between the Acute Neonatal Services and Mid West Children's Disability Services. A review of figures after 7 months showed that only 50% of eligible infants were referred to the clinic. An education intervention was done in University Maternity Hospital Limerick (UMHL) in 2015: a presentation outlining the service and its referral criteria. Additionally the referral criteria for the regional EIT were changed to reflect the Vermont Oxford Network (VON) criteria and the practice of Therapeutic Hypothermia for infants with hypoxic ischemic encephalopathy. The aim of this retrospective audit was to determine whether referral rates had improved following this intervention.

**Methods:** The identities of eligible infants were obtained from the database of infants from UMHL included in the VON in 2015 and 2016 and from the neonatal morbidity and mortality meeting records from that period. The inclusion criteria were as follows: Infants born (a) prematurely, from 22+0 weeks gestation to 29+6 weeks gestation, (b) with a birth weight between 400grams and 1500grams or (c) at term, with hypoxic ischaemic encephalopathy requiring therapeutic hypothermia. Identifying the number of these infants known to the Early Intervention Services was achieved by accessing the HSE Mid West Children's Disability Service Management Information System Database.

**Results:** In total there were 67 infants eligible for referral to the Bright Horizons Clinic, 4 died prior to discharge and were not included in the results. Of the remaining infants, 60 were known to the Early Intervention Services indicating a referral rate of 95%.

**Conclusion:** The percentage of eligible infants referred to the Bright Horizons Clinic increased substantially following an education intervention in 2015. Further study is required regarding the outcomes of the infants attending the service.

#### **Poster No. 84 - General Paediatrics**

##### **TRACKING CHILDHOOD HEIGHT FOR SMALL FOR GESTATIONAL AGE INFANTS IN IRELAND**

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**Aims:** Approximately 3-5% of neonates are born SGA. This cohort is estimated to account for 1 in 5 children (and adults) who are short in stature. The aim of this project was to provide an analysis of growth outcomes of SGA infants in the Irish population using the Growing Up in Ireland (GUI) data.

**Methods:** GUI was accessed via the ISSDA data repository. Birth height was standardized according to gestational age. Growth measures were standardized for sex. Distributions of outcome variables were examined using robust graphical methods. Univariate poisson regression was employed to examine the relative risk of SGA on quintiles of growth outcomes at 9 months, 3 and 5 years of age. A sex-adjusted height below two standard deviations was identified as a significant cut-score from the literature. Univariate logistic regression was employed to examine the likelihood of this outcome in the SGA group. R statistical programming was used for analysis.

**Results:** The GUI cohort consisted of 12,121 children in Ireland, 56% of whom were female. Those born SGA were 29%, 16% and 12% more likely to fall in a height decile below that of their average for gestational age peers at 9 months, 3 and 5 years respectively. At 5 years of age the SGA group demonstrated a likelihood of falling 2 SD below the sex-adjusted mean, five-fold over their peers (OR: 5.40, 95% CI: 2.86, 10.20). Graphical visualisations were plotted to aid interpretation of outcomes for the SGA group in this dataset.

**Conclusion:** SGA neonates represent between 3 to 5% of a given population. In Ireland, data from the GUI study demonstrated a 3.5% prevalence. This analysis suggests that subgroups of SGA infants may exhibit worse growth outcomes than their population matched peers.

## Poster No. 85 - General Paediatrics

### Adrenal Insufficiency: Stay Calm and Stress Dose

#### An Audit of Multi-Centre Paediatric Steroid Therapy Cards

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Parents provided anecdotal evidence regarding the lack of understanding of steroid therapy during periods of illness and emergency to Clinical Nurse Specialists in Endocrinology. This was found to be a concern internationally from parents when attending Emergency Departments (Styne, D. 2016). The Organisation of Paediatric Endocrine Nurses in Ireland (OPEN-I) investigated the availability of Emergency Steroid Therapy cards and found that none available met the needs of our patient group.

New cards were developed in conjunction with Endocrine Consultants in Ireland and reviewed following 2 years of implementation to ascertain effectiveness. The audit was carried out across Tallaght hospital, Our Ladies Childrens Hospital, Crumlin, the Childrens University Hospital, Temple Street and Cork University Hospital. The audit was carried out over a 6 week period to identify the benefit of the cards prior to review. 47 responses were received and 89% of the respondees felt that the card was of benefit to them. 16% of the respondees identified that they had been delayed in receiving emergency treatment.

The outcomes from the audit includes

1. The development of a standardised education program for steroid replacement
2. Promotion of the cards to ensure awareness throughout the general paediatric professionals

Styne, D. (2016) Pediatric Endocrinology: A Clinical Handbook

## Poster No. 86 - General Paediatrics

### AUDIT OF BENZODIAZEPINE USE AS RESCUE MEDICATION FOR TYPICAL FEBRILE SEIZURES AT WEXFORD GENERAL HOSPITAL

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**AIMS** To assess the frequency with which benzodiazepines are prescribed as rescue medications for patients presenting to Wexford General Hospital with typical febrile seizures (FS) during a 7 month period.

**METHODS** A retrospective analysis of all the patients presenting to Wexford General Hospital with a diagnosis of typical FS over a 7 month period. A template was designed in order to look at the type of seizure (typical vs atypical), number of admissions and the use of benzodiazepines during admission and discharge.

**RESULTS** 29 patients aged 16 years and below were diagnosed with FS between January and July 2017. 65.5% (n=19) were typical and 34.5% (n=10) were atypical.

69% (n=20/29) of patients were admitted overnight, 14 with typical FS. The main reasons for admission were overnight observation and monitoring (n=9) and intravenous antibiotic administration (n=9).

16% (n=3/14) of those admitted with typical FS were prescribed rescue medication in the form of benzodiazepines (buccal or intravenous) as an inpatient. 28.6% (n=4/14) of patients admitted with FS were provided rescue medication on discharge.

**CONCLUSIONS** The use of rescue medications in typical FS is not indicated<sup>[1]</sup>. There is also no documented role for rescue medications in recurrent or focal FS, unless they are also prolonged<sup>[2]</sup>. Benzodiazepines were therefore inappropriately prescribed in 21.1% (n=4/19) of presentations with typical FS during the 7 month period. FS can be a frightening experience for parents, but due to the low risk posed by isolated seizures, the mainstay of management should be in educating parents, rather than prescribing rescue medication.

Risks associated with the use of rescue medication include respiratory depression which can be life-threatening<sup>[3]</sup>.

The relatively high frequency with which they are prescribed could be attributed to the desire to relieve parental and staff anxiety, rather than any medical benefit to the patient.

[1] Offringa M, Newton R, Cozijnsen MA, Nevitt SJ. (2017) Prophylactic drug management for febrile seizures in children. *Cochrane Database Syst Rev.* 2017;2:CD003031. [2] Knudsen FU. (2000) Febrile Seizures: Treatment and Prognosis. *Epilepsia.* 2000;41(1):2-9. [3] McIntyre J, Robertson S, Norris E, Appleton R, Whitehouse WP, Phillips B, Martland T, Berry K, Collier J, Smith S, Choonara I. (2005) Safety and efficacy of buccal midazolam versus rectal diazepam for emergency treatment of seizures in children: a randomised controlled trial. *Lancet*, 16-22;366(9481):205-10.

## **Poster No. 87 - General Paediatrics**

### **EYES PROTECTION DURING PHOTOTHERAPY IN NEWBORNS**

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**AIMS:** To check Compliance rate of eye protection in jaundice babies under phototherapy.

**METHODS:** A prospective study based on observations on babies under phototherapy in our neonatal unit was carried between 25/03/15 to 28/04/2015. Random observations were carried out by 2 doctors and one nurse during this time. The following parameters were noted at each occasion: Date, Time, Name, MRN, Term or Preterm, Eyes shields were on, slipped or off.

#### **RESULTS:**

Observations were recorded on total of 35 babies during the study period. Out of these 19 were term and 16 were preterms. Total 165 observations were recorded, 82 (50%) on term and 83 (50%) on preterms. Overall median observations per baby was 3 (Range 1-21). Median number of observations on term baby were 3 (Range 1-21) and 4.5 (Range 1-12) for preterm. 113 (68.4%) observations showed that the eye cover was properly on (69.5% for term and 67.4% for preterm). Eye cover was slipped at 34 (20.6%) occasions (15.8% for term and 25.3% for preterms) and cover was off for feeding or care at 18 (10.9%) occasions (14.6% for term and 7.2% for preterms).

#### **CONCLUSION:**

1-This study demonstrates overall eye protection compliance rate of 79.3% in our unit which is well below the standard target of 100%.

2-Eye covers were more frequently slipped in preterm babies (25.3%) compared to term babies (15.8%) and eye covers were off for feeding or care more frequently in term (14.6%) rather in preterm babies (7.2%).

#### **RECOMMENDATIONS:**

1-Staff Education re importance of eye protection of babies under phototherapy.

2-Staff training on proper application of eye shields /eye protectors.

3-Frequent observations of babies under phototherapy.

4-Trial of other types of eye protectors available in market (e.g Neoshades).

5-Re-audit after implementation of the above recommendations to evaluate the outcomes.

Reference: <https://www.nice.org.uk/guidance/cg98/evidence>

## Poster No. 88 - General Paediatrics

### PATIENT IDENTIFICATION BANDS AUDIT

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**AIMS:** To assess adherence and compliance of the staff to the HSE patient identification guidelines in Paediatric Department.

**METHODS:** This was a prospective study conducted between 15/11/2016 to 16/12/2016 and included children admitted to Paediatric department during this period. Data source was patient's files and wrist, ankle identification bands. Data was also collected for any missing or incorrect identification bands.

**RESULTS:** Data was collected on total of 50 children during the audit period. 26 out of 50 (52%) had their bands on hands. 5 (10%) patients had their Identification bands clipped to medical notes beside bed. 19 (38%) patients had no Identification bands at all. All those patients (n=26 and n=5) with identification bands had correct details on their bands.

**CONCLUSIONS:** 1-Almost 40% of patient admitted to paediatric ward had no Identification bands. Although all Identification bands noted to have accurate information.

### RECOMMENDATIONS:

1-It is the responsibility of all staff whether clinical or administrative to ensure that they are dealing with the correct patient and aware of the HSE patient identification policy.

2-Nursing/Midwifery staff to apply ID band to every in-patient and verify its details and to make sure on every shift that correct ID band has been appropriately applied.

3-Medical staff, allied health professionals, healthcare assistants and portering staff are responsible to ensure that patient's ID band is replaced immediately if it is torn or removed.

Kerry General Hospital Patient Identification Policy

## Poster No. 89 - General Paediatrics

### An Audit of Prescription Charts on the Paediatric Ward.

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**AIMS:** To determine prescriber compliance with the instructions on the front of the drug prescription chart.

**METHODS:** This retrospective audit was conducted over a one-week period from December 01/12/2016 to 06/12/2016. Data was collected from the prescription charts of patients who were discharged from the paediatric ward and different variables were recorded. Microsoft Excel was used for data input and analysis.

University Hospital Kerry drug prescription chart (Form 148A. Updated May 2013) was used as a standard tool.

**RESULTS:** A total of 28 prescription charts were reviewed. All of them had patient label affixed. On average 4.6 drugs were prescribed per chart (range 1-11). On average 1.9 prescribers (1-5) with 41.5 possible/potential errors on average (1162 total) and 11.2 errors present on average (314 total). Overall there was a 27% error rate.

The breakdown of different errors noted were as follow: (n=number, % of total errors)

1-Not using block capitals (102, 32.5%),

2-Using trade names (32, 10.2%)

3-Not writing the patient name & MRN on each page (28, 8.9%).

4-Not recording consultant name (24, 7.7%).

5-Illegible writing (18, 5.7%).

6-Imprecise dosing routes (18, 5.7%).

- 7-Signature bank not filled in(15, 4.8%).
- 8-Use of abbreviations(13, 4.1%).
- 9- No allergy documented yes/no (12, 3.8%)
- 10-“mcg” use instead of microgram (10, 3.2%)
- 11-Not recording IMC number(5, 1.6%).
- 12-No Bleep number written(1, 0.3%).
- 13- Medications not discontinued appropriately ,no date/signature(10, 3.2%).

#### **CONCLUSIONS:**

Prescribers had higher levels of compliance regarding signature, bleep, medical council number and not using abbreviations. There was poorer adherence to instructions in the areas of using block capitals, documenting allergy, recording consultant name, documenting patient name and MRN on each page and legibility.

#### **RECOMMENDATIONS:**

- 1-Adequate training and education on safe prescription should be part of the induction programme for the new NCHD's.
- 2-Prescription chart should be regularly reviewed on weekly basis for detecting any potential errors and any error detected should be reported.
- 3-To make sure through our governance and educational teams that adherence and compliance is satisfactory.
- 4-Regular audits with aim to improve the results.

#### **Poster No. 90 - General Paediatrics**

##### **SCHISTOSOMIASIS IN IRELAND- A CASE REPORT**

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9 year old boy presented to OPD with history of intermittent haematuria for 7 months. Urine was bright red to pink in colour at the end of micturition. He recently visited his grandparents in Sudan where he had been swimming in river Nile. There was no history of trauma, no history of UTI.

On examination, his blood pressure was 106/78mmHg, he was circumcised. Systemic examination was unremarkable.

His FBC, U&E, LFTS, C3, C4, ASO titre and throat swab were normal, urine protein to creatinine ratio was normal however he had intermittent +1 blood on urine dipstick.

Urine microscopy showed 60 red cells, urine and stool cultures were negative. Abdominal X-ray did not show any renal tract calculus. Renal ultrasound showed thickened bladder wall of 6mm. His blood serology revealed Schistosome ELISA positive at level 7.

He was treated with Praziquantel 40mg/kg PO one dose only. One week after this treatment his haematuria resolved and he had no further haematuria.

Schistosomiasis is a disease caused by infection with parasitic blood flukes. These parasites live in certain types of freshwater snails. Individuals can become infected when skin comes in contact with contaminated water. The approach to diagnosis for returned travellers differs from the approach to diagnosis in endemic settings. Among returned travellers, serology is the most useful test, but it does not reflect definitive evidence of ongoing infection.

Diagnostic tools include direct assays (demonstration of eggs in the stool or urine via microscopy, or demonstration of antigen or DNA in the blood, urine, and/or stool) and indirect assays (demonstration of antibody in blood via serology).

Patients with schistosomiasis be treated promptly with praziquantel in the presence or absence of clinical manifestations. A single dose of praziquantel reduces the parasite burden substantially.

UPTODATE.COM

**Poster No. 91 - General Paediatrics**

**THYROID SCREENING PRACTICES IN CHILDREN WITH DOWN SYNDROME IN THE FIRST YEAR OF LIFE**

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**Objective:** To determine thyroid screening practice in the first year of life in children with Down syndrome at St. Luke's General Hospital, Kilkenny and to determine adherence to national guidelines.

**Background:** Down syndrome is the most common congenital cause of developmental disability in Ireland with a birth prevalence of 1 in 546, which is the highest in Europe . Beyond the newborn period , the incidence of elevated TSH values in Down syndrome increases and has been reported to be as high as in 85 % of infants under the age of 12 months

**Method :** The study design was an audit which was conducted through a retrospective chart review. Children with karyotype confirmed Down syndrome in the first year of life were eligible for inclusion.

**Result :** Ten children with Down syndrome were identified , born during the twelve months specified , six males and four females.We note that six children had no TFT done after the initial newborn screening. Out of other four, only one was on treatment, other three had normal TFT.

**Discussion:** It appears that our compliance with DSMIG guidelines is very low. 60% of children recieved no TFT after initial newborn screening which is concerning. This suggests a need to identify factors contributing to poor adherence to DSMIG guidelines for medical management of children with Down syndrome. It is a very small retrospective audit but it does reflect current clinical practice. Broad dissemination of guidelines, frequent clinical reminders and similar auditing activities for quality assurance are important in improving adherence to clinical guidelines.

APPROVED GUIDELINES 2005 With Updates 2009 & 2015 Down's Syndrome Medical Interest Group (DSMIG) (UK & Ireland) Department of Paediatrics University of Dublin, Trinity College The National Children's Hospital, Tallaght Hospital

**Poster No. 92 - General Paediatrics**

**ABANDONING BAG SAMPLES IN THE ED: IMPACT ON DIAGNOSTIC ACCURACY OF PAEDIATRIC UTI**

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**Aims:** To assess the impact of discontinuing urine bag sampling in the evaluation and management of urinary tract infection (UTI) in children < 3 years of age. Urine bags were discontinued in June 2017 in the ED of UHG in favour of clean catch for all children < 3 years.

**Methods:** Clinical and microbiologic data were retrospectively gathered over two 7-day periods, pre and post discontinuing urine bag use. Data variables included, age, method of urine collection, indication for urine sample, urinalysis result, urine microscopy and culture result and diagnosis on discharge. All microbiology data were retrieved from the PAS (patient administration system); clinical information was collected from patient medical records scanned on the day of ED attendance as recorded on the Therefore Navigator program.

**Results:** The 1<sup>st</sup> and 2<sup>nd</sup> cycles included 30 and 25 patients respectively and results are presented in table below. During the 1<sup>st</sup> cycle urine culture isolated mixed organisms on 11 occasions and one pure growth *Escheria coli*; 2<sup>nd</sup> cycle urine culture isolated mixed organisms on 6 occasions and two episodes of *Escheria coli*. During the 1<sup>st</sup> cycle diagnosis on discharge included: viral gastroenteritis (16), upper respiratory tract infection (6), lower respiratory tract infection (LRTI), non-specific viral illness (3), otitis media (1), UTI (1), and physiological jaundice (1). During the 2<sup>nd</sup> cycle diagnosis on discharge included: UTI (2), viral gastroenteritis (3), URTI (5), LRTI (1), non-specific viral illness (8), colic (2), constipation (1), and gastro-oesophageal reflux.

**Conclusions:** The use of bag samples increases probability of contaminated urine culture results. Clean catch urine sampling will reduce excess costs associated with urine diagnostic pathways. Patient selection for urine sampling needs to be more focused in the ED setting.

	1st cycle	2nd cycle
<b>Number of patients</b>	30	25
<b>Urine sample collection method</b>		
Urine bag	29	2
Clean catch	1	19
Mid-stream urine	0	3
Not recorded	0	1
<b>Urine sample positive findings</b>		
Dipstick	11	7
Microscopy	13	3
Culture	12	8

### Poster No. 93 - General Paediatrics

#### SURVEILLANCE OF DEVELOPMENTAL DYSPLASIA OF THE HIPS AT WEXFORD GENERAL HOSPITAL

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**Aims:** To determine the correlation between clinical suspicion for Developmental Dysplasia of the Hip (DDH) and high-risk patients with the results of radiological investigation in Wexford General Hospital including accuracy and reliability.

**Methods:** We reviewed current literature to ascertain appropriate indications for screening and to determine the efficacy of clinical examination in detecting DDH. According to local guidelines, a hip ultrasound is performed at 6 weeks of age followed by a hip x-ray at 6 months of age.

We looked at all hip x-rays between March and August 2017, roughly correlating to births between September 2016 and March 2017. Data was gathered using NIMIS, PACS and patient's charts.

**Results:** 219 infants had hip x-ray between March and August 2017 for DDH screening.

53.9% (n=118) of the requests were performed by the Paediatrician after the neonatal check and 46.1% (n=101) were requested by General Practitioners (GP) due to subsequent abnormal findings.

25.4% infants (n=30/118) had abnormal clinical exam in the neonatal period while 74.5% (n=88) had risk factors on history (e.g: family history, breech).

10.5% (n=23) of x-rays were abnormal and referred for further investigations; 57% (n=13) had been requested by the Paediatrician due to abnormal exam (23%, n=3/13) and presence of risk factors (77%, n=10/13). All hip ultrasounds were normal.

Only one infant referred by the Paediatrician due to abnormal exam had radiological confirmation of DDH and was treated appropriately. One patient referred by GP had radiological confirmation of DDH.

**Conclusion:** Early diagnosis of DDH is of the utmost importance as delays can lead to a more complex treatment and complications. History and clinical exam are crucial for early detection.

This audit shows the need for higher quality targeted training to both Paediatricians, General Practitioners and Public Health Nurses in order to avoid over investigating and under diagnosis.

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#### **Poster No. 94 – General Paediatrics**

##### **SKULL FRACTURES AND SAFEGUARDING IN THE UNDER 2'S: A 3 YEAR RETROSPECTIVE STUDY**

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**Aims:** Our aim was to evaluate the presentation, management and safeguarding assessment of head injuries in the under 2 population presenting to the Paediatric Emergency Department (PED).

**Methods:** A 3 year retrospective chart review from January 2012 - December 2014 was conducted of all children under the age of 2 years who presented to the PED with a head injury where imaging was undertaken for a suspected skull fracture.

**Results:** 93 children were identified for inclusion. 84/93 (90%) of injuries occurred at home with 53/93 (57%) witnessed events. 44/93 (47.3%) were symptomatic of head injury with 4/44 (9%) diagnosed with a skull fracture. 43/93 (46.2%) had a scalp haematoma/bruise and 23/43 (53.5%) had a skull fracture. Imaging included 65/93 (69.1%) skull radiographs and 42/93 (45.1%) CT scans. 14/93 (15%) with an initial radiograph subsequently had a CT. Significant pathology was found in 27/93 (29%); 26 skull fractures (1 parietal with arachnoid haemorrhage) and 1 extra axial haemorrhage. Fractures were parietal in 23/26 (88%). 24/27 (88.9%) were ≤12 months of age. 65/93 (69.9%) patients were admitted to hospital. All acute skull fractures were admitted. 24/93 (25.8%) patients had skeletal surveys with 8/24 (33%) abnormal findings. None of this 0/8 had a skull fracture. 18/93 (19.4%) had an ophthalmology review which were all normal. Half of these (9/18, 50%) had abnormal imaging (8/9 skull fracture and 1/9 extra axial haemorrhage). 16/18 (88.9%) also had a skeletal survey. 65/93 (69.9%) were referred to social work or public health. A safeguarding strategy meeting occurred in 11/93 (11.8%) cases.

**Conclusions:** Initial radiological investigations of suspected skull fractures was not uniform. Skull fracture alone was not an absolute indication for skeletal survey. There was a significant correlation between age ≤12 months and skull fracture. This data will be benchmarked against PERUKI members to consider clinical decision rule formulation.

#### **Poster No. 95 - General Paediatrics**

##### **VITAMIN D LEVELS IN IRISH CHILDREN WITH TYPE 1 DIABETES MELLITUS : A CROSS-SECTIONAL STUDY**

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#### **AIM**

The prevalence of low vitamin D levels reported in healthy European children varies widely (8% - 95%), with limited reports on vitamin D levels in Irish children. One study reveals a high prevalence of low vitamin D levels in infants only<sup>[1]</sup>. Our study explored vitamin D status in an Irish cohort of children with Type 1 Diabetes Mellitus (T1DM) attending a West of Ireland diabetes clinic. Seasonal variation in status and patient demographic and anthropometric characteristics were also considered.

#### **METHODOLOGY**

Following ethical approval, a written survey, physical examination and blood samples were obtained at annual diabetes clinic reviews. Serum 25(OH)D was analysed using LC-MS/MS as a biomarker of vitamin D levels and zBMI scores were derived from the 2007 World Health Organization (WHO) child growth standards LMS model. Participants' vitamin D levels were classified as deficient, insufficient and sufficient according to the UK Scientific Advisory Committee on Nutrition (SACN) guidelines<sup>[2]</sup>.

## **RESULTS**

To date, 70/119 participants completed study (F=55.7%, 93% White Irish, Age Range=5-18 years). Prevalence of vitamin D deficiency and insufficiency were 14/70 (20%) and 21/70 (30%) respectively. Mean (SD) serum 25(OH)D levels measured during summer and spring [70.61 (20.29) and 58.53 (20.57)] were significantly ( $p=0.0001$ ) higher than in winter and autumn [37.39 (15.14) and 39.71 (16.87)]. A positive (Spearman's  $r$ -value=0.354) correlation between serum 25(OH)D levels and sun exposure was statistically significant ( $p=0.004$ ). There was no statistically significant correlation between zBMI and vitamin D status ( $p=0.237$ ).

## **CONCLUSION**

This study reveals a high prevalence (50%) of vitamin D deficiency or insufficiency in this cohort with higher numbers of low serum 25(OH)D levels during winter/autumn as opposed to summer/spring. These findings concur with a recent national UK report<sup>[2]</sup>. The recommendations for vitamin D supplementation in the UK have been revised in 2016. The recommendations for Ireland are currently being reviewed.

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### **Poster No. 96 - General Paediatrics**

#### **Exploring the growth and nutritional status of children with Prader Willi Syndrome (PWS)**

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**Aim:** To explore growth and nutritional status in children with PWS

**Methods:** All children with PWS attending the National Children's Hospital were invited to participate (n=44). Assessment included

Anthropometry

Nutritional Bloods

Feeding questionnaires

Day Food diary

Ethical approval obtained.

**Results:** Nineteen patients participated (14 female 74%). Median age 7.27 years (0.6-18.2). 14 patients, 74%, were prescribed growth hormone. Weight, height, BMI Z scores<sup>1</sup> and percentage body fat were recorded (median, interquartile range IQR).

Weight Z scores -1.73, 2.06.

Height Z scores -0.91, 2.42.

BMI Z scores 0.42, 2.01.

% Body fat 26 (IQR 17)

Iron deficiency anaemia presented in 2 patients and vitamin D insufficiency in 2 patients

Early feeding issues occurred in 15 children (83%). 13 children (68%) required neonatal NG feeding, mean duration 66 days (ranging to 365 days). Specialised formula was required in 7 patients (39%).

Average weaning age to solids was 29.5 weeks (18-52 weeks), delayed weaning in 6 patients. 39% of parents reported difficulties achieving feeding milestones. Difficulties with fluids requiring specialised teats/ bottles was reported in 28%. 10 patients (55%) reported food seeking behaviour, median onset at 2 years.

Supplement use occurred in 11 patients (58%), of these 2 were prescribed iron / vitamin D supplements.

Food diary: Patients achieved 41% - 112% of their estimated average requirement for energy. 88% of patients (n=15) did not meet their recommended daily allowance (RDA) for iron and 41% (n=7) did not achieve their RDA for calcium.

**Conclusion:** Nutritional issues ranged from feeding difficulties, delayed weaning and potential for over restriction in infancy to micronutrient deficiencies, food seeking and obesity in later childhood. PWS is a complex genetic disorder. It consists of a number of nutritional phases with unique challenges. Specialised dietetic management is essential to balance the reduced caloric need of these patients while optimising growth.

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### **Poster No. 97 - General Paediatrics**

#### **COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN, CHEST X-RAY OR NOT?**

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**Aim:** To assess the clinical indications of Chest X-Ray (CXR) in children attended the paediatric assessment unit (PAU) in University Hospital Waterford (UHW) with suspected community-acquired pneumonia in correspondence with evidence-based guidelines.

**Methods:** We conducted a retrospective cohort study in patients presented to the PAU in University Hospital Waterford. 61 paediatric patients included in the study of 81 patients. The inclusion criteria: Patients under 16 years old, attending the PAU with respiratory symptoms in October and November 2016. Clinical data collected from the PAU logbook, National Integrated Medical Imaging system (NIMIS), Eltrax software and medical record department. Data of each patient reviewed in correspondence with British Thoracic Society (BTS) guidelines for management of CAP in children. The primary outcome was whether CXR is requested or not according to the evidence-based protocol.

**Results:** 36 patients of the study population (60), had Chest x-ray as part of their initial assessment (59%). Third of these patients met the BTS criteria for CXR. In 25 patients CXR not indicated (70%). Only seven patients of the 36 had positive radiological findings (19%).

**Conclusion:** The results show the importance of following evidence-based guidelines when requesting radiological imaging in patients presenting with respiratory symptoms, to reduce the exposure of radiation in the young age population. Clinical departmental audits will help to achieve these goals.

1- Guidelines for management of community-acquired pneumonia in children: update 2011, British Thoracic Society, Community acquired pneumonia in children Guideline group. 2- Iram J Hag, Community acquired pneumonia in children, BMJ 2017;356:j686 doi: 10.1136/bmj.j686 (Published 2017 March 02)

## **Poster No. 98 - General Paediatrics**

### **AN AUDIT OF URINE CULTURE RESULTS AND ANTIBIOTIC SENSITIVITIES IN CHILDREN WITH UNCOMPLICATED URINARY TRACT INFECTIONS IN OUR LADY OF LOURDES HOSPITAL**

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#### **Introduction**

- Urinary tract infections (UTIs) are frequent in childhood and may have significant adverse consequences, especially for younger children.
- Most cases of uncomplicated UTI respond readily to outpatient antibiotic treatments without further sequelae.
- Antibiotic resistance among uropathogens is increasing dramatically.

#### **Background and Objectives**

- To determine the common organisms cultured from urine samples, and the sensitivity of these organisms to the first line drugs used in the management of UTIs in the paediatric ED of Our Lady of Lourdes Hospital.
- To evaluate antibiotic prescription patterns in the paediatric ED of Our Lady of Lourdes Hospital.
- To compare the antibiotic prescription patterns against the hospital guidelines for first line antibiotics for uncomplicated UTI.

#### **Methods**

- This was a retrospective review
- Children with suspected UTI based on positive urine microscopies were identified from the Paediatric Emergency Department of Our Lady of Lourdes hospital records.
- 200 urine sample results were reviewed.

A survey of the management of urinary tract infection in children in primary care and comparison with the NICE guidelines. Kieran M Kennedy, Liam G Glynn, and Brendan Dineen An Illustrated Guide to Pediatric Urology By Ahmed H. Al-Salem

## **Poster No. 99 - Neonatal**

### **SERUM C-REACTIVE PROTEIN CUT OFF VALUES FOR PERFORMING LUMBAR PUNCTURE IN NEONATES WITH SUSPECTED EARLY ONSET SEPSIS**

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#### **Objectives**

- To evaluate the serum C-reactive protein values that indicate performing a lumbar puncture in neonates with suspected early onset sepsis.
- To assess the demographic properties of the neonates with suspected early onset sepsis who have undergone lumbar puncture.
- To assess for additional indicators for a high C-reactive protein

#### **Methods**

- This was a retrospective review
- Neonates who have undergone a lumbar puncture in the NICU in Our Lady of Lourdes Hospital were identified from the Microbiology Laboratory.
- Over the time period January 2014 to December 2015 (n=104).
- Charts were retrieved and reviewed.

#### **Results**

- GBS was detected by PCR in 2.8% (n=3) of the babies.
- CRP values for the babies with confirmed GBS meningitis were >20.
- None of the clinically normal babies with raised CRP had meningitis while all meningitis cases were significantly symptomatic.
- CSF culture detected no growth for all the babies in the study.
- 76.6% of the babies were term.
- 56.7% of the babies had the LP done in less than 48 hours of life.

## Conclusion

- CRP is effective for the diagnosis of neonatal sepsis especially when used in correlation with the clinical condition to help identify septic neonates and help in their appropriate management.
- CRP < 20 mg/L makes meningitis less likely, therefore it should not be an indication for lumbar puncture solely.
- There are no reliable clinical or laboratory markers to predict which babies will develop meningitis and hence symptomatic neonates would warrant a lumbar puncture regardless of their CRP values.

Acute phase reaction and acute phase proteins\* E. Gruys,<sup>†</sup>1 M.J.M. Toussaint,<sup>1</sup> T.A. Niewold,<sup>2</sup> and S.J. Koopmans<sup>2</sup> Maternal and neonatal C-reactive protein after interventions during delivery Article · November 1993 with 33 Reads DOI: 10.3109/00016349309058160 · Source: PubMed Benitz WE, Han MY, Madan A, Ramachandra P: Serial serum C-reactive protein levels in the diagnosis of neonatal infection. Pediatrics 1998;102:E41. An Update on the Use of C-Reactive Protein in Early-Onset Neonatal Sepsis: Current Insights and New Tasks AUTHOR - Bernhard Resch

## Poster No. 100 - General Paediatrics

### BRIDGING THE GAP FROM ADOLESCENCE TO ADULT CARE; A CLINICAL SURVEY OF TRANSITION SERVICES IN IRELAND

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Current models of clinical care recommended that well structured transition service is essential element in providing good acceptable health service

**Aim:** The aim of this study was to assess the need and the current available transition services in Ireland. We also aimed to identify challenges affecting transition services from clinicians' point of view

#### Methods:

A questionnaire-based survey was designed and sent by post to paediatric consultants in five hospitals in Ireland including Our lady's children hospital, Crumlin, Temple Street Hospital, National Children's Hospital, University Hospital of Limerick and Cork University Hospital.

**Results:** A total of 49 feedback forms were received. Transition services are currently provided by 22 of 49 (52.4%) paediatric consultants, all indicated need for transition services. 42/49 (85.7%) suggested that transition should be considered at 17 years of age (range 16-18 years).

Among 22 consultants who provide transition services, the average number of annual clinics held ranges between 3-4. Nevertheless, 14/22 (63.3%) recommended that number of clinics should be increased. Available services include IBD, Diabetes mellitus, metabolic disorders, CF and post transplant services. Challenges include lack of structural services, difficulties or unavailability of adult services. Some conditions are transitioned via data transfer only without clinical attendance. Participating paediatricians reported the need for personnel (30 of 49 (61.2%)), availability of clinic slots (21 (42.9%)), need of extra resources (22 (44.9%)) and the lack of coordination (30 (61.2%)) as the current obstacles. Notably, transition can be a challenge in neurodisability and metabolic disorders.

**Conclusions and recommendation:** Our survey identified clearly that transition services are a real challenge. More resources and guidance are needed for effective transition services. To our knowledge; a national wide-based survey is on progress and we hope that will help in setting a clear clinical standards and recommendation to improve care of adolescents with chronic conditions.

**Poster No. 101 - General Paediatrics****CLINICAL INDICATIONS FOR A MECKEL'S SCAN****N Moollan**<sup>1</sup>, V Reynolds<sup>2</sup>, AJ Nicholson<sup>1</sup>, S Ryan<sup>2</sup><sup>1</sup>Department of General Paediatrics, Temple Street Children's University Hospital, Dublin 1, Dublin<sup>2</sup>Department of Radiology, Temple Street Children's University Hospital, Dublin 1, Dublin**Background/Aims**

Meckel's diverticulum (MD) can cause serious lower GI bleeds in children. MD are present in approximately 2% of the general population. Complications can occur including GI bleed secondary to ectopic gastric mucosa, diverticulitis, and bowel obstruction.<sup>1,2,3</sup> The diagnostic imaging of choice for a MD bleed is scintigraphy with <sup>99m</sup>Tc-pertechnetate (Meckel's scan).<sup>1,2,3</sup> Our study aims to determine which clinical presentations are most likely to have a positive Meckel's scan.

**Methods**

We reviewed the clinical details of all patients who had a Meckel's scan performed in Temple Street Children's University Hospital from 2012-2017. The data was analysed using the following headings: patient age, gender, presenting symptoms, results of investigations and final diagnoses.

**Results**

25 patients with a mean age of 4.6 years, 14 male, 11 female, underwent a Meckel's scan in the 5 year period studied. 2(8%) had a positive Meckel's scan with MD confirmed at laparoscopy. Of the 4 who presented with malaena, 2 had a positive scan. 6 presented with painless haematochezia and had negative scans. 16 had haematochezia with other symptoms including rectal or abdominal pain, constipation, diarrhoea/vomiting or umbilical discharge. These 16 scans were also negative. Other diagnoses included constipation with anal fissure or stenosis, gastroenteritis, gastritis with ulceration, and patent vitello-intestinal duct.

**Conclusion**

Meckel's scan was positive in 50% of those who present with malaena. In our study, all those who presented with painless or symptomatic haematochezia had a negative result. This contrasts with other studies that found an association between MD and haematochezia with a drop in haemoglobin.<sup>4</sup> We suggest that malaena is an appropriate indication for a Meckel's scan while children with haematochezia are less likely to benefit from a Meckel's scan.

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**Poster No. 102 - General Paediatrics****SENSITIVITY AND SPECIFICITY OF PARENTAL PERCEPTION OF PYREXIA WITHOUT A THERMOMETER IN A PAEDIATRIC EMERGENCY DEPARTMENT****CM Moore**<sup>1</sup>, NA Walsh<sup>1</sup>, R McNamara<sup>1</sup>, N Kandamany<sup>1</sup>, I Okafor<sup>1</sup><sup>1</sup>Emergency Department, Temple St Children's University Hospital, Dublin 1, Ireland

**Aim:** This study aimed to assess the sensitivity and specificity of parental perception of pyrexia – without measuring with a thermometer - upon attendance to the paediatric ED, as many parents were anecdotally noted to treat pyrexia without objective measurement. NICE guidelines recommend that reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals.

**Methods:** This prospective observational study was approved by the institutional Ethics Board. Children of triage category 2 or lower who presented with a non-trauma related presentation were invited to participate through their parents. As part of nursing triage prior to measuring the child's temperature parents were asked if and why they thought that their child had a temperature in real time.

**Results:** 54% (n=173) of the 320 valid records returned were male, and 68% (n=218) were Irish. More than half (54%) of children had received antipyretics at home before presentation to the ED. Just under 7% (n=22) were admitted as inpatients to the hospital. Only 13.1% of children included in the study were pyrexia (body temperature  $\geq 38^{\circ}$  Celsius). Parents perceived pyrexia in 27% (n=86) children. Parental assessment of pyrexia (without a thermometer) had a sensitivity of 81% and a specificity of 81%.  
**Conclusion:** Caregivers' assessment of fever in paediatric patients attending our Emergency Department was sensitive and specific. Further analysis should be performed.

#### **Poster No. 103 - General Paediatrics**

##### **IMPROVING THE QUALITY AND SAFETY OF DISCHARGE IN BABIES WITH DOWN SYNDROME**

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**Aim:** Anecdotal reports in our level 2 regional neonatal centre suggested that not all discharges of babies with Down Syndrome met with acknowledged standards of care, so this initiative aimed to quantify this problem and improve compliance with the Medical Management of Down Syndrome guidelines.

**Method:** The retrospective review identified cases of babies with Down Syndrome from the Maternity Information System, in order to retrieve and review medical records. Anonymised data was analysed using a proforma. The checklist was designed based on the above-mentioned standards and multidisciplinary feedback was employed.

**Results:** Over a three-year period, twenty babies were clinically diagnosed with Down Syndrome. Babies were identified using the Maternity Information System. All clinical diagnoses were postnatal. Every baby had karyotype confirmation of their diagnosis of Down Syndrome, as well as referral to Early Intervention Multidisciplinary Services and Physiotherapy, Thyroid Stimulating Hormone checked on Newborn Bloodspot Screening card and Newborn Hearing Screening. 90% (n=18) babies had cardiology referral before discharge. 35% (n=7) of babies were plotted on appropriate centile charts and only 25% of babies had ophthalmology referral completed.

Six-month pilot implementation of the checklist demonstrated 100% compliance (n=4) with the standards.

**Conclusions:** The quality of medical discharge of babies with Down Syndrome can be improved with the use of a standardised checklist. This could be implemented nationally when the MN-CMS Electronic Health Record is brought in.

#### **Poster No. 104 - Neonatal**

##### **MOVING BABIES TO AND FROM A REGIONAL LEVEL 2 NEONATAL CENTRE: OUR TRANSPORT EXPERIENCE**

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<sup>2</sup>National Neonatal Transport Programme, Dublin, Ireland

**Aim:** To quantify number of babies transferred to and from our regional level 2 centre, 45 minutes from tertiary paediatric and neonatal care with ~3000 births per year, to examine how many transfers were performed by the local team and to assess to and from where babies were transferred.

**Method:** All transfers to and from our Neonatal Unit (NU) prospectively recorded over calendar year 2016, and local records and hospital NNTP (National Neonatal Transport Programme) census used. Transports conducted by NNTP – acute and critical care transfers - were distinguished from those conducted by local network

**Results:** Inbound: 29 transfers into our unit – all non-acute or return transfers. 65% (n=19) of these transfers from network level 3 NU. 48% (n=14) completed by the NNTP, all still requiring respiratory support (return transfers) but not requiring critical care

Outbound: There was a total 43 transfers out of our unit: 24 acute and 19 non-acute. 33% (n=14) of outbound transfers were to level 1 NU (hospital of booking). 34% (n=15) of transfers out were to tertiary paediatric units: 12 for acute care. 13 (28%) to level 3 NU, with 55% of these to network level 3 NU: all but 3 were critical care transfers. 56% (n=24) of the transfers out of the unit were undertaken by the NNTP service, 44% undertaken by local resources

**Conclusions:** 88 neonatal transfers were undertaken to or from involving our level 2 regional neonatal unit in 2016, with 50 (57%) relying on local resources: nurses, doctors and ambulance service, depleting resources for the duration of these transports, and further supports calls for an efficient appropriate national neonatal retro- or lower acuity transfer service

#### **Poster No. 105 - General Paediatrics**

##### **Investigation of Paediatric Hypoglycaemia – A Review**

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**INTRODUCTION:** Hypoglycaemia is a medical emergency, defined as a blood glucose of 2.6mmol/litre or lower. It may represent a complication of common illnesses such as gastroenteritis or may be the presenting feature of underlying metabolic disease. Appropriate assessment and investigations are required to establish an accurate diagnosis and to exclude underlying disorders. The aim of this audit was to review to investigations of patients presenting to an Emergency Department with hypoglycaemia.

**METHODS:** Patients aged under 16 years with capillary glucose of 2.6 or lower presenting to the Emergency Department of a teaching hospital were identified using a database generated electronically from glucometer readings. Subsequent lab investigations were reviewed to establish if formal metabolic work up was carried out. This was compared to existing recommendations regarding the investigation of hypoglycaemia.

**RESULTS:** 34 patients with capillary glucose of 2.6 or less were identified. Average age was 3.5 years. Subsequent serum glucose in the laboratory was over 2.6 in 9 cases. In 9 other cases, no lab glucose was recorded. Metabolic workup was performed in 13 patients. 4 patients with lab glucose under 2.6 did not have a complete metabolic work up sent.

**CONCLUSION:** There was a lack of consistency in the approach to the investigation of hypoglycaemia. As a result of this audit a quality improvement initiative has been undertaken to improve the clinical management of children presenting with hypoglycaemia to the Emergency Department. An educational initiative highlighting the need for appropriate testing in these patient has been undertaken. In addition, a protocol is being developed to guide appropriate management of patients with hypoglycaemia.

**Poster No. 106 - General Paediatrics**

**A TALE OF TWO WEBS: RETHINKING NON-BILIOUS VOMITING AND METABOLIC ALKALOSIS WITH NORMAL ABDOMINAL ULTRASOUND**

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<sup>1</sup>Department of Paediatrics, Mayo University Hospital, Castlebar, Ireland

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**AIMS:** Duodenal webs are due to incomplete bowel lumen recanalization and a rare cause of upper intestinal obstruction with an estimated incidence of 1 in 10,000 to 1 in 40,000<sup>1</sup>. We discuss two cases of early and late presentation of duodenal web with normal abdominal ultrasounds on admission.

**METHODS:** Retrospective chart and literature review.

**RESULTS:**

**Case 1:** A 5 day old term female infant who presented with non-bilious vomiting after every feed and signs of severe dehydration. Blood gas showed severe hypochloraemic hypokalaemic metabolic alkalosis. Abdominal ultrasound was normal. It was repeated 5 days later due to persistent symptoms and showed an air and fluid-filled stomach with collapsed duodenum. This was followed by a barium meal which confirmed a duodenal web. She underwent a duodenoduodenostomy. She made a good recovery but re-presented one month later with bilious vomiting. She underwent an exploratory laparotomy which showed small bowel obstruction with pinhole perforation secondary to adhesions. She made a good recovery and did well thereafter.

**Case 2:** A two year old girl with Down syndrome who presented with non-bilious vomiting and reduced urinary output. There were no clinical signs of significant dehydration. Bloods showed severe hypochloraemic hypokalaemic metabolic alkalosis with acute renal failure. Abdominal X-ray and ultrasound were normal. She made a full recovery with slow intravenous fluid rehydration but re-presented again one month later with intermittent non-bilious vomiting and similar biochemical picture without renal failure. Diagnosis was made on barium meal. A duodenoduodenostomy was performed with no postoperative complications.

**CONCLUSION:** Duodenal webs can present early or late and symptoms may vary causing a diagnostic dilemma for clinicians. They should be considered in cases of non-bilious vomiting with metabolic alkalosis, and where pyloric stenosis has been ruled out on ultrasound, fluoroscopic bowel studies should promptly be undertaken to avoid delay in diagnosis.

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**Poster No. 107 - General Paediatrics**

**MYCOBACTERIUM BOVIS ARACHNOIDITIS: A CASE PRESENTATION**

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**Aim** To describe the unusual presentation and diagnosis of a young girl with *Mycobacterium bovis* arachnoiditis.

**Case Report** A previously healthy, HIV-, 11 yo Caucasian Irish female, rural background, presented to UHG in October with a 2-week history of intermittent early-morning headache with associated nausea and vomiting, 1-week complaint of abdominal pain with fatigue, and fever for 3 days prior to admission. Past medical history was unremarkable. On initial examination the patient was febrile with notable abdominal tenderness, maximal in the right iliac fossa; there were no meningeal signs, no focal neurology, GCS 15. Initial laboratory work revealed normal FBC, CRP, renal and liver profiles. VBG (x3) revealed persistent metabolic alkalosis (pH>7.5) with hypocarbia. Chest radiograph, abdominal

ultrasound were normal; urine/blood cultures sterile. Hospital day 2 the patient developed somnolence, GCS 12; MRI and CSF sampling were performed. MRI brain showed prominence of temporal and posterior horns of lateral ventricles, without obvious cause; CSF analysis, WBC 443 (77% monocytes), glucose 1.7mmol/L and protein >25g/L, negative Gram stain, sterile cultures, negative viral/bacterial PCR. Ceftriaxone and acyclovir were commenced. Over the next 12 hours the patient became increasingly encephalopathic and urgent transfer to a tertiary centre was arranged where she underwent emergency placement of an extra-ventricular drain for evolving hydrocephalus. Ventricular CSF had a normal protein level (0.33g/L). Subsequent whole-spine MRI was consistent with arachnoiditis with localised inflammation; lumbar laminectomy was performed. Operative samples revealed caseating granulomas, single acid-fast bacillus, and strongly positive PCR signal for *M. tuberculosis*. Steroid and anti-tuberculous therapy were commenced with favourable outcome. Cultures subsequently revealed *M. bovis* species. Contact screening has revealed LTBI of unconfirmed species in family members, without obvious infectious contact to date.

**Conclusion** *M. bovis* arachnoiditis is a rare diagnosis, and it remains to be established how the infection was contracted by this previously-well child.

#### **Poster No. 108 - General Paediatrics**

##### **CONVERSION DISORDER: FAIL TO PREPARE, PREPARE TO FAIL**

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**Background & Aims:** Conversion Disorder (CD) is characterised by the presence of neurologic symptoms such as weakness, syncope and non-epileptic seizures, in the absence of an underlying neurological disease. CD in the Paediatric population presents a diagnostic and therapeutic dilemma, generating sporadic but substantial clinical burden. Currently, no clinical guidelines inform best practice. This case series raises subject awareness and proposes management strategies.

**Methods:** Case series. 1: A 13 year old girl presented to the ED having had a number of unusual episodes. On first presentation, she collapsed after getting out of bed. Subsequently, she had a number of syncopal episodes. Typically, she reported weakness and dizziness, falling to the ground unresponsive. These episodes of apparent unconsciousness were associated with eye fluttering. After waking she was drowsy but recovered rapidly. 2: A 12 year old, right handed girl presented to the ED with a 10 day history of generalised weakness of her right hand and wrist, associated with altered sensation. She had been unable to write but remained pain free. There was no history of trauma or associated neurological symptoms beyond the hand.

**Results:** 1: Lying&standing BP, ECG, CXR, Holter / King of Hearts monitor, EEG and MRI Brain; all within normal limits. 2: Neurological examination, laboratory studies, inclusive of MRI Brain & Cervical cord; all within normal limits. A diagnosis of functional neurological disorder was made in both cases.

**Conclusion:** Conversion Disorder is a disabling medical condition and should not be a diagnosis of exclusion, delaying treatment and worsening outcomes. It should be flagged early in the diagnostic process with awareness of the literature, acknowledging that acceptance by parents is difficult. The history & examination should be re-evaluated, consultations judicious, and 'convenience' associations challenged. An integrative, multidisciplinary approach avoids superfluous investigations and procedures, positively influencing the care pathway.

**Poster No. 109 - General Paediatrics**

**THE INCIDENCE OF MENINGITIS IN A REGIONAL PAEDIATRIC SETTING: 4 YEARS' EXPERIENCE WITH A PREPONDERANCE OF ENTEROVIRUS**

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**THE INCIDENCE OF MENINGITIS IN A REGIONAL PAEDIATRIC SETTING: 4 YEARS' EXPERIENCE WITH A PREPONDERANCE OF ENTEROVIRUS**

**Aims:**

1. Describe the incidence of paediatric meningitis (0-14 years old) in the Galway city and county area during the period 2013 - 2016.
2. Evaluate the use of CSF PCR for meningitis diagnosis.

**Methods:** Microbiologically confirmed cases of meningitis (positive CSF culture +/- PCR for bacterial or viral pathogens) were identified via the Microbiology Database, Division of Clinical Microbiology, UHG. Clinical records and the Patient Administration System were reviewed, relevant clinical and laboratory data retrieved. Hospital In-Patient Enquiry system and 2016 census data were analysed for paediatric medical admission figures and current population statistics respectively.

**Results:** 328 individual CSF samples were analysed during 2013 – 2016; 38 microbiologically confirmed cases of meningitis; 32/38 viral etiology. Six cases of bacterial meningitis, 66% confirmed by PCR alone; 100% viral meningitis, PCR confirmed (Table). There were 12,943 paediatric medical admissions 0-14 years during the study period, 38 cases per 12,943; c.2.9 meningitis cases (2.47 viral, 0.46 bacterial) per 1,000 admissions. During the study period, there were c.215,516 children 0-14 years living in Galway city and county, approximating to c.17 cases (16 viral, 3 bacterial) of meningitis per 100,000 population 0-14 years.

	<b>Bacterial*</b> <b>N = 6</b>	<b>Viral**</b> <b>N = 32</b>
Age, months; average (range)	29 (0-166)	23 (0-165)
Neonate (<28 days)	3	11
<b>CSF</b>		
White cell count x 10 <sup>9</sup> /L; average (range)	734 (24-1,234)	274 (1-1,970)
Neutrophils; average % (range)	63 (48-95)	38 (1-87)
Protein g/dL; average (range)	1.45 (0.97-1.54)	0.55 (0.23-1.17)
PCR %	100	100
Culture %	33	0
PCR + Culture %	33	0

\* *Neisseria meningitides* (2); GBS (2); *Listeria monocytogenes* (2)

\*\* Enterovirus (30); HSV (1); Parechovirus (1)

**Conclusion:**

Meningitis is a rare paediatric diagnosis, majority of viral aetiology. PCR is an invaluable tool in the diagnosis of meningitis; note no case of bacterial meningitis had a 'normal' CSF white cell count.

## Poster No. 110 - General Paediatrics 5

### THE FREQUENCY OF INAPPROPRIATE CHEST X-RAYS IN CHILDREN

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**Aim** Chest x-rays (CXR) are a common radiological investigation performed in children and often carried out as part of routine investigations. We analysed CXRs performed in children in Wexford General Hospital to identify the frequency of inappropriate CXRs.

**Methods** We reviewed current literature to ascertain appropriate indications for CXRs in children. We analysed CXRs performed in children aged 16 and below between July 2017 and September 2017. Data was gathered using NIMIS, iPatient Manager System and patient charts.

**Results** 123 CXRs were performed between 11<sup>th</sup> July 2017 and 10<sup>th</sup> September 2017.

15% (n=19) CXRs were requested by General Practitioners (GP); the most common indication was pneumonia signs (73.68%, n=14/19). Only 4 were abnormal. According to the British Thoracic Society (BTS) guidelines, patients with community acquired pneumonia that don't require hospitalization don't need CXRs.

60% of CXRs in children under the age of 1 were accurately requested, the most common indications being respiratory distress and cardiac murmurs. Asthma and bronchiolitis were the most common indications in those aged 1-8 years.

Overall, 48% (n=50/104) of CXRs were inappropriately requested in the hospital setting (e.g: bronchiolitis, asthma, chest pain, cervical lymphadenopathy). The largest number of inappropriate requests (58.3%) was found in patients between 9-16 years, with only 10.41% (n=5/48) CXRs showing any abnormalities.

**Conclusion** Our results indicate that there is a high frequency of inappropriate CXRs performed, with the highest number among older children. This audit has shown that there is a trend towards over investigation and is suggestive of the growing culture of "defensive medicine" and retreatment in the use of good clinical acumen.

BTS guidelines will be implemented locally to avoid unnecessary radiation exposure. This audit will improve culture of CXRs in Wexford General Hospital and in the long term save funds for the hospital and the HSE.

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## Poster No. 111 - General Paediatrics

### A CASE OF JUVENILE MYOCLONIC EPILEPSY DIGNOSED BY ELECTROENCEPHALOGRAM IN A PATIENT WITH KNOWN ABSENCE SEIZURES

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Juvenile Myoclonic Epilepsy (JME) is one of the most common types of generalised epilepsy to occur in mid-to-late childhood. Typically JME starts with absence seizures, with myoclonic jerks occurring anywhere between 1 and 9 years later with the majority of patients developing generalised tonic-clonic seizures within the next few months.

Our case is of an 8-year-old girl, who presented with a four-month history of episodes of absence attacks. The attacks were occurring three to four times a day and always had a similar presentation – face went blank, eyes rolled and she was unresponsive. There was never any associated limb jerking. Her first EEG showed at least three habitual episodes during the period of recording, which were associated with generalised runs of regular three-cycles/second spike and slow wave activity consistent with idiopathic generalized epilepsy such as childhood absence seizure. She was then commenced on Zaronitin, which caused vomiting and so was switched to Lamictal. She remained seizure free for 2 years and so her anticonvulsants were weaned and she had a repeat EEG which was normal. She represented a year later with episodes of lapse in concentration. Her third EEG showed several bursts of generalised spike and slow wave activity, the discharges contained polyspike and wave therefore these features are consistent with Juvenile Myoclonic Epilepsy. She was recommenced on low-dose Lamictal. Approximately 3-8% of children with absence seizures develop JME. While the majority of children with absence seizures will eventually grow out of them, this may not always be the case. It is therefore essential that patients and families are counseled as to the risk of seizure recurrence when weaning off anticonvulsants.

### **Poster No. 112 - General Paediatrics**

#### **WEIGHING PRACTICES IN THE PAEDIATRIC EMERGENCY DEPARTMENT**

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**Introduction:** Paediatric weights are essential for the appropriate management of the care of the child, in particular the critically ill child. Obtaining weights in the Emergency Department (ED) may not always be possible. It's therefore essential to have an accurate method of estimating the child's weight. Current practice is to estimate weight based on age and sex of the patient, as set out by the APLS 2015 guidelines. The aim of this study was to audit the number of children who had measured weights in the ED and to assess the accuracy of the APLS estimated weight guidelines.

**Method:** This study was carried out in the Paediatric ED, at University Hospital Limerick. Data were collected on all patients who presented to the ED over a seven-day period in June 2017; 166 successive patient charts were analysed. Data collected included age, sex, presenting complaint, height, weight and fluid boluses given. APLS guidelines were used to estimate weight in all children, based on their age.

**Results:** 45% of the patients were female and 55% male. Weights were recorded in 72 patients (43%). Whether the weight was estimated or weighted was not recorded for any child. All children had a weight estimated by study group, using APLS guidelines. Estimated weights were a good predictor of weight documented in notes ( $p < 0.001$ ). 100% of pre-school-aged children, 90% of primary-school-aged children and 57% of secondary-school-aged children were found to be within the 95% confidence interval.

**Discussion:** Estimated weights are useful in emergency situations but these results will not always be accurate. As the child's age increases, so does the level of inaccuracy. The use of the APLS estimated weight guidelines should only be used in exceptional circumstances and the child should be weighed accurately as soon as possible afterwards, to ensure the most appropriate management is being carried out.

**Poster No. 113 - General Paediatrics**

**PARENTS' PREFERENCES ON DISCHARGE IN A PAEDIATRIC HOSPITAL**

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**AIMS:** To evaluate parents' preferences on a number of aspects of the discharge process in a paediatric hospital, including their perspectives regarding out of hours (8pm-8am) discharge, nurse led discharge, and discharge education.

**METHODS:** We surveyed parents of inpatients in our tertiary paediatric hospital, on 27<sup>th</sup> Oct 2017. High dependency and Intensive care areas were excluded. Parents were asked to complete a written survey addressing preferences on discharge and related factors including travel time to hospital, mode of transport and household composition. We plan to repeat this survey in 4 weeks to increase sample size.

**RESULTS:** A total of 40 surveys were completed out of a possible 82 eligible patients. Patient age ranged from 6 weeks to 15 years. Most patients live within 60 minutes travel time of the hospital (70%). The majority of parents surveyed would be happy for nurse led discharge (90%). The majority of parents are happy to take children home between 8am and 12am. See results in Table 1.

Table 1.

Time	8am-12pm	12pm-4pm	4pm-8pm	8pm-12am	12am-4am	4am-8am
Yes (%)	95	85	77.5	55	42.5	40
No (%)	2.5	5	12.5	35	47.5	50
Uncertain (%)	2.5	10	10	10	10	10

Of the parents surveyed most felt the best time to receive information about the duration of admission was when seen by the consultant (50%). Half were happy to be given education verbally on discharge, others (42.5%) felt written information should also be provided. The majority would prefer to receive education on the diagnosis when confirmed rather than just prior to discharge

**CONCLUSION:** Parents may be willing to take their child home at any time and out of hours discharge should be available. Most parents are agreeable to nurse led discharge. A patient's discharge should be tailored to individual family circumstances. Information about the approximate duration of admission and discharge education should be provided when the diagnosis is confirmed and should be available in verbal and written formats.

**Poster No. 114 - General Paediatrics**

**AETIOLOGICAL INVESTIGATION IN PERMANENT CHILDHOOD HEARING IMPAIRMENT, A RETROSPECTIVE AUDIT**

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**Aim:** Universal Newborn Hearing Screening (UNHS) was implemented nationally in 2014. Approximately 110 neonates with permanent childhood hearing impairment (PCHI) are identified annually, and as per best practice all are referred to paediatricians for aetiological investigation. Our aim was to review the practice in a paediatric hearing clinic against British Association of Audiological Physician (BAAP) guidelines (1,2,3,4).

**Methods:** Retrospective audit of all children with PCHI seen in a paediatric hearing clinic over a 1 year period. Data was collected from laboratory and radiology records and electronic clinic letters .

**Results:** 44 children were referred; 20 had bilateral mild/moderate hearing loss, 5 severe/profound, 14 unilateral and 4 had no hearing loss. 23/25(92%) with bilateral hearing loss were tested for Connexin mutations, 5 of which were positive. CMV testing was performed in 27 patients, initial serology was positive in 10 cases, but congenital CMV was only confirmed in 1 case.<sup>1</sup> Guthrie result is outstanding. 9 were booked for MRI of inner ears and IAM. 11 patients were referred to ophthalmology.

Urgent paediatric assessment is advised to allow for prompt testing for potentially treatable causes (ie congenital CMV), however in this cohort the average waiting time to be seen was 8 months. There was also a substantial number of referrals for children diagnosed beyond infancy.

**Conclusion:** To our knowledge, this audit examines the largest cohort of children attending for aetiological assessment of PCHI in Ireland. . While compliance to BAAP guidelines for Connexin and CMV testing was high, the rate of referral for MRIs and ophthalmology referrals was low. Of note, referral numbers are almost 4 times the initially predicted number. The volume of children, paired with limited clinicians and resources, impacts on the effective implementation of BAAP guidelines.

1. British Association of Audiovestibular Physicians. Guidelines For Aetiological Investigation Into Unilateral Permanent Childhood Hearing Impairment, April 2015 2. British Association of Audiovestibular Physicians. Guidelines For Aetiological Investigation Into Mild To Moderate Permanent Childhood Hearing Impairment, April 2015 3. British Association of Audiovestibular Physicians. Guidelines For Aetiological Investigation Into Severe to Profound Permanent Childhood Hearing Impairment, April 2015 4. Universal Newborn Hearing Screening Programme HSE. National Governance Document for the Health Service Executive. 2014, HSE

### **Poster No. 115 - General Paediatrics 3**

#### **CRÈCHE: SOURCE OF COUGHS, COLDS AND KINGELLA**

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**Aims:** Clusters of Kingella Kingae infection have previously been associated with children attending the same day-care facility. Here we will describe a case series of Kingella infections.

**Methods:** Chart review of invasive Kingella infections, two confirmed microbiologically and one presumed diagnosis due to the epidemiological link.

#### **Results**

##### **Case One: 11-month-old boy**

Initial Presentation: Two day history of left hand swelling. Dorsum of left hand swollen and erythematous. Coryza and cough ongoing for three weeks but afebrile.

Clinical Course: Treated as cellulitis with IV flucloxacillin for 48 hours. Hand swelling improved during admission and was discharged on 5 days of oral flucloxacillin.

Microbiology: Blood culture positive after 29 hours, Kingella Kingae isolated.

##### **Case Two: 16-month-old boy**

Initial Presentation: Refusing to walk or crawl on a background of a febrile illness one week prior to presentation. Right knee slightly swollen on examination.

Clinical Course: MRI knee suggested osteomyelitis of his proximal tibial metaphysis. He was commenced on ceftriaxone. He improved quickly and was weight bearing within 36 hours of starting antibiotics. Discharged home on oral amoxicillin to complete a 3-week course.

Microbiology: Bone biopsy from tibia grew Kingella Kingae sensitive to penicillin.

##### **Case Three: 18-month-old girl**

Initial Presentation: One-month history of intermittent limp, pyrexia, unusual posture with loss of lumbar lordosis.

Clinical Course: MRI suggested acute L5/S1 vertebral osteomyelitis. Attended same crèche as case two. She improved quickly on ceftriaxone. She completed one month of ceftriaxone and two months of oral cephalixin.

Microbiology: No growth of *Kingella* on blood culture. Influenza A on throat swab. Likely diagnosis in view of epidemiological connection.

**Conclusions:** *Kingella Kingae* is the most common agent seen in skeletal system infections in children aged 6-36 months of age. Bone, joint and heart are the preferential sites of infection. It can be difficult to diagnose so a high index of suspicion is needed.

Outbreaks of *Kingella kingae* Infections in Daycare Facilities. Pablo Yagupsky, Emerg Infect Diseases, Vol. 20, No. 5, May 2014 2. *Kingella kingae*: Carriage, Transmission, and Disease. Pablo Yagupsky, Clin. Microbiol. Rev. Vol. 28 no. 1 54-79, 1 January 2015

#### Poster No. 116 - Neonatal

#### MEDICATION RECONCILIATION IN NICU, CAN WE DO BETTER?

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**Aims:** It is important to ensure accurate prescribing of medications for babies transferred into the neonatal intensive care unit (NICU) from outside hospitals. These neonates are at risk of medication reconciliation errors at admission.<sup>1</sup> We aim to answer the question: Are prescribing errors occurring when these babies arrive into NICU?

#### Methods

**Population:** All neonates transferred from outside hospitals into NICU during 2016 were eligible for inclusion. 26 neonatal charts were reviewed.

**Study Type:** Retrospective chart review.

**Data Collection:** We used a tool consisting of 20 closed questions to analyse medication documentation from the referring hospital, the transport team and the admitting unit. We also looked for any potential prescribing errors.

**Results:** In 73% of the cases a list of medications was provided in the doctor's transfer letter. However, the doses of these medications were only provided 38% of the time.

In 92% of cases the transport team documentation contained a list of medications and in 84% of cases the transport documentation provided medication doses.

In 40% of cases new medications were started shortly after arrival in NICU and in 80% of these cases a reason for starting the new medication was documented in the medical notes.

There were no prescribing errors documented in any of the 26 cases.

**Conclusions:** The admitting team relies on the documentation from the referring unit and the transport team to ensure the correct medication is prescribed. In a quarter of the cases the documentation provided by the referring hospital did not include a clear list of the neonate's medications. There is significant room for improvement here and we should be aiming to have a complete list of medications for every baby transferred.

We should be aiming for 100% accuracy in medication prescribing in this cohort of sick babies transferred for intensive care.

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**Poster No. 117 - Sub-Specialty and Special Interest Paediatrics**

**AN UNUSUAL CAUSE OF A FIRST AFEBRILE SEIZURE IN A TODDLER; PROPIONIC ACIDEMIA**

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**Aims:** Our aim was to describe both; an unusual cause of a first afebrile seizure in a toddler; and an atypical first presentation of propionic acidemia (PA), a rare, autosomal recessive organic aciduria with only several cases currently diagnosed in Ireland. We pose the question; should metabolic screening be considered in the investigation of afebrile seizures?

**Methods:** Review of case presentation, investigations, and available literature.

**Results:** Case history: a male 14-month-old presenting to the emergency department following a first afebrile seizure. He was well at presentation, with no developmental or neurological abnormalities. His head circumference was above the 98th percentile, and weight and height lay in the 91-98th percentile. Blood glucose, venous blood gas and ammonia were unremarkable. Metabolic screening was performed given his large head circumference. Urinary organic acid analysis revealed raised 3-hydroxypropionate; plasma amino acid analysis was abnormal; and acylcarnitine profile showed elevated propionylcarnitine (C3), consistent with PA.

PA is caused by mutations in propionyl-CoA carboxylase genes A or B resulting in enzyme deficiency. There are two classical forms. The most common is neonatal PA presenting with progressive encephalopathy and metabolic acidosis. Late-onset PA typically presents with metabolic crises during times of infection or catabolic stress.<sup>1</sup> Expanded newborn screening programmes have also led to the description of milder phenotypes.<sup>2</sup> This case has a number of atypical features; while epilepsy can be a feature in the long term, it is very rare to diagnose PA following a first seizure in the absence of acidosis.<sup>3,4</sup> However, retrospective analysis shows that many patients with late onset organic acidurias had features prior to diagnosis including seizures, movement disorders and failure to thrive.<sup>3,5</sup>

**Conclusion:** Metabolic diseases including PA are highly susceptible to delayed or missed diagnosis. A high index of suspicion should be maintained in the investigation of unprovoked seizures in this age-group.

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3. Kölker S, et al. The phenotypic spectrum of organic acidurias and urea cycle disorders. Part 1: The initial presentation. J Inherit Metab Dis. 2015; 38:1041-1057
4. Kölker S, et al. The phenotypic spectrum of organic acidurias and urea cycle disorders. Part 2: the evolving clinical phenotype. J Inherit Metab Dis (2015) 38:1059–1074
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**Poster No. 118 - Sub-Specialty and Special Interest Paediatrics**

**AN ULTRARARE CAUSE OF FEEDING DIFFICULTIES IN AN INFANT; TYROSINEMIA TYPE 1**

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Tyrosinemia type 1 is an autosomal recessive metabolic disorder caused by a deficiency of fumarylacetoacetate hydrolase (FAH). This is a terminal enzyme involved in the metabolism of tyrosine. Its prevalence has been reported as 1: 100,000 [1]. Patients with tyrosinemia die secondary to hepatic insufficiency during early childhood. Literature reveals a markedly increased risk of hepatocellular carcinoma among the survivors [1].

Here we report an eight month-old female infant who was referred to a Paediatrician for an outpatient assessment because of feeding difficulties and was noted to have hepatomegaly on examination. On MRI, the liver appeared diffusely enlarged and contained multiple non-enhancing nodules of varying size. Alpha fetoprotein level of 101.042 ng/ml raised concerns for hepatoblastoma or hepatocellular carcinoma. However an US guided liver biopsy was not consistent with these diagnoses. Her urine organic acid analysis was done as part of a metabolic screen and showed succinylacetone, the presence of which is pathognomonic of Tyrosinemia type1. Mutation analysis proved her to be a compound heterozygous for two mutations in the FAH gene.

She was commenced on a low protein diet and started on Nitisinone(NTBC). At 14 months of age, MRI abdomen showed a more stable appearance suggestive of regenerative nodules rather than hepatoblastoma, metastases or hepatocellular carcinoma.

Our patient had very high AFP level and the existence of multiple nodular lesions in the liver in conjunction with this was very suggestive of hepablastoma. However other diagnoses considered included tyrosinemia, embryonic carcinoma, malignant teratoma and disseminating malignancy.

[1] Croffie JM, Gupta SK, Chong SKF , Fitzgerald JF. Tyrosinemia Type 1 Should Be Suspected in Infants With Severe Coagulopathy Even in the Absence of other signs of Liver failure. *Pediatrics* 1999; 103 (3): 675-678.

#### **Poster No. 119 - General Paediatrics**

##### **A RARE CASE OF CONGENITAL SYPHILIS IN A PRETERM MALE INFANT**

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**AIM:** Congenital syphilis is a rare but preventable disease. We present a case of a male preterm infant born to a mother with no prenatal care and who was diagnosed with this now rare condition in the early postnatal period.

**METHODS: Case:** A 25-year-old primigravid lady presented to the Accident and Emergency complaining of abdominal pain and turned out to be pregnant and in early preterm labour. She claimed she was unaware she was pregnant, therefore gestation was uncertain. An emergency caesarean section was performed because of a non-reassuring CTG and meconium-stained amniotic fluid. A male infant was born and admitted to Special Care Baby Unit (SCBU).

**RESULTS:** Postnatal assessment put him at 34 weeks gestation. The baby had unusual peeling of both hands and feet. He had no dysmorphic features. He required CPAP for respiratory distress and chest X-ray showed multifocal consolidation. A full septic screen was performed for suspected early-onset sepsis. The baby was covered with IV antibiotics. CRP and WBC were markedly elevated. The haemoglobin was low. Urgent maternal blood tests came back positive for syphilis on the same day. The baby's investigations showed: positive syphilis IgM, positive blood RPR 1:64 (same as mother's result), CSF and blood PCR for syphilis were both positive but CSF RPR was negative. He had conjugated hyperbilirubinaemia. The X-ray of the long bones did not show periostitis but there were some lucencies noted consistent with congenital syphilis. He was treated for 10 days with high dose IV Benzylpenicillin.

**CONCLUSION:** Infants with congenital syphilis if untreated or inadequately treated may experience severe sequelae including cerebral palsy, hydrocephalus, sensorineural hearing loss and musculoskeletal deformity, with 25% risk of stillbirth, 14% risk of neonatal death, 41% risk of infected infant and 20% chance of a healthy infant.

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**Poster No. 120 - General Paediatrics**

**DO WE CUT IT? A SNAPSHOT OF PAEDIATRICIANS' VIEWS AND KNOWLEDGE ABOUT TONGUE TIE IN IRELAND**

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**AIM:** To gauge the knowledge about ankyloglossia (tongue tie), and how Paediatricians in Ireland view its relevance.

**METHODS:** We conducted a phone survey with six questions. Each paediatric/neonatal department (23 in total) in the Republic of Ireland was contacted. To minimise bias we spoke to the medical/neonatal consultant, registrar and SHO who was on-call on that day. If a certain doctor was not available or unreachable, we tried to contact them the next day. The six questions had a YES, NO or NOT SURE response, and one question had a follow up question.

**RESULTS:** Of the 69 doctors contacted, 65 completed our survey.

100% (n=65) were aware of what a tongue tie is.

98% (n=64) could name 2 symptoms of a tongue tie, with 'poor feeding' and 'poor latch' being the top two symptoms listed.

20% (n=13) did not know how to examine for a tongue tie, with 76% (n=10) being SHO's and 24%(n=3) being registrars. All consultants knew how to examine for ankyloglossia.

75% (n=49) were not aware of the ankyloglossia algorithm in the national clinical program for paediatrics and neonatology. Of these, 78% (n=38) were NCHD's.

78% (n=51) doctors agreed training on how to examine for an ankyloglossia and when it should be released would be helpful.

55%(n= 36) felt an ankyloglossia was a genuine problem and a frenulectomy would help.

**CONCLUSION:** The majority of surveyees felt ankyloglossia was a genuine problem. The majority knew how to examine for an ankyloglossia but agreed training on how to examine for an ankyloglossia and when to conduct a frenulectomy would be useful. The majority of surveyees were not aware of the ankyloglossia algorithm in the National Clinical Program for Paediatrics and Neonatology.

**Poster No. 121 - General Paediatrics**

**A TODANI TYPE 4B CHOLEDOCHAL CYST IN A 2YO IRISH GIRL: A CASE REPORT**

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**AIMS:** choledochal cyst is when there is a cystic dilatation of the common bile duct. It is relatively rare to find a choledochal cyst, with prevalence occurring between 1 in 13000 to 1 in 2 million people. Our aim was to describe and report a 2year old girl who presented to our hospital with jaundice and scleral icterus, who eventually was diagnosed with a Todani type 4B choledochal cyst.

**METHODS:** We report the clinical history, physical examination findings and results of lab and radiological findings on this 2yo Irish girl.

**RESULTS:** This is a 2yo girl who presented with a three day history of jaundice, scleral icterus, pale stools, dark urine and lethargy. She had been previously well, on no medications, had no history of foreign travel and had no family history of any illnesses of note. We initially worked her up with basic blood tests and later an ultrasound of the abdomen. Bloods revealed raised (direct) bilirubin of 116umol/L, Alk Phos of 704IU/L, GGT of 490IU/L, ALT of 429IU/L and AST of 354IU/L. The ultrasound of the abdomen revealed, 'appearances suspicious of marked cystic dilatation of the common bile duct,

however no obvious calculus demonstrated". The child was referred onto the GI team in Crumlin where she underwent a MRCP. This demonstrated the presence of a Todani Type 4B Choledochal cyst involving the common hepatic duct, the CBD and the cystic duct. She was finally referred onto the general surgeons, and now is awaiting elective duct excision, reconstruction of the biliary tree with hepaticojejunostomy in a Roux-en-Y fashion.

**CONCLUSION:** It is important to always consider a choledochal cyst in a child with a clinical picture of obstructive jaundice, and to be aware of the risk of malignancy after cyst excision.

1) Medscape Article on 'Pediatric choledochal cyst surgery'

#### **Poster No. 122 - General Paediatrics**

#### **MANAGING DIABETIC KETOACIDOSIS: KEEPING WITH THE PROGRAMME**

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#### **Aims:**

The incidence of T1DM is rising and the age at presentation is falling. Approximately 25% of newly presenting children present in diabetic ketoacidosis (DKA) which is the commonest cause of diabetes related deaths predominantly due to cerebral oedema. Current international DKA guidelines (BSPED, ISPAD) differ in terms of recommended fluid volumes and insulin doses. Pending new evidence, the National Clinical Programme for Paediatric Diabetes has endorsed continuing with current Irish DKA guidelines. This study aimed to evaluate adherence to in house DKA guidelines and clinical outcomes

#### **Methods:**

We undertook a retrospective chart review of all DKA cases in our centre in 2016

#### **Results**

Twenty-one patient episodes (17 male) of DKA were identified in 2016. The median (range) age was 9 years (20 months–16 years). Acute phase management was in line with guidelines in all cases (accurate prompt diagnosis, appropriate laboratory investigations, fluid type, fluid volume and time to insulin infusion from diagnosis). Clinical observations were adequate in all patient episodes. In fifteen cases (70%), electrolytes and venous blood gases were measured exactly as per guidelines. During sixteen (76%) patient care episodes, dextrose was appropriately added to intravenous fluids but in 4 (20%) patient care episodes, dextrose titration was suboptimal resulting in minor hypoglycaemia at a mean time of 9.75 hours. All patients were reviewed by the diabetes specialist team at admission. No severe hypoglycaemia, hypokalaemia or cerebral oedema was seen during treatment. Median time to discharge was 4 days.

#### **Conclusion**

Optimal clinical outcomes in DKA require adherence to clear guidelines, regular re- education and audit. Current DKA guidelines are generally working well in our institution. The most important issue identified by this audit was minor delays in titrating dextrose concentration during treatment resulting in minor preventable hypoglycaemia. Guidelines were updated and made more explicit and the audit cycle will be repeated.

## Poster No. 123 - General Paediatrics

### CO-EXISTING TRANSIENT NEONATAL DIABETES MELLITUS TYPE 1 WITH CONGENITAL CHOLEDOCHAL CYST – COINCIDENCE OR CONNECTED?

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**BACKGROUND:** Transient Neonatal Diabetes (TNDM) is characterised by diabetes that develops in the first 6 weeks of life and resolves by 18 months. Approximately 70% of cases are classified as TNDM Type-1 (TNDM1), caused by methylation defects on chromosome 6q24. It is associated with some congenital anomalies, however associated hepatobiliary abnormalities are not described.

Choledochal cysts are congenital dilatations of part or all of the bile duct, occurring in 100,000-150,000 live births. The 5 major types are classified according to the extent of hepatobiliary involvement.

Surgical excision of the cyst is indicated to prevent complications such as stone formation, malignancy, cyst rupture and pancreatitis.

#### CASE REPORT

We describe a case of TNDM1 due to whole chromosome paternal uniparental disomy 6, with co-existence of a type 1a choledochal cyst in a female born following intrauterine growth retardation. Hyperglycaemia soon after birth led to insulin treatment and a diagnosis of TNDM1, with resolution of the diabetes by 4 months of life. Follow up of antenatal findings of a cystic anomaly demonstrated the presence of a type 1a choledochal cyst on ultrasound and magnetic resonance cholangiopancreatography. Successful surgical excision of the cyst and a roux-en-Y hepaticojejunostomy was undertaken at 6 months of age.

**CONCLUSIONS:** To our knowledge the co-existence of these disorders has not previously been reported. Whilst it is possible these two disorders are independently co-existing, further genetic analysis by whole exome sequencing is now in progress to determine if a mutation in the *PKHD1* gene, unmasked by the paternal UPD of the entire chromosome 6, explains the associated choledochal cyst in this case.

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## Poster No. 124 - Neonatal

### NEONATAL FACIAL LACERATION FROM HIGH-FLOW NASAL CANNULAE.

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**Background:** High-flow therapy is increasingly being used in neonatal units as a form of non-invasive respiratory support for preterm infants. Iatrogenic injuries are well described with CPAP use, however, to our knowledge there are no reports of iatrogenic injuries associated with high-flow nasal cannula (HFNC). We describe a case of a male infant who sustained a significant facial laceration secondary to HFNC.

**Case:** A preterm male infant was commenced on HFNC on day 6 of life. Following 6 days of HFNC therapy, the infant developed a large exudative lesion of the right upper cheek. Following removal of the HFNC device, the wound healed rapidly with IV antibiotics. The device was examined by local

Biomedical engineers and the manufacturer was informed. A root cause analysis (RCA) yielded a number of important clinical lessons.

#### **Conclusions:**

The RCA team concluded that pressure from the unprotected firm plastic edge of the Wigglepad, from faulty positioning during application breached the facial skin resulting in a laceration and secondary cellulitis. Other factors such as pressure and the infant's level of activity may have contributed. We recommend that our observations regarding the dangers of improper application should be included in the Manufacturer's literature. We discourage detachment and reapplication, as improper re-application may lead to facial injury. Caution should be taken to ensure the plastic mount is applied directly over the designated area of the dressing to avoid an exposed rim of plastic. Caution should also be taken to avoid pressure of the infants face when nursed prone and/or when the infant is agitated. Good partnership and communication between medical staff, nursing staff and the parents are paramount to ensure parental concerns are heard and changes in the infant's clinical status are recognised early and promptly addressed. We hope that reporting this case will increase awareness of the potential for iatrogenic injury with neonatal HFNC.

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#### **Poster No. 125 - General Paediatrics**

#### **LANGERHANS CELL HISTIOCYTOSIS – CUTENOUS MANIFESTATION THAT CAUSES CONFUSION IN THE DIAGNOSTIC PROCESS: 2 CASE SERIES**

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**Aim:** Case series were written to create awareness to the health care staffs and clinicians about Langerhans Cell Histiocytosis that can present with cutenous manifestation that may be misdiagnosed as eczema and sebarrhoeic dermatitis leading to mismanagement.

**Methods:** Consent was obtained from the parent to allow us to review the patient's chart and to translate the information and results in writing for the case report. Details were extracted and images were also uploaded in the case series

**Results:** Not applicable

**Conclusions:** The evaluation of the extent of the disease and the choice of treatment involves a multidisciplinary team of clinicians/ paediatricians, dermatologists, pathologists, haematologists, endocrinologists, radiologists and orthopaedists. Treatment of choice depends upon the age of the patient, the number and extent of the lesions, presence of involvement of the liver, lungs, spleen or hematopoietic system, number of organs affected and any organ dysfunction. In multi-system LCH, prednisolone plus chemotherapeutic drugs such as vincristine or etoposide are being used widely. The response to the therapy may differ but both of our patients responded very well to the treatment. Eventhough the exact aetiology of Langerhans cell histiocytosis is still a debate, the treatment for it is still chemotherapy.

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## Poster No. 126 - General Paediatrics

### MENINGITIS IN THE POST MEN C VACCINATION ERA

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**Aim:** Neisseria Meningitidis causes meningitis. There are different strains which are A, C, B, W and Y. Ireland has one of the highest notification rates of invasive meningococcal disease in Europe based on confirmed cases in the EU/EEA, 2008-2012. Mortality rates are 5-15% with 10-15% suffering permanent disability. After the introduction of Men C vaccination, the incidences of meningitis caused by both Serotype C and Serotype B have significantly reduced. This study is to investigate if Meningitis Serotype C still exists in our cohort.

**Methods:** This is a retrospective study. Total numbers of children were 44 with 2 failed lumbar puncture, 4 exclusions, 8 neonatal patients and 30 paediatric age group patients. Symptoms, signs and investigations results were collected in a data collection sheet using the documented data from the patients' chart.

**Results:** 8 children were diagnosed as meningitis. 5 children had positive results in either the cultures or the PCR samples sent. The other 2 children were diagnosed as viral meningitis and meningo-encephalitis. None of these children had Serotype C proving how effective the vaccination has been and herd immunity has been achieved. 3 children had Serotype B and 2 others were Serotype W135. 2 neonates had Group B Streptococcal infection.

**Conclusions:** We are still having positive results for meningococcal from culture or PCR in the cerebrospinal fluid. There were presence of Neisseria Meningitidis Serotype B and Serotype W135. It shows how significant is the value of lumbar puncture to be done to secure a definite diagnosis. Clinical signs of meningitis are possibly the most valuable asset in making decision for lumbar. The introduction of Men B vaccination into the Irish national vaccination schedule this year is definitely the next big important step in reducing the risk of these children getting the infection.

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**Poster No. 127 - Medical Education, Management and Laboratory Medicine**  
**MANAGEMENT OF BRONCHIAL ASTHMA IN HOSPITAL FOR CHILDREN ABOVE 5 YEARS OLD AND CHILDREN 5 YEARS OLD AND YOUNGER- CLINICAL AUDIT**

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**Aims:** The aim of this audit is to collect data on the management of children with bronchial asthma in Paediatric Ward, Letterkenny University Hospital in comparison with the SIGN 153- British guideline on the management of acute exacerbation of asthma.

**Methods:** The number of patients needed for this audit was obtained from Hospital In- Patient enquiry (HIPE) department. The patients who were diagnosed with acute exacerbation of bronchial asthma were grouped into those older than 5 years old and those at the age of 5 years old and younger. Data was analyzed by using Microsoft excel document.

**Results:** Management of bronchial asthma in children should try to comply with all the statements outlined by the SIGN-153 guideline but it also has to fit into the suitability of the hospital setting as well. The correct doses of salbutamol, ipratropium bromide and steroid have to be correct in order to ensure the best management is given to the children both older than 5 years old and 5 years and younger. Nebulized magnesium sulphate is one of the first line treatments in severe exacerbation of bronchial asthma as well and need to be considered in managing the patients.

**Conclusions:** The management and treatment of bronchial asthma in children aged below and above 5 years old in Paediatric ward in Letterkenny Hospital is almost similar to those outlined in the SIGN 153 guideline. Treatments given for the children with severe asthma were almost very similar to those recommended by SIGN 153 as compared to those with moderate exacerbation.

BRITISH THORACIC SOCIETY: MANAGEMENT OF BRONCHIAL ASTHMA IN HOSPITAL SIGN 153

**Poster No. 128 - Medical Education, Management and Laboratory Medicine**  
**Quality standard for the epilepsies in children and young people- Clinical Audit**

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**Aim:** To learn and investigate whether children with epilepsy under follow up here in Paediatric Department Letterkenny University Hospital are receiving care as stated in the Quality standard for the epilepsies in children and young people (aged up to 18 years old) QS27 based on NICE guide for commissioners for the diagnosis and management of the epilepsies in adults, children and young people (CG 127).

**Methods:** We included children at the age of 14 years old and below who have been diagnosed with epilepsy. We have taken 20 random samples from the patients chart numbers obtained from the hospital in patient enquiry office. We retrieved the data from the patients' charts and also by looking at IMPAX system to see if they have imaging done as well.

**Results:** Due to the limitation of resources, we are not able to achieve/ carry out most of the quality statements as outlined by the NICE QS27 CG127 guideline. Although we do have our limitations we have tried our best to accommodate the children with epilepsies with the care that we are able to provide. We are only able to carry out 2 statements out of 9 (though we have to exclude statement 9 as it is not applicable to our age group at the moment).

**Conclusions:** Although we are not able to offer and provide the care following the quality standard outlined by the NICE guideline, the clinicians still provide the best they can by offering the care that are within our limitations which is to carry out MRI. However knowing the quality standards are important, as we are going to be communicating with the parents and we should know where our limitations are so that we can convey these to the parents and the children as well.

Quality standard for the epilepsies in children and young people (aged up to 18 years old) QS27 based on NICE guideline for commissioners for the diagnosis and management of the epilepsies in adults, children and young people (CG 127).

## **Poster No. 129 - Neonatal**

### **THERAPEUTIC HYPOTHERMIA OF THE NEWBORN**

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#### **Aims:**

The benefit of induced hypothermia in post-asphyxia encephalopathy has been proven in high-quality randomized controlled trials to be safe and it reduces the incidence of death and disability at 18-24 months of age especially. This study was done to see the results of the Magnetic Resonance Imaging (MRI), result of the Electroencephalogram (EEG), developmental milestone of the children and what type of referrals were done for the children with regards of their developmental milestone and their well-being.

#### **Methods:**

This was a retrospective study. 12 babies were obtained from 2012 till 2016 since cooling was started in Letterkenny University Hospital in 2012. Data were then collected using data collection sheet to see whether the babies fulfilled the criteria and what are the outcomes for these babies.

#### **Results:**

The current ages of these babies vary as the oldest of age is 3 years and 6 months old and the youngest is 4 months of age. All 12 babies fit into the therapeutic hypothermia criteria. 2 babies had developmental delay and they were also the only children having abnormal MRI results and EEG results and subsequently being referred to therapies and assessments. Interestingly 6.88 was not the lowest blood gas in this study but it was 6.78 and this child has normal developmental milestone.

#### **Conclusions:**

Therapeutic cooling has significantly help to reduce risk of developmental delay and progression of these children to cerebral palsy. There was no clear correlation between the neurodevelopmental outcome and the baseline findings prior to starting therapeutic hypothermia treatment but seizure activities may have increased the risk of developmental delay. MRI helped as a prognostic tool. This study can be a good start on continuous assessment of the children who received the treatment with regards of preventing mortality and disability following hypoxic ischaemic encephalopathy.

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**Poster No. 130 - General Paediatrics**

**GET IT RIGHT WHEN YOU WRITE**

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**Introduction:** Protocols for documentation have been said to improve communication between healthcare professionals, and therefore patient outcomes. However, inconsistencies in abbreviation use have been shown to impact patient outcomes<sup>1</sup>. This study evaluates the use of abbreviations in patient notes among NHCDs.

**Aims:** The main objective of this study is to evaluate the use of abbreviations in patient notes in particular – Right & Left, < &gt;, + & -, Up & Down arrows. A secondary objective is to highlight error rates associated with their use, in order to improve the accurate transfer of information between health care staff.

**Methods:** A prospective chart review was conducted in Temple Street Children's University Hospital. In this single blinded audit, 56 charts were selected from each hospital ward at random. They were then assessed based on the patient's most recent hospital admission. Each chart was anonymised and assessed for four abbreviation errors. These abbreviations included; left or right, up or down arrows, < or > and + or -. We examined the appropriateness of abbreviations using current HSE guidelines<sup>2</sup>, and the frequency of their use.

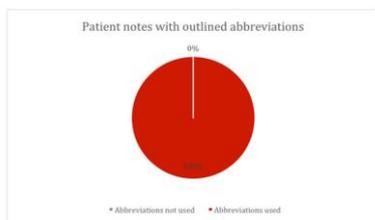


Figure 1 Bar chart depicting percentage of patient's notes containing abbreviations.

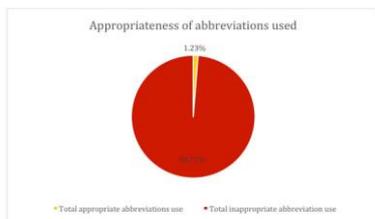


Figure 2 Bar chart depicting appropriateness of total abbreviations used.

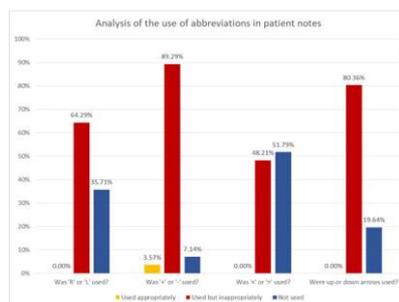


Figure 3 Bar chart depicting breakdown of types of abbreviation use in patient notes.

**Results:** Review of 56 charts in the Temple Street Children's Hospital showed that all charts contained abbreviations (Fig. 1), of which only 1.23% were used appropriately (Fig. 2) according to the HSE guidelines on abbreviation use. This was confined to the use of '+' or '-' which related only to biochemical results of urine and blood analyses. All others were inappropriate (Fig. 3).

**Conclusion:**

Abbreviation use was evident in patient documents. These abbreviations were deemed ambiguous, and supports the need of electronic paediatric medical records.

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**Poster No. 131 - General Paediatrics**

**RE-AUDIT OF DIPSTICK URINALYSIS ON NEONATES PRESENTING TO A PAEDIATRIC ASSESSMENT UNIT**

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**Aim:** Urinary tract infection (UTI) in the neonatal period is considered a serious bacterial illness requiring the completion of a full sepsis work up. Urine dipstick testing appears to have a significant diagnostic value in early identification of UTI in children. The aim of the re-audit was to evaluate the improvement in practice of dipstick urinalysis amongst neonates presenting to the Paediatric assessment unit (PAU) of a regional hospital, 2 months after initial audit.

**Methods:** Retrospective review of charts of neonates presenting to the PAU comparing the 2-time periods (T1: period 1 and T2: period 2) was done. T1 was period between October 2015 and March 2016 versus T2 period between May and October 2016. Neonates were defined as infants aged 28 days and below of corrected gestation. Abnormal dipstick urinalysis was defined as the presence of at least 1 of nitrite, leucocyte esterase and blood.

**Results:** 65 (60% males) neonates presented during T1 versus 63 (38% males) in T2. The median age of presentation in T1 was 8 (range: 3 - 22) days whereas 6 (range: 3 - 28) days in T2. Results of dipstick urinalysis were documented in 73.8% (48/65) versus 87.3% (55/63). Abnormal dipstick urinalysis was recorded in 12/48 and 7/55 during T1 and T2 respectively. Positive urine cultures were seen in (1.7%) 2/12 in T1 and 3/7 (42.9%) in T2. Presenting symptoms of the 5 neonates with positive urine culture were poor feeding (100%), irritability (60%) and vomiting (40%), jaundice (40%).

**Conclusion:** There was an improvement in the practice of dipstick urinalysis. Infants with symptoms and signs suggestive of UTI should have a urine sample tested for infection.<sup>1</sup> However, neonates and younger infants present with non-specific signs and symptoms. We recommend all young infants should have urine sample tested regardless of presenting symptoms.

1. [www.nice.org.uk/Guidance/CG54](http://www.nice.org.uk/Guidance/CG54)

**Poster No. 132 - General Paediatrics**

**The Introduction of Reflective practice in Temple Street Hospital: A Pilot Study of Balint Groups**

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**Aim:** Reflective practice is an established part of the curriculum of Psychiatric and General Practice (GP) trainee's in Ireland, including Balint Rounds. Reflective practice has not yet come in to play as a mandatory part of our training as paediatric non consultant hospital doctors (NCHDs). A Balint group is the most commonly used method of reflective practice, involving groups of professionals including doctors sharing their non clinical experience of work within a confidential safe space.

Our aim was to introduce and evaluate a pilot of Balint rounds within the NCHD cohort at Children's University Hospital, Temple Street

**Method:** A steering group for the introduction of Balint groups in TSH has been established including a Consultant trained in the facilitation of Balint. NCHD's were provided with information on Balint and asked if they were willing to participate. Logistical issues were resolved such as the identification of an appropriate venue and selection of a time amenable to various work schedules. We have commenced Balint rounds once per month with a core group of 10 NCHD's and evaluation is underway.

**Results:** We have had positive feedback from NCHD's involved in this pilot. We are unable to accommodate additional requests for membership. Complete analysis in the form of thorough surveys after completion of our pilot of 4 Balint rounds will be available from November, when we aim to determine the impact of the introduction of this opportunity for reflective practice. Themes explored have included challenging aspects of work with a non clinical focus including the doctor-patient-parent relationships and relationships with colleagues.

**Conclusion:** We have successfully introduced reflective practice at Temple Street. We expect to continue to receive positive feedback and will feedback to management at Temple Street and Royal College of Physicians, Ireland (RCPI)

### **Poster No. 133 - General Paediatrics**

#### **DON'T MISS CONGENITAL HYDROCEPHALUS**

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#### **Case Report**

SC was a 25-day old boy infant referred to Hospital by his PHN (public health nurse) with a rapid increase in his occipital-frontal circumference (OFC) and bilateral persistent downward gaze.

SC was born at 40+6 by emergency Caesarean section due to a non-reassuring cardiotography (CTG) in labour. Thick meconium stained liquor was noted; he required suctioning, respiratory resuscitation and supports for 10 minutes postpartum. Apgars were 1, 6, and 10 and he went to the postnatal ward from theatre. OFC was measured at 35.5cm (50<sup>th</sup> -75<sup>th</sup> centile). Of note, prior to his hospital presentation he saw his GP and also underwent a tongue tie (ankyloglossia) repair for feeding difficulties.

On presentation to hospital SC was well nourished and hydrated, but quiet and not very active on handling. His macrocephaly was notable with an OFC of 40.5cm (>99.6<sup>th</sup> centile) with widening of both his anterior and posterior fontanelles and splayed suture. A cranial ultrasound demonstrated marked hydrocephalus; of the lateral and third ventricles but a normal fourth ventricle. No mass, haemorrhage or arachnoid cysts were seen.

SC remained clinically stable, was transferred to the Neurosurgical service in Temple Street Hospital where he underwent further MRI imaging and subsequently a ventriculoperitoneal (VP) shunt was sited. SC was discharged home clinically well only 5 days after his initial presentation to hospital and two days post neurosurgery. He will be followed up with repeat MRI imaging in 2 month's time by the Neurosurgical team.

#### **Conclusion**

This case highlights the importance of serial measurements of growth parameters including height, weight and especially OFC. Early diagnosis and intervention is also critical to such an excellent outcome. As Paeditricians we see many children with large OFC's but this is the diagnosis not to miss.

**Poster No. 134 - General Paediatrics**

**THE ROLE OF THE MONOCYTE:LYMPHOCYTE AND NEUTROPHIL:LYMPHOCYTE RATIO IN THE DIAGNOSIS OF BACTERIAL INFECTION OF THE URINARY TRACT OF CHILDREN**

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**Purpose:** To determine the relevance of the monocyte: lymphocyte and neutrophil: lymphocyte ratio in children presenting unwell in the emergency care setting with a diagnosis of urinary tract infection, particularly in the setting of lymphopenia.

**Methods:** A retrospective analysis of laboratory data on 241 patients with confirmed UTI over a two and a half year period. All cases presented to the emergency department of a paediatric training hospital (AMNCH) in Dublin from 31/12/2014 to 31/06/2017. Full blood data was available in 235 cases, with 28 cases demonstrating lymphopenia (lymphocyte count <1.4-2.0x 10<sup>9</sup>/litre; value adjusted for age). The correlation between the admission lymphocyte and both monocyte and neutrophil numbers was assessed.

**Results:** Both ratios (NLR and MLR) did not correlate with adult values in predicting bacterial infection of the lower and upper urinary tract although MLR was closer to both median and mean scores in the adult series. Of interest, in non E coli species the MLR was below the mean in 80% (20/25) of isolates; there was no corollary in terms of NLR pattern or low lymphocyte count at the time of presentation for non E Coli UTI. Absolute white cell count, neutrophil count and C-reactive protein did not differ significantly within the study cohort.

**Conclusion:** NLR & MLR do not appear to be a useful diagnostic tools in relation to determination of urinary tract infection in the setting of acutely unwell hospitalized children. Our study does raise the possibility of MLR in establishing the likelihood of non E Coli species colonization, which may merit further analysis.

Naess, A., Nilssen, S., Mo, R., Eide, G. and Sjursen, H. (2016). Role of neutrophil to lymphocyte and monocyte to lymphocyte ratios in the diagnosis of bacterial infection in patients with fever. *Infection*, 45(3), pp.299-307. Wyllie, D. (2004). Relation between lymphopenia and bacteraemia in UK adults with medical emergencies. *Journal of Clinical Pathology*, 57(9), pp.950-955.

**Poster No. 135 - General Paediatrics**

**NEUROENDOCRINE TUMOURS OF THE PAEDIATRIC APPENDIX: TEN-YEAR INCIDENCE AT A TERTIARY REFERRAL CENTRE**

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**Aims:** Appendiceal cancer is rare. Nonetheless, it is a potentially aggressive malignancy and, according to data extracted from the Surveillance, Epidemiology, and End Results database, the incidence of appendiceal cancer is increasing. Neuroendocrine tumours, the most common appendiceal tumours, are diagnosed incidentally following laparoscopic appendicectomy in up to 90% of cases where the tumour is diagnosed in the paediatric population. We sought to determine the number of neuroendocrine tumours diagnosed in those aged under sixteen years at our institution over a ten-year period.

**Methods:** HIPE Data and Gastrointestinal Multidisciplinary Team (MDT) meeting records were assessed for the period between January 1<sup>st</sup> 2007 and December 31<sup>st</sup> 2016 to identify all appendicectomies performed, be that as a single resected organ or as part of a more extensive resection. All histopathological reports for these patients were analysed to determine the number of neuroendocrine tumours that had been recorded. For each of these, MDT outcomes, including the necessity for further imaging, additional surgery, specialist referral and chemotherapy was determined.

**Results:** In this ten-year period, 1448 appendicectomies were performed, while an additional 12 patients had a colorectal resection in which the appendix underwent histopathological analysis as part of a larger specimen. Three patients (0.2%) in this cohort were determined to have been diagnosed with a neuroendocrine tumour. All three were incidentally detected. MDT discussion determined that all three cases required post-operative imaging. While one patient required additional surgery, no patient required treatment with chemotherapy.

**Conclusions:** Appendiceal neuroendocrine tumours are rarely encountered in the paediatric population. A significant proportion are incidentally diagnosed however, presenting both diagnostic and treatment challenges. Our data determines the incidence of these malignancies at an Irish tertiary referral centre over a ten-year period, highlighting many of the above issues.

#### **Poster No. 136 - General Paediatrics**

##### **Concussion management in General Practice: a comparison of Paediatric and Adult presentations in Primary care**

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**Aims:** Concussion is a mild traumatic brain injury with pathophysiological sequelae induced by biomechanical forces and the effects in children are different from adults. Children face different issues than adults following concussive episodes, with return to school/learning being a key goal in management and more conservative rest periods prior to returning to sporting activity. The aim of this study was to examine the management of concussion by GPs who deal mainly with Paediatric or Adult concussion.

**Methods:** GPs were recruited from national meetings and invited to take part. GPs were subdivided on the basis of most frequent age-group presenting with concussion (Children / Adults / Mixed). Data was analysed based on knowledge of diagnosis and return to play protocols; concussion assessment and follow-up management.

**Results:** 150 GPs completed the survey with equal proportions in each age-group; Paediatric (n=38), Adult (n=32), Mixed (n=47). Similar proportions had undertaken formal training; used guidelines to aid diagnosis and self-reported knowledge of diagnosis or return to play protocols. Paediatric concussions were more likely to present within 24 hours (59% v 38% v 20%; p=0.003) and to Out-of-hours services (37% v 19% v 28%; p=0.12), with less frequent secondary / specialist care referral (50% v 77% v 77%; p=0.02). A decreased proportion of follow-up reviews was offered from those GPs mainly dealing with Paediatric concussion (34% v 56% v 45%; p=0.18).

**Conclusion:** The results from this study show that Paediatric concussion cases more frequently present earlier and to Out-of-Hours services. GPs are less likely to offer follow-up review or to refer to specialist secondary services in Children. Given the differences between Paediatric and Adult concussion presentations, GPs would benefit from obtaining formal training in Paediatric concussion management and having a lower threshold for further management intervention.

**Poster No. 137 - General Paediatrics**

**NOVEL CYSTIC FIBROSIS MUTATION (c.2805-2810delinsTCAGA) IN AN INFANT OF INDIAN DESCENT**

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**Background:** Cystic fibrosis (CF) was once believed to be extremely rare in India. In recent years, it has been recognised as a condition which does affect Indian patients. While the exact prevalence and spectrum of CF in the Indian population is not known, limited evidence suggests that the  $\Delta F508$  is the most common mutation, however its frequency seems to be low in comparison to the Caucasian population. It is suspected that there may be significant variation in the CFTR mutations seen in this patient group. A lack of resources and the absence of a centralised cystic fibrosis database has limited progress in this area.

**Case Report**

We describe a female infant, born in Ireland, to non-consanguineous Indian parents. She presented on day of life one with bowel obstruction, secondary to meconium ileus. Immunoreactive trypsinogen was raised on neonatal screening, and sweat test was positive (Sweat 117mg, chloride 96mmol/l). Initial molecular genetic analysis, using a 39 mutation panel, specific for an Irish population, identified no mutations. Extended sequence analysis identified a homozygous CFTR variant (c.2805-2810delinsTCAGA; p.(Pro936Glnfs\*6) which is predicted to create a downstream stop codon. Subsequent testing of the patient's parents revealed them both to be carriers.

**Conclusion:** Population database searches revealed no other cases of this CFTR gene mutation in the literature. This is relevant information for the Indian health service, but also in our own context, where our patient groups are becoming more diverse. It reinforces the need for further research to better identify new novel mutations in this population group, to better guide screening and diagnosis, and to ultimately lead to the generation of novel precision therapies.

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**Poster No. 138 - General Paediatrics 5**

**AUDITING CURRENT PRACTICES OF PLOTTING GROWTH CHART IN CHILDREN WEXFORD GENERAL HOSPITAL**

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**INTRODUCTION:** Measuring growth parameters in infants and children like height, weight and head circumference and plotting them on age and sex specific growth charts is a useful non-invasive tool of assessing their well being and growth.

**AIM:** To audit current practice of plotting growth charts in children admitted for last 6 months to wards and special care baby unit. The audit was done to look for current deficiencies in plotting the growth centile so that we don't miss children with faltering growth and promptly identify the factors influencing their growth.

**STANDARDS:**

1. The Recommendations of Plotting Growth chart according to age, sex and gestation from RCPCH and department of health UK.
2. Growth chart specifically designed for down syndrome and turner syndrome.

**METHODOLOGY:** Retrospective 50 random chart review for presence of growth chart review and documentation of OFC, Height and weight in current notes and their respective centile Chart. Plotting data on growth chart by appropriate measuring equipment.

**RESULTS:**

50 patients were collected out of which 32 that is 64% were from Saint Gabriel ward and 18 that is 36% were from SCBU.

24 were female and 26 were male.

Growth charts were present in 16 patients that is only 30% and the growth parameters were plotted in only 12 patients that is only 25%.

Out of these 12 patients 07 patients were from Saint Gabriel ward and 05 patients from SCBU.

**CONCLUSION:**

Rates of documentation of growth parameters in the hospital setting were unacceptably low.

Implementation of use of growth charts require not only education but also steps to encourage more regular measurement of growth parameters in all visits in all areas of hospital.

A simple framework for health care providers to use as a counselling tool is presented.

Education and Make sure to keep growth charts in all patient admission areas.

Consultant will check that centile chart is present in files and it is plotted properly.

1. UK Growth chart 2-18 years RCPCH and Department of health

**Poster No. 139 - General Paediatrics**

**RE-AUDIT: INTRA DEPARTMENTAL AUDIT IN IMPROVING QUALITY OF WRITTEN INPATIENT DRUG KARDEX 2017, IN WEXFORD GENERAL HOSPITAL, COUNTY WEXFORD, REPUBLIC OF IRELAND.**

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<sup>2</sup>PAEDIATRIC CONSULTANT WEXFORD GENERAL HOSPITAL

**INTRODUCTION:** Medication errors defined as any error in the prescribing, dispensing or administration. It is single most preventable cause of patient injury.

**AIM:** After evaluation of the findings from previous audit and having education and training of staff to improve the Inpatient Kardex, to Check if any improvement in year 2017

**METHODS:**

1. Inpatient 100 drug karded sheets would be audited for the months of Jan 2017-till July 2017 against redetermined standards.

<b>RESULTS</b>	<b>2017</b>
• Identification	100
• Allergy	94
• Date	86
• signature	77
• MCRN written	82
• Bleep no mentioned	<b>31</b>
• Legible hand writing	97
• Starting date	98
• Frequency	99
• Interval	94
• PRN medication	<b>38</b>
• Discontinuation	79
• Route	95
• Dose	100
• Generic Name	81

**COCLUSION:**

There is steadily improvement in allergy, MCRN and generic name documentation.

Maxium dosage for 24 hours in PRN medication and bleep no documentation is very low.

**Poster No. 140 - Neonatal**

**AUDIT OF NEONATAL TRANSFER FROM SPECIAL CARE BABY UNIT, WGH TO TERTIARY CARE IN 2016**

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**Introduction:** The **(NNTP)** is a rapid response service for the stabilisation and transportation of premature/ill neonates, up to the age of six weeks corrected gestational age, who require transfer to tertiary centres nationally.

The team provides stabilisation advice and intensive care at the referring hospital, prior to, as well as during the transport to the relevant tertiary centre.

**Aim:** The aim of this audit to analyse neonatal transfer Services from Special Care Baby Unit, WGH for Tertiary Care from January to December 2016

**Standard:** The National Neonatal Transport Programme (NNTP)

<http://www.nntp.ie>

**Methodology:** This audit is retrospective. All charts for the babies who was transferred out was reviewed to see following DATA.

gender, mode of delivery, gestational age, birth weight, apgars, age at transfer, diagnosis, referral centre, Response time (from call to arrival of transport team), stabilising time (time of arrival to the time of departure), passive cooling, respiratory support, transport team, complication during transportation and outcome.

**Results:**

Total transfer 22 neonates Female/ Male = 15/7.

13 infants (65%) were transported within 24 hours of life.

2 infants (9%) during the second day

7 infants after 48 hours.

16 (72.7%) were transferred by dedicated NNT team and for the remaining 6 infants (27.3%), by our team.

6 infants transferred to UHW, 4 to NMS, 4 to Coombe, 4 to Crumlin, 3 to Rotunda and 1 to Temple Street Hospital.

2 infants required passive cooling due to asphyxia.

Respiratory support needed in 11 babies (50%). 8 infants IPPV, Two were managed with nasal oxygen and one baby with NCPAP.

The median time from request of transfer to arrival of the transport team was 180 min. Median stabilization time was 30 min.

No complications occurred during transfer.

No infant died during transport

**Conclusion:** Most of babies were transfer by Neonatal transfer team, the most common reason for transfer was RDS, needing mechanical ventilation and prematurity followed by HIE and Neonatal seizure.

The National Neonatal Transport Programme (NNTP) <http://www.nntp.ie> - Neonatal Guidelines

<https://www.networks.nhs.uk/nhs-networks/staffordshire-shropshire-and-black-country-newborn/neonatal-guidelines>

## Poster No. 141 - Neonatal

### PREMEDICATION FOR ELECTIVE INTUBATION IN NEWBORN IN SCBU OF WEXFORD GENERAL HOSPITAL

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**Introduction:** Endotracheal intubation is a common procedure that is undertaken to secure an airway in the neonatal speciality. In a Level 1 unit, this is not a routine task but one which is undertaken in emergency situations only.

Morphine is the most commonly used medication for elective intubation. Study showed that it is not effective as compared to placebo (1).

**Aim:** Aim of this audit is to evaluate current practices of premedication in all elective intubations that have been undertaken in the Special Care Baby Unit for the period of JAN to DEC.2016.

**Standards:**

1. All newborn should received premedication for elective intubation if not contraindicated.
2. Morphine Sulphate 100micrograms/kg should be administered at least 15mins prior to intubation.
3. SCBU should have written protocol for premedication in elective intubation.
2. Premedication protocol should include Analgesic/sedation vagolytic and muscle relaxant.

**Methodology:** A retrospective chart review of all the newborn infants ( $n=9$ ) who were intubated in the Maternity Unit in 2016 was undertaken.

**Results:**

Total of 9 babies were included in the Audit who were intubated in last one year. Total number of deliveries 2000.

1. Five babies were due to prematurity and RDS.

Two of them were intubated in labour ward without sedation .

Three were intubated in SCBU.

2. Two intubation were done in term babies ,one of them was done in theatre with non vigorous babies with bradycardia due to HIE.

Second intubation in term plus 14 days was done in SCBU electively as HIE, need cooling .

3. Five elective intubation were done ,four of them received morphine for sedation.

4. Five intubation were having average of two attempts .

Two were presumed one attempts as it was not documented .

**Conclusions:** No standard Guideline present for premedication in elective intubation

Premedication mainly used was morphine that was not used according to recommendation that is 15 to 20 minutes before intubation

1. Morphine for elective endotracheal intubation in neonates: a randomized trial Brigitte Lemyre\*<sup>1</sup>, Joanne Doucette<sup>2</sup>, Angela Kalyn<sup>2</sup>, Shari Gray<sup>3</sup> and Michael L Marrin<sup>2</sup>

## Poster No. 142 - Neonatal

### AUDIT OF THE PREVENTION OF EARLY ONSET NEONATAL INFECTION – WEXFORD GENERAL HOSPITAL CLINICAL GUIDELINE 000 029

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**Background:** The guideline for the management of neonates at risk of infection was revised and updated in Jan 2014 for infants who are identified as having risk factors for the development of neonatal sepsis. The risk categorize into yellow and red flag. One yellow flag , observation only , two yellow and one red flag for septic work up and A/B.

## **Aim**

1. Recommended observations to be undertaken at birth and every four hours for twenty four hours were being undertaken
2. what has been the significance of repeating CRP levels at twenty four hours
3. Measure the incidence of positive blood culture sepsis
4. Any alterations in intravenous antibiotic use.

## **Method:**

A retrospective Chart review neonatal admissions from Jan-March 2013 (before implementation of the guideline) to Jan-March 2014 was undertaken.

## **Findings**

1. 14 babies requiring observation for 24 hours. Infants requiring observation for 24 hours should have a total of 7 documented recordings for each vital sign. A median of 3 recording was present .
2. Out of 43 babies in 2014 on IV antibiotics 23.3% (n=10) had elevated repeat CRPs.
3. 3 positive blood cultures in 2013 (all 3 were gram positive cocci CONS) and 0 in 2014 .
4. The use of IV antibiotics in 2014 was greater 63.2% v 55.5%. Symptomatic infants with no other flags requiring treatment was higher 48% v 40% ,percentage of asymptomatic infants receiving treatment was lower 16.1% vs 20%.

**Conclusion** Neonatal observation chart for the postnatal ward is required. Guideline for doing LP and duration of A/B on the basis of CRP. Need to re-audit after new guideline for LP

Nice guideline 2012 Neonatal Sepsis departmental guideline.

## **Poster No.143 - General Paediatrics**

### **USE OF VIRAL PCR FOR RESPIRATORY VIRUSES IN A PERIPHERAL PAEDIATRIC WARD - EXPERIENCE FROM SLIGO UNIVERSITY HOSPITAL**

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**Aims:** Viral Polymerase Chain Reaction (PCR) is a sensitive and specific diagnostic method with rapid turn around time. A review of current literature revealed a lack of evidence-based guidelines to direct the use of PCR in investigation of acute respiratory infection. We wanted to determine the bulk of respiratory PCRs requested by our paediatric department, the most common indications, the turn around time and the impact a positive/negative result had on treatment, length of hospitalization and isolation.

**Methods:** A review of requests for viral respiratory PCR through the Kepler system identified 114 samples taken between 01/01/2015 and 31/12/2016. Clinical information was subsequently obtained from Patient's Medical records.

**Results:** Most common clinical symptoms recorded were fever, tachypnoe and increased work of breathing respectively. The mean turn around time was 4 days. Oseltamivir was discontinued in 1 case and Antibiotics stopped in 3 cases. Most patients were discharged home by the time results were received. Most commonly isolated viruses were RSV and Influenza A.

**Conclusion:** The current clinical impact of PCR of respiratory viruses is minimal in our unit. This could be due to long turn around time and lack of clear indications for it. Further prospective audit with departmental guidelines on indications for viral PCR and closer follow up of results may support a case for an onsite multiplex PCR.

**Poster No. 144 - General Paediatrics**

**AUDIT ON THE USE OF BACTERIAL PCR IN A PERIPHERAL PAEDIATRIC DEPARTMENT OF SLIGO UNIVERSITY HOSPITAL**

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**Background:** Febrile illness is the most common childhood emergency department presentation, yet it remains a diagnostic challenge. Combination of culture and PCR identify more pathogens than either culture or PCR alone. Peripheral units without onsite PCR processing facilities face long turn around times and the added cost of transporting samples.

**Methods:** We collated a list of patients who had bacterial PCR (N.Meningitis, GBS, E.Coli, HiB) requested on serum, CSF or both from November 2015-November 2016. Patient's medical charts were examined and the following information was elicited; demographic data, indications for PCR, turn over time for results and the impact of results on further management. Our results were compared to the national guideline issued by The Irish Meningococcal and Meningitis Reference laboratory (IMMRL).

**Results:** The positivity rate was 7.5%. There was 1 false negative result (positive blood culture and negative PCR). There were no false positives. Over half (51%) of CSF samples were not compliant with the national guideline. 69% were received within 72h of request, all positive PCRs were communicated within 24 hours. 74% of patient's treatment changed or they were discharged following receipt of their result. 22% treatment remained the same as they were deemed to be on the correct treatment already. 8.3% of patients were discharged home before the result of PCR was available.

**Conclusion:** This audit shows potential for rationalization of PCR requests at our site. Improving compliance with National Guidelines will optimize resource management. While our audit can assess PCRs that were requested, and speculate whether this was appropriate, it cannot comment on possible missed opportunities for PCR requests. The IMMRL guideline is currently being implemented, and a re-audit is going to take place by the end of 2017 to close the audit loop.

**Poster No. 145 - General Paediatrics**

**WHEN THINGS DON'T ADD UP - UNUSUAL PRESENTATION OF A PATIENT WITH MENINGITIS B**

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The overall rates of invasive meningococcal disease (IMD) has decreased over the last 20 years in Europe. Despite this trend, Ireland has the highest incidence of IMD in Europe. The highest prevalence falls into the age group of under one year where clinical presentation is often without the classically described signs. The purpose of this report is to describe an unusual phenotype of a patient with Invasive meningococcal B meningitis and to present a literature review of the current epidemiology, presentations, complications of meningitis in Ireland.

An 8-month old boy, born to non-consanguineous members of the Travelling community in Ireland was admitted to a regional paediatric unit with poor feeding, barking cough and irritability, Rotavirus positive diarrhoea, low serum potassium and high sodium. Viral infection in the setting of an undiagnosed metabolic condition was suspected. On the third day of admission, he remained irritable and Lumbar puncture was done. Results were consistent with partially treated meningitis.

Meningococcus B was identified by Polymerase Chain Reaction (PCR). On day 6 of admission, he developed right head tilt and spiked temperature for the first time. Computed Tomography (CT) of his brain showed a right sided subdural collection requiring transfer to a tertiary centre and burr hole draining. He recovered well. His immunologic, metabolic and genetic work-ups have been negative to date. He was recently diagnosed with bilateral hearing loss requiring cochlear implants, and has been enrolled into early intervention network in view of his developmental delay.

While the overall decrease in the incidence of IMD is unarguably positive, current generation of young physician might not have been exposed to many cases of typical and atypical presentation of IMD, and their clinical suspicion might be decreased in that aspect. Regular literature review and focused training is necessary in order to maintain safe practice.

**Poster No. 146 - Sub-Specialty and Special Interest Paediatrics**

**THE DANGER OF SNUFFLES - CASE SERIES OF 4 INFANTS WITH INVASIVE PARECHOVIRUS INFECTION**

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Newborn infants with older siblings attending crèche are frequently exposed to common viruses. In most cases, this is inconsequential. However, some viruses whilst only causing very mild infection in older children, can cause devastating disease in the newborn. Parechovirus has been recently identified as a possible pathogen causing sepsis like symptoms in young infants.

We are presenting a case series of 4 infants under 6 weeks of life, presenting to a small regional paediatric unit between October 2016 and February 2017. They all had older siblings in crèche and all presented with severe sepsis like symptoms. 3 of them were persistently febrile, two developed encephalitis, one developed seizures requiring Anti Epileptic Drugs (AED) and had an abnormal MRI. One developed hepatitis and one required respiratory support. One had to be transferred to a tertiary intensive care unit. All of them received at least 48h of antibiotics and 5 days of Acyclovir while awaiting results of blood and CSF cultures and PCRs. One received IVIG. All of them recovered from the acute phase, however developmental outcome needs to be followed up.

This case series reports 4 geographically unrelated cases of Parechovirus. While Parechovirus might have been an important causative agent in the past it is only recently, that it is being routinely tested for, and its real incidence is unknown. Education in smaller regional units is necessary to ensure Parechovirus is included in the differential diagnosis and work up of an unwell neonate with normal inflammatory markers and CSF findings. Appropriate and standardized follow up guidelines also need to be developed, so that these infants, at an increased risk of developmental complications are not missed.

**Poster No. 147 - General Paediatrics**

**PAEDIATRIC HEADACHE AUDIT AT OUR SERVICE, MIDLANDS REGIONAL HOSPITAL PORTLAOISE.**

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**INTRODUCTION:** Headache is a common in children. In order to make a correct diagnosis of underlying pathology its utmost important to have a good history taking and thorough physical examination. To achieve this target we carried out an audit locally in our paediatric unit in view of finding our standards of history taking and physical examination done for admitted patients presenting with chief complaint of headache with a back ground of either acute or chronic form of headache.

We have also included the outcome of brain scans carried out for these patients with some form of red flags symptoms or signs in the light of given standards.

Currently we don't have any local guideline available so this audit will help us to standardize our approach.

**METHODS:** This audit was conducted with reference to British paediatric neurology association guidelines (BPNA) for headache. It was retrospective study including total of 53 patients came to us with a chief complaint of headache on admission to paediatric ward during 2015 and 2016 years( 24 months). Five patients were omitted from the study due to history of head injury associated with headache, so our results are based on the data from 48 patients.

We went through all the inpatient charts in comparison to BPNA guidelines for headache as well as red flags signs criteria used for doing brain scans.

**RESULTS:** We were deficient in different aspects of history taking, physical examination and also in our criteria for doing brain scans in such patients.

**CONCLUSION:** We need improvement in all the areas of our recording plus in our approach towards radiological investigations for the better care of our local paediatric population.

**RECOMMENDATION:**

Introduce a paediatric headache Performa.  
Our plan is to do reaudit in 12 months time.

**Poster No. 148 - General Paediatrics**

**IS THERE EVIDENCE OF POSITIVE EARLY IMPACT OF ROTAVIRUS VACCINE ON A GENERAL PAEDIATRIC PRACTICE?**

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**Aims:** Rotavirus is a viral infection which causes gastroenteritis most commonly during Spring and Winter. It is now protected against using RV1, an oral monovalent live attenuated human rotavirus vaccine, and has been added to the National Immunisation Schedule at 2 and 4 months for all children born on or after October 1st 2016. This study aimed to assess whether the vaccine has had an impact on the number of confirmed cases of rotavirus detected at University Hospital Limerick (UHL).

**Methods:** A retrospective search of the electronic medical records system at UHL was conducted between 1st October 2015 to 1st October 2017. The number of confirmed cases of rotavirus in the one year period preceding the introduction of RV1 was compared with confirmed cases of rotavirus the one year period following introduction of the vaccination.

**Results:** In the year prior to the introduction of RV1 (1st October 2015 - 1st October 2016), there were 125 confirmed cases of rotavirus (7 were concurrently positive for adenovirus -- 8.75%). In the one year period following the introduction of RV1 (1st October 2016 - 1st October 2017) there were 154 confirmed cases of rotavirus (17 were concurrently positive for adenovirus -- 26.18% and 2 were concurrently positive for norovirus -- 3.08%).

**Conclusion:** Following the introduction of the rotavirus vaccination, there has been no reduction in confirmed cases of rotavirus at UHL. Follow-up studies across multiple sites over the coming seasons would be helpful to allow for greater evaluation of the impact of the rotavirus vaccination. RV1 has been internationally validated as preventing 80% of severe cases of rotavirus causing clinical symptoms, such as diarrhoea, in low mortality countries.

HSE. Immunisation Schedule. [hse.ie/eng/health/immunisation/pubinfo/newschedule/immschedule](http://hse.ie/eng/health/immunisation/pubinfo/newschedule/immschedule) (accessed 23.10.2017) Soares-Weiser K, MacLehose H, Bergman H, Ben-Aharon I, Nagpal S, Goldberg E, Pitan F, Cunliffe N. Vaccines for preventing rotavirus diarrhoea: vaccines in use. Cochrane Database of Systematic Reviews 2012, Issue 11. Art. No.: CD008521. DOI: 10.1002/14651858.CD008521.pub3

**Poster No. 149 - General Paediatrics**

**ADHERENCE TO ANTIMICROBIAL PRESCRIBING POLICY: EFFECTIVENESS OF FLASHCARD AND EDUCATIONAL PROGRAMME**

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**Aims** We set out to determine the compliance of antibiotic prescribing to the recommended antimicrobial guidelines and the efficacy of antimicrobial flashcards and posters in improving prescribing practice.

**Methods** We performed a retrospective study of 50 patients admitted with an illness that may require antibiotics to the paediatric ward and assessed choice, route, frequency, dose and if prescribed in generic form. A presentation was given regarding antimicrobial guidelines, antimicrobial flashcards were

distributed to the doctors and antimicrobial posters were installed in the paediatric emergency department and paediatric ward. We then assessed the 50 patients admitted after this for the same criteria and assessed change in practice.

### **Results**

Prior to our antimicrobial presentation, antibiotic choice had a compliance rate of 28.5% with the recommended antimicrobial guidelines and antibiotics were prescribed in generic in 71.4%. Correct route, frequency and dose were 69%, 95.2% and 92.9% respectively.

Compliance to antimicrobial guidelines was significantly improved following our presentation, introduction of flashcards and antimicrobial posters, at a rate of 48.5%. Generic prescribing improved to 85.7% and correct route, frequency and dose were 74.2%, 97.1% and 88.6% respectively.

Of note, co-amoxiclav was only prescribed 9% of the time in accordance with the guidelines (3 times out of 32) and was generically prescribed 46.8% of the time.

### **Conclusion**

Antimicrobial resistance is an evolving problem in our current healthcare system and antibiotic stewardship is one of our most powerful weapons against this<sup>1</sup>. The introduction of antimicrobial flashcards and posters significantly improved compliance rate with the recommended guidelines however there was still definite scope for improvement regarding this and further education sessions should be given to NCHDs and antimicrobial flashcards given to all new NCHDs starting in the hospital.

References 1. Ireland's Health Service. 2017. About Antibiotic Resistance - Ireland's Health Service . [ONLINE] Available at: <http://hse.ie/eng/health/hl/hcaiamr/antibiotics/aboutantibiotics.html>. [Accessed 29 October 2017]

## **Poster No. 150 - General Paediatrics**

### **COW'S MILK PROTEIN INTOLERANCE IN THE EMERGENCY DEPARTMENT**

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### **Aims**

To determine the initial management of suspected CMPI, the follow up and outcomes after ED attendance.

### **Methods**

A retrospective review of patients with suspected CMPI attending the ED review clinic from September to December 2016 was conducted. Data was extrapolated from scanned clinical notes. Parents were contacted by phone in June 2017 to examine outcomes and follow up received.

### **Results**

A total of 19 patients were included. In ED 12 breastfeeding mothers were asked to adopt a dairy-free diet, 5 formula fed infants were commenced on hydrolysed formula, 1 infant was commenced on lactose-free formula and 1 remained on cow's milk-containing formula.

At review clinic, 2 children were felt to not have CMPI. 3/17 were referred to GP, 5/17 were referred to General Paediatrics and 5/17 were referred to dietician (of which 2 seen in ED and 3 have not been seen)

Follow up phone calls were obtained from 16/17 children. 7/16 remain on milk exclusion diet and 9/16 have reintroduced milk with average of 3 months spent CMP free.

### **Conclusion**

Our study shows varying initial management of children with suspected CMPI and demonstrated inadequate follow up of CMPI infants with very few children linked with a dietician. A pathway should be developed for the management and follow up of patients diagnosed with CMPI.

1. Irish Food and Allergy Network, Milk Allergy Introduction [Internet], 2017, Available from: <http://ifan.ie/milk/introduction>

## Poster No. 151 - General Paediatrics

### An Audit on Managing Procedural pain in Children

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**Background:** A systematic approach to pain management is required to ensure relief of Pain and anxiety for children. The administration of appropriate analgesia in children varies by age as well as by training of the team (which includes physicians, nurses, physician assistants and nurse practitioners). Neonates are at highest risk of receiving inadequate analgesia.

**Aim:** To assess if pre procedural pain relief was given to patients who attended AMU, SCBU and who were admitted in ward

Standards:

Recommendations are taken from AAP and NEJM

**Methodology:** Observational study, Cases studied for patients attended/ admitted in AMU, SCBU & Paediatric Ward. The data analysed using SPSS, hospital based encrypted computers.

Results: The following was the results; number of cases n= 46,

Procedures done;

Blood investigation 17 (36%), blood investigations and IV access 12 (37%), IV access 6 (13%), LP 3 (6%), NG tube insertion 3 (6%), urinary catheterisation 2 (4%), ET intubation 3 (6%), chest drain 0.

Method of pain relief used; Cold Spray in 14 (30%) patients, Amito/Emla 8 (17%), Sucrose in 5 (10%), PO analgesia in 0, IV Analgesia 0, Sedation 2 (4%)

Parental Consent for Analgesia was taken in 24 (52%) cases out of which 1 patient/ parent refused for analgesia.

**Conclusions:** 29 (63%) patients out of 46 received pain relief, 17(36%) patients has not received pain relief who should have the pain relief.

Recommendations & Action Plan:

- 1) Training and education in paediatric pain assessment and management should be provided.
- 2) We also recommend to develop local guidelines which should be available in Acute assessment unit on single laminated sheet and detailed guidelines should be available in guideline folder in the ward.
- 3) Family presence during painful procedures can be a viable and useful practice in the acute care setting.
- 4) Pain assessment for children should begin at admission and continue until discharge. When discharged, patients should receive detailed instructions regarding analgesic administration
- 5) Neonates and young infants should receive adequate pain prophylaxis for procedures and pain relief as appropriate.
- 6) Sedation or dissociative anaesthesia should be provided appropriately for patients undergoing painful or stressful procedures

<http://pediatrics.aappublications.org/content/114/5/1348>

<http://www.nejm.org/doi/full/10.1056/NEJMvcm1411127>

## Poster No. 152 - General Paediatrics

### THE FALLING AGE OF MENARCHE AND IMPLICATIONS FOR BREAST CANCER IN IRELAND

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**Aims:** This study aimed to identify changes in the recorded age of menarche in Ireland and assess implications for breast cancer risk and incidence. Girls whose menarche occurs early not only have longer exposure to oestrogens during years which are important in the initiation of breast cancer but

exposures are at a higher level<sup>1</sup>. The average age of menarche has been falling throughout the world with records from Europe and the US showing a decline in age from 15.5 to 12.5 in the last 100 years<sup>2</sup>.

**Methods:** An analysis of all published records of age of menarche in Ireland was undertaken and the effects of early menarche on breast cancer risk were investigated. Data on both aspects was combined for the first time to estimate the effect of falling age of menarche on breast cancer in Ireland.

**Results:** The average age of menarche in Ireland has fallen from 13.5 to under 12.5 since 1986<sup>3,4</sup>. Age in Ireland has fallen in line with international levels and current trends reflect a slowing rate of decline. Age at menarche is a risk factor for breast cancer with a change of two years corresponding to a 10% difference in risk<sup>5</sup>.

**Conclusion:** The reduced age of menarche among girls in Ireland increases their risk of breast cancer later in life. The increase in risk could lead to a potential additional 140 diagnoses of invasive breast cancer and 35 deaths annually, given current rates of 2,880 diagnoses and 710 deaths annually in Ireland<sup>6</sup>. Understanding this step-change in risk and incidence is essential for resource planning and promoting screening programmes.

1. McMahon B et al. Epidemiology and the causes of breast cancer, *Int J Cancer*, 2006, May 15;118(10):2373-8. 2. Hochberg, Belsky, Secular trend in puberty - Declining age of menarche in Western societies from 1840 to 2000. *BMC Medicine*, 2013, 11:113. 3. Hoey H, Cox L, Tanner J. Age at menarche in Ireland, *Ir Med J*, 1986, 79 (10) 283:5. 4. O'Connell A et al. The Mean age at Menarche of Irish Girls, *Ir Med J*, 2009, 102 (3), 76:79. 5. Hsieh C et al. Age at menarche, age at menopause, height and obesity as risk factors for breast cancer: Associations and interactions in an international case-control study. *Int. J. Cancer*, 1990, 46: 796–800. 6. National Cancer Registry Ireland. Female breast cancer factsheet. Cork, 2017. Available from: [http://www.ncri.ie/sites/ncri/files/factsheets/FACTSHEET\\_female%20breast\\_0.pdf](http://www.ncri.ie/sites/ncri/files/factsheets/FACTSHEET_female%20breast_0.pdf).

#### Poster No. 153 - General Paediatrics

##### AN AUDIT OF INVESTIGATION RATE IN URGENT PAU ATTENDEES

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**AIMS:** To identify the overall rate of laboratory investigations and radiological imaging performed on urgent attendees to Paediatric Assessment Unit (PAU) in Cavan. To further stratify the investigation rate according to age, triage category and presenting complaint. To conduct a literature search and compare our results to other PAU's on both national and international levels.

**METHODS:** A retrospective audit of patient documentation was performed on all urgent attendees to Cavan PAU in one month. PAU registry book was used to gather patient data, presenting complaint and outcome. Hospital electronic lab results system and NIMIS/PACS were used to identify whether investigations or imaging were done for each patient. SCOPUS database was used to conduct a literature search.

**RESULTS:** 374 urgent attendees presented to PAU in April 2017. 39% (n=147) had at least one haematological or biochemical investigation performed. Blood tests were more frequently done in the extremes of paediatric age and in patients with abdominal complaints (59%, n=61). Increased percentage of blood tests was strongly associated with acuity of presentation, represented by a higher triage category (80% in Cat 1 vs 17% in Cat 5). Highest proportion of imaging - 35% (n=29) was done in patients with respiratory symptoms. Literature search identified 157 articles, 6 of which were included in this audit for comparison. Three large studies from US, two from UK and one from Ireland were chosen after abstract review. Selected data from US studies reported overall 43% frequency of blood investigations in Paediatric ED's, and 36-45% rate of imaging in respiratory complaints. Focused study from the UK reported 40% rate of lab tests in children with fever (vs 34% in our study). Imaging rate was 16% in UK study (vs 13%).

**CONCLUSIONS:** Our rate of investigations in the select paediatric population appears similar and occasionally lower than that reported in overseas studies.

**Poster No. 154 - General Paediatrics**

**EXPLORING A RARE ASSOCIATION OF SYMPTOMS IN NEUROFIBROMATOSIS TYPE 1**

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Congenital bowing of the tibia and fibula and Chiari malformations are rare associations presenting in Neurofibromatosis type 1. The aim of this report is to look into these specific features associated with Neurofibromatosis type 1 and to review these features in two cases. Five percent of children diagnosed with NF develop congenital bowing of the tibia and fibula, with 80% being seen in males (1). At times it is difficult to diagnose NF1 as this feature presents in childhood and other features will present before the child turns 10 years old. As this condition is based on a clinical diagnosis, this makes it difficult to counsel parents and inform them of what to expect.

Chiari malformations have an estimated 2% prevalence in NF1(4). It is known that changes in white brain matter is common leading to learning disabilities in these children however this structural malformation is not commonly seen or thought to have association with NF1 (5). This is a case report and literature review looking at two different patients who presented with one or both of these features, leading to a prolonged time to diagnose NF1. There is a need to screen for these features when considering the diagnosis of NF1.

1. Kaissi, Ali A., K. Klaushofer, F. Grill, and R. Ganger. "Bilateral and Symmetrical Anteromedial Bowing of the Lower Limbs in a Patient with Neurofibromatosis Type-1." *Hindawi. Case Reports in Orthopaedics*, 28 Feb. 2015. Web. 16 Sept. 2017. . 2. Lemire, E. G. "Congenital tibial bowing and polydactyly: a case report." *Journal of Medical Case Reports. Biomed Central*, 23 July 2007. Web. 17 Sept. 2017. . 3. Iamaguchi, R. B., P. M. Fucs, A. Carlos Da Costa, I. Chakkour, and M. D. Gomes. "Congenital pseudoarthrosis of the tibia - results of treatment by free fibular transfer and associated procedures - preliminary study ." *Journal of Paediatric Orthopaedics B. Journal of Paediatric Orthopaedics B*, 20 Sept. 2011. Web. 17 Sept. 2017. 4. Pozetti, M., T. A. Belasuzami, N. B. Seixas, and J. F. Araujo. "Neurofibromatosis type 1 and Chiari type 1 malformation: A case report and literature review of a rare association." *Surgical Neurology International. Surgical Neurology International*, 7 July 2016. Web. 17 Sept. 2017. 5. Billiet, T., B. Madler, and F. D'Arco. "Characterizing the microstructural basis of "unidentified bright objects" in neurofibromatosis type 1: A combined in vivo multicomponent T2 relaxation and multi-shell diffusion MRI analysis." *NeuroImage: Clinical. NeuroImage: Clinical* , 13 Apr. 2014. Web. 18 Oct. 2017. . 6. Beattie, M., and M. Champion. *Essential Revision Notes in Paediatrics for the MRCPCH*. 3rd ed. New Dehli: Jaypee Brothers Medical Publishers (P) Ltd, 2012. Print.

**Poster No. 155 - General Paediatrics**

**Retrospective review of the Viral Aetiology and Length of stay in patients admitted with acute bronchiolitis.**

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**Aims:** Bronchiolitis accounts for a notable number of admissions to paediatric units during the winter months. This study aims to compare the length of stay (LOS) of patients who had positive virology against those with no identified pathogen.

**Methods :** Inclusion criteria were all patients with a diagnosis of Acute Bronchiolitis, admitted over the Winter season (01/10/2016 - 31/01/2017). Student t-test was used to compare LOS of these patients according to virology results.

**Results:** We found that 230 patients met inclusion criteria. Mean age was 22 weeks (median 15, range 2-245 weeks). The average LOS was 2.6 days (median 2, range 1-14 days). 162 (70.4%) had a positive viral outcome, 12 (5.2%) were negative and in 56 (24.4%) the viral swab was not done or the result unknown. RSV accounted for 127 (78.4%) of the positive results and a further 10 (6.2%) had RSV and another virus. Of the 25 who had a positive (non RSV) viral screen, 18 (11.1%) had a single other virus isolated and 7 (4.3%) were found to have multiple other viruses on Nasopharyngeal aspirate (NPA). The mean LOS was significantly longer in those with positive viral result (2.97 days, 2.6-3.3days, 95% confidence interval (CI)) than those with a negative or unknown result (1.7 days, 95% CI 1.4-2.0 days,  $p < 0.000$ ). However no significant difference was found between those with a positive RSV alone result ( $n=127$ ) and those who were either positive for a non-RSV virus or multiple viruses ( $n=35$ ) ( $p=0.861$ ).

**Conclusion:** The majority of children admitted with Acute Bronchiolitis had a positive viral result and most were RSV positive. The LOS was significantly longer in those who were found to have positive virology, but no significant difference in LOS was found by the type of virus isolated.

**Poster No. 156 - General Paediatrics 3**

**BRITISH THORACIC SOCIETY (BTS) PNEUMONIA AUDIT: COMPARING LOCAL DATA WITH INTERNATIONAL DATA**

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**AIMS:** Our aim was to collect data on children admitted to Midlands Regional Hospital, Portlaoise (MRHP) with a diagnosis of Community Acquired Pneumonia (CAP). The purpose of this was to establish the diagnostic criteria used, the investigations done and the subsequent management of patients. This data was used to compare with the data from 16 other hospitals across the UK and Ireland as part of the British Thoracic Society's (BTS) audit on CAP from the same time period.

**METHODS:** A retrospective chart review was carried out to identify patients with CAP. Inclusion criteria included children presenting to MRHP aged  $>1$  year with a diagnosis of CAP over Dec 2016 – Jan 2017. We compared our data with international data which was automatically generated using the audit tool from BTS website.

**RESULTS:** Our data is comparable to international data with regard to demographics and severity of pneumonia requiring O<sub>2</sub> therapy. We are performing more blood tests (including acute phase reactants and microbiological investigations) and chest x-rays than other centres. Also, more patients are receiving IV antibiotics and chest physiotherapy as opposed to the recommendation of BTS, UK.

**CONCLUSIONS:** The over diagnosis, over investigation and over treatment of CAP is leading to wasted resources and is not in adherence with best practice. We are in the process of creating local guidelines and after their introduction; we expect our efficacy to improve. We plan to re-audit in 1 year.

British Thoracic Society's guidelines for management of community acquired pneumonia in children 2011. ( <https://www.brit-thoracic.org.uk/standards-of-care/guidelines/bts-guidelines-for-the-management-of-community-acquired-pneumonia-in-children-update-2011/> )

**Poster No. 157 - Medical Education, Management and Laboratory Medicine**

**Completion of Medical Communication Sheets in Rotunda NICU + SCBU**

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**Aims:** Patient doctor communication is a vital part of a high quality healthcare system. Parents of new born babies must be kept informed about the condition of their little ones and proper documentation of all these communications is vital. The medical communication sheet AKA “Green sheet” was introduced in NICU + SCBU of Rotunda hospital, Dublin 3 years ago to document all communications with parents.

**Methods:** A retrospective chart review of patients who were admitted to NICU + SCBU of Rotunda hospital during a 6 week time frame (Mid August – End September 2016) was carried out. Use of communication sheet, documented discussions elsewhere in clinical notes, grade of doctor writing these discussions and duration of stay of patient was noted.

**Results:** A total of 76 charts were reviewed. Green sheet was enclosed in patient’s chart with communication entries in 9/76 patients (11.8%). Among which consultants documented in this sheet in 67% of cases and in 22% it was written by registrars. On the other hand, these communications were documented in clinical notes in 24/76 cases (31.6%), here again consultants wrote the communication details in majority cases (58%).

**Conclusion:** Communications were three times more documented in clinical note area (pink sheet) as compared to the communication sheet (green sheet) which was specifically put in charts for this purpose. Most of the communications in green sheet as well as clinical notes were written by consultants and most registrars / NCHD’s usually used the clinical note area to document discussions. Short stay patients were most affected. Results were disseminated and presented in bi-annual audit in Rotunda hospital the importance of the proper use of this communication sheet. It is planned to do a re-audit it in 2017/18.

Patient doctor communication sheet NICU, Rotunda hospital Dublin, implemented in 2014.

**Poster No. 158 - General Paediatrics**

**IS IT A TUMOUR? AN UNUSUAL PRESENTATION OF AN ACUTE UNILATERAL INFLAMMATORY CEREBELAR LESION IN A NINE YEAR OLD BOY.**

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**AIM:** Acute cerebellitis is a rare inflammatory syndrome often characterised by severe headache, vomiting and decline in consciousness. Acute cerebellar signs including ataxia and dysmetria are common. We present a case of a 9 year old boy with progressive headache without cerebellar signs but with very abnormal neuro-imaging.

**METHOD:**

**Case:** A previously well 9 year old boy presented to the Emergency Department with a history of severe, sharp frontal headache for 6 days. The headache was waking him from sleep. He had associated episodes of vomiting and visual disturbances. There was no history of rash or fever. Full neurological examination including cerebellar examination was normal.

**RESULTS:** Routine blood investigations including inflammatory markers were normal. CT brain showed a focus of attenuation in the right cerebellum suggestive of a space occupying lesion. MRI brain confirmed a right cerebellar hemisphere lesion with minor mass effect and effacement of the fourth ventricle. The patient was transferred to a neurosurgical facility for further assessment. The headache worsened. He

was commenced on a course of systemic steroids. He underwent cerebellar tissue biopsy which showed low grade glioma favouring pilocytic astrocytoma, however, confirmatory testing was negative. A repeat MRI in 6 weeks was advised. It showed a decrease in signal abnormality involving right cerebellum but persistent T2 hyperintensity likely reflecting gliosis with volume loss and resolution of previously seen mass effect. The overall imaging appearances reflected sequelae of cerebellitis.

**CONCLUSION:** Acute cerebellitis without cerebellar signs is unusual in children. It can occur as a primary infection or post-infectious or post-vaccination disorder. A wide range of infectious pathogens have been implicated. The course of the disease ranges from benign self-limiting disease to fulminant disease. Our case is interesting and unusual due to the absence of neurological signs including gait disturbance which is present in 95.8% of cases.

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### Poster No. 159 - General Paediatrics

#### Common things are commonly misunderstood ...

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**Case report:** Discussion of a child with severe undiagnosed Coeliac Disease; including his presentation, investigations (laboratory and radiological) and diagnosis.

We present a case of a 3 years old boy who was admitted with progressing lethargy, abdominal distension, poor feeding and irritability around feeds. On examination he was pale, irritable and had gross abdominal distension and severe muscle wasting. Baseline investigations revealed that his haemoglobin was 3.2 g/dl (microcytic, hypochromic anaemia) with a ferritin of 3 ug/L.

Background history was of severe, treatment resistant constipation and feeding difficulties for the past 2 years. There was no reported weight loss, however he failed to gain any weight over the previous 6 months, with both height and weight below the 3<sup>rd</sup> centile. It was reported that coeliac disease had been excluded by testing performed in primary care.

Radiological investigations included an Abdominal US and then a CT abdomen that showed jejunal wall thickening. The CT findings are considered to be the highly suggestive of severe coeliac disease, although these radiological signs are rarely seen as the diagnosis is often made in the community. On further review of his investigations, it became apparent that the testing in primary care was an IgE to wheat level which is not diagnostic of coeliac disease. Diagnosis was confirmed by tissue transglutaminase level of 93 u/ml (0 - 6.99) and duodenal biopsies.

**Conclusion:** Although coeliac disease is a very well recognised condition, there is a real misunderstanding around the symptoms and diagnosis, even among health care professionals. The aim of this study was to highlight the delay in diagnosing this common disease. It is estimated that 1 in 100 individuals in Ireland have coeliac disease however only 1 in 300 individuals are tested.

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**Poster No. 160 - Medical Education, Management and Laboratory Medicine**  
**ACCURATE ESTIMATION OF CAPILLARY REFILL TIME: IS IT MISSION IMPOSSIBLE?**

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**Introduction:**

Capillary refill time (CRT) is an assessment tool routinely used to evaluate circulatory status and the diagnosis of shock and dehydration.

**Aim:**

Controversy still surrounds the usefulness of measuring CRT as part of the assessment of unwell children. The purpose of this literature review was to evaluate:

- 1- Factors that influence the measured value of CRT.
- 2- Normal range of CRT.
- 3- Role of CRT as a diagnostic tool in children.
- 4- Reliability of CRT.

**Methods:**

A literature review was undertaken Using databases such as PUPMED, MILDLINE; The literature was searched up to date. A total of 21 articles were included.

**Results:** Four studies examined the site of CRT in children and neonate. Measurements made on the lower extremities tend to result in longer times than those made on the upper extremities, head or chest.

CRT was found also be affected by the duration of pressure, and the ambient and skin temperatures, with longer duration of pressure and lower temperatures resulting in longer CRTs.

Neonates have variable normal CRT; with upper limit of 5-7s. In healthy children, a CRT of  $\leq 2$ s should be expected when measured on the finger. If the foot or chest is used for assessment, CRTs of  $\leq 4$ s should be considered normal.

The diagnostic value of CRT was examined in nine studies. Most of the studies emphasis the need to use combination of signs in prediction of dehydration and serious illness.

The literature suggests that there is no good agreement when different observers measure CRT and was better for normal values and clearly abnormal values.

Several different methods of measuring CRT automatically have been described. One potential approach uses digital videography. DCRT was found to more accurately predict the presence of significant dehydration compared with clinical assessment.

**Conclusion:**

Further studies of use of new technologies to improve the measurement and detection of CRT are warranted to decrease variability.

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## Poster No. 161 - Medical Education, Management and Laboratory Medicine

### A QUALITATIVE AND QUANTITATIVE ASSESSMENT OF THE PAEDIATRIC INTERNSHIP AT UNIVERSITY HOSPITAL LIMERICK OVER 30 MONTHS

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**Aims:** To review the literature and identify studies looking at the educational value of paediatric training programmes in Ireland at internship level. To evaluate the experiences of the paediatric internship program at UHL.

**Methods:** A systematic review was conducted to identify studies of Irish paediatric training. A retrospective audit of the paediatric internship training programme at UHL was conducted. Data collected included overall experience, merits and deficiencies in training and research outputs. The study population comprised all doctors who have completed or are currently in their paediatric internship at UHL, since July 2015 (N=20).

**Results:** 283 studies were retrieved for systematic review. Following application of predefined exclusion criteria, 7 studies were reviewed and included. No studies referred to the training of paediatric interns in Ireland. The results of this systematic review include 78% satisfaction rate with the Irish paediatric higher specialist training (HST) scheme<sup>1</sup>. Negative experiences in HST training included: failure to protect time for research<sup>3,1</sup>, excessive clinical service and poor monitoring of trainers<sup>3</sup>.

Preliminary data on UHL paediatrics interns indicate that 73% describe excellent paediatric internship experience. 54% described the other paediatric NCHDs as excellent mentors and 73% felt well-supported in clinical decision making. Deficiencies in training were identified as: a lack of responsibility (64%); wanting on-call shifts (100%); wanting more paediatric intern posts at UHL (60%). Most interns participated in clinical audit (50%) or research projects (71%). Every participant remains interested in pursuing a career in paediatrics and found their paediatrics intern post helpful in informing their career decision.

**Conclusion:** This is the first study of its kind in Ireland. To optimise the quality of training of Irish paediatric interns, ongoing local and national quality improvements are required. More paediatrics internship opportunities at UHL should be explored, due to the high demand and excellent experiences of interns at UHL.

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#### **Poster No.162 - General Paediatrics**

#### **STUDY OF PAEDIATRIC NEGATIVE APPENDICECTOMY RATES, PATHOLOGIES, RADIOLOGY AND BIOCHEMISTRY AT A TERTIARY CARE CENTRE, IRELAND.**

DM O'Sullivan<sup>1</sup>, S Abd Elwahab<sup>1</sup>, C Sharkey<sup>1</sup>, E Kavanagh<sup>1</sup>, L Browne<sup>1</sup>, A McCann<sup>1</sup>, D Byrnes<sup>1</sup>, A Lal<sup>1</sup>, A Lowrey<sup>1</sup>, A Merrigan<sup>1</sup>, S Tormey<sup>1</sup>

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**Introduction:** The diagnosis of acute appendicitis is challenging in the paediatric population.<sup>(1)</sup> The literature is relatively deficient in describing paediatric negative appendectomy (NA) rates and pathology.

**Aims:** To review literature for paediatric NA, identify local NA rates with regard to age, gender, histological diagnosis, and radiology.

**Method:** A systemic review was conducted using appropriate MESH terms and PRISMA guidelines. Inclusion criteria included paediatric studies (<16 years) that described NA rates, within the last five years. A simultaneous retrospective audit was undertaken to examine the histological and radiological records of paediatric appendectomies at UHL from 2010 to 2016.

**Results:** Of 723 initial sourced articles, 19 were included. The overall international mean rate for NA was 7.8%; males higher than females (9.08% vs 7.58%). Younger age was associated with NA: 15.35% in <5 years old versus 3.03% in 5-10 years. Our local UHL NA rate was 31.3% out of total 1325 paediatric appendectomies. The histology of NA showed pathologies other than inflammation including: lymphoid hyperplasia, faecolith and/or oxyuriasis. Interestingly 22.7% (n=301) had ultrasound scans (US). US was inconclusive in 81% (n=243). Biochemistry markers were analysed for diagnostic capabilities.

**Conclusion:** NA was relatively common in UHL compared to the international figures. Considering signs like pruritus ani and eosinophilia could aid clinical diagnosis. US had very low sensitivity in this cohort, and CT was not rarely utilised. Considering CT in these patients may reduce NA rate. Further research into the predictive capabilities of the biochemical markers, as outlined in this study sample and early Paediatric Consultant involvement in this cohort may decrease the negative appendectomy rates at UHL.

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#### **Poster No. 163 - Medical Education, Management and Laboratory Medicine**

#### **PROMOTING TECHNOLOGY ENHANCED LEARNING: ASSESSING VIEWS AND EFFICIENCY OF MOBILE PHONES IN CLINICAL PRACTICE**

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**Aims:** Technology-enhanced learning, specifically the use of mobile devices by Healthcare professionals has transformed many aspects of clinical practice.<sup>1</sup>

Some healthcare organisations are reluctant to advocate the staff use of mobile phones due to the risks associated with interference of medical equipment, infection control concerns, and reported parental complaints.

Mobile devices provide a multitude of benefits for clinical staff including increased access to useful apps such as drug-dose calculators, and other validated point-of-care tools, which are of high educational value and have been shown to support better clinical decision making and improved patient outcomes.<sup>2</sup>

**Methods:** We designed a survey assessing parental and staff perception on the use of mobile phones, using a five point Likert scale. 40 staff and 40 carers participated in the questionnaire. Following this, we created two clinical scenarios assessing administrator and prescriber performance. We assessed length of time to complete task and degree of accuracy, with and without mobile phones.

**Results:** 38/40 (95%) parents and 39/40 (97%) staff members felt that healthcare professionals should be allowed to use mobile technology in a clinical environment.

For the drug administration scenario (performed by nursing staff), all participants were quicker using mobile phone assistance. The average length of time was 82 seconds quicker.

For the prescriber scenario (performed by medics and non-medical prescribers), again all participants were quicker using mobile phone aide, with an average length of 86 seconds quicker.

Accuracy of 100% was maintained in both cohorts in each scenario.

**Conclusion:** Despite previous reported parental concern, this survey highlights the strong carer support for healthcare professionals appropriately using mobile phones in clinical areas. Staff were similarly keen for the use of mobile technology to aid their practice.

We have demonstrated an improvement in efficiency of performing clinical tasks with the assistance of mobile phones, ensuring accuracy was maintained. The appropriate use of mobile phones promotes well-informed, safety-conscious, technology-assisted, effective clinical care.

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## **Poster No. 164 - Medical Education, Management and Laboratory Medicine**

### **WHATSAPP DOC?**

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**Introduction:** Much interest has arisen around the use of smartphones, tablet devices and related apps in the healthcare context. It has been suggested that increasing numbers of healthcare professionals are using these technologies in the workplace. WhatsApp use for clinical work is ubiquitous at UHL, Ireland, UK (1) and further afield.

**Aims:** To collect objective data regarding WhatsApp usage and the current handback system at UHL among the intern cohort.

**Objectives:** We wanted to assess the type of patient data being sent on WhatsApp, to assess risky phone behaviours and to outline the risks associated.

**Methods:** We used a questionnaire to collect objective data on WhatsApp usage, patient information, physician stress and the UHL handback system. This was handed out during lunchtime teaching sessions to the intern cohort.

**Results:** We had a total response rate of 80% (N=41). All respondents had a WhatsApp account and used a group chat at UHL for clinical work. Nearly 20% of these groups included consultants. We found that 97% of interns send sensitive patient information and don't ask patient permission, that 68% are concerned about sharing patient information on WhatsApp at work but yet 90% feel that they cannot perform at their best without this instant messenger. We found that 95% of interns feel it is safer for patients if everyone on the team uses WhatsApp. When assessing risky phone behaviours we found that 30% have lost their phone within the last year and 5% within last week.

**Conclusion:** The solution to these problems is a physician tailored, safe and secure, real-time instant messaging system with added features such as an improved handover system.

(1) The ownership and clinical use of smartphones by doctors and nurses in the UK: a multicentre survey study. Mohammad H Mobasheri et al. BMJ Innovations October 2015

**Poster No. 165 - Medical Education, Management and Laboratory Medicine**  
**COUNTING THE COSTS, DOES IMPROVING KNOWLEDGE OF LABORATORY COSTS INFLUENCE**  
**DIAGNOSTIC PATHOLOGY ORDERING PRACTICES AT UNIVERSITY HOSPITAL LIMERICK?**

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**Introduction:** It is well recognised that 70% of critical medical decisions depend on laboratory data and much emphasis to date on the streamlining of diagnostic ordering has been on diagnostic suites of testing for various conditions with little consideration of the cost involved in terms of consumables, equipment and technical expertise.

**Aims:** To both evaluate the current knowledge of laboratory costs amongst the intern cohort at UHL and to ascertain if an educational intervention can impact on ordering laboratory tests with a resultant cost benefit.

**Objectives:**

1. Interns' opinions on the importance of reducing laboratory costs.
2. Intern estimation of Haematology, Biochemistry and Serology laboratory test costs.
3. Cost analysis of all laboratory tests before and after an educational intervention.

**Methods:** The number of blood tests ordered over a three month period pre-intervention was ascertained by a Cognos search on the laboratory information management system (LIMs) to get a baseline number of tests ordered per week. The associated cost of each test was then applied to calculate the average cost of specific lab tests per week.

An educational intervention was undertaken using a multi-modal approach; an initial questionnaire to collect objective data on intern opinions and knowledge regarding laboratory testing and costs followed by a teaching session using PowerPoint.

A further Cognos search was undertaken to obtain the number of blood tests ordered post the educational intervention. Data collection and data analysis was conducted using Excel and SPSS v23 respectively.

**Results:** Intern knowledge was very poor regarding the cost of each test prior to the educational intervention.

Data illustrates that the number of tests ordered after the educational intervention were not markedly reduced.

**Conclusion:** This study suggests that the intern cohort is a potential group that would benefit from an educational campaign to lower laboratory tests and costs at UHL.

**Poster No. 166 - Medical Education, Management and Laboratory Medicine**  
**INTO THE BLENDER: INTEGRATING CASE BASED LEARNING (CBL) E-LEARNING INTO A TRADITIONALLY TAUGHT PAEDIATRIC ROTATION**

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**Aims:** Blended learning is using E-learning in conjunction with traditional teaching methods. It has been shown to be superior to traditional teaching methods (1). E-learning is a rapidly evolving area within medical education (2,3,4).

Our aim was to create our own online reusable learning resources (RLR's) using a case based learning (CBL) model and thus adopted a blended learning approach. CBL is known to promote deep and active learning (5,6,7). We identified a learning need within our students for reliable online 'paediatric-specific' RLR's

**Methods:** All scenarios were scripted and programmed by our academic staff using the software Articulate Storyline 2. We chose this software as it is available via our institution and ongoing technical support and training is available.

We analysed our curriculum and identified emergency management as being an area that was high yield for students. We created 6 CBL scenarios on emergency management e.g. status asthmaticus, diabetic ketoacidosis etc.

All cases were reviewed by a consultant to ensure content was up to date and accurate. Each case took approximately 8 hours to create and produces approximately 1 hour of learning time.

These resources were launched in April 2017 and students completed a questionnaire upon completion of their rotation. We have only assessed our students' engagement with the resource.



**Results:** 96% of students completed our questionnaire. 92% used the RLR's at least once per rotation with 70% using them on multiple occasions. 86% would recommend the resource to future students.

**Table 1** demonstrates why students liked using the resource and how they used it

**Conclusions:** Overall our students have engaged with the RLR's and blended learning approach. They enjoy them and find them relevant to their study.

These RLR's are also applicable for post graduate trainees in paediatrics, general practice or as stand-alone CPD modules

Future research is needed to assess how these resources enhance students learning and overall confidence in managing emergencies.

Reason for liking the resource	
Relevant	80%
Enjoy working through a case	70%
Easy to use	63%
Enjoy using E-Learning resource	51%
Reason to use resource	
Supplement their learning	66%
Check their knowledge	46%
In place of book learning	3%

1) Liu, Qian et al (2016). "The Effectiveness of Blended Learning in Health Professions: Systematic Review and Meta-Analysis." Ed. Panagiotis Bamidis. Journal of Medical Internet Research 18.1 PMC. Web. 9th June 2017. 2) Triola MM, Huwendiek S, Levinson AJ, Cook DA (2012). New directions in e-learning research in health professions education: Report of two symposia. Med Teach. 34(1):e15-20. 3) Ruiz, J.G., Mintzer, M.J. and Leipzig, R.M. (2006) 'The Impact of E-Learning in Medical Education', Academic Medicine, 8(3), pp. 207-212 [Online]. Available at: [\[pedago.urv.cat/site\\\_media/papers/The\\\_Impact\\\_of\\\_E\\\_Learning\\\_in\\\_Medical\\\_Education.pdf\]\(http://pedago.urv.cat/site\_media/papers/The\_Impact\_of\_E\_Learning\_in\_Medical\_Education.pdf\)\(Accessed: 9th June 2017\). 4\) Khasawneh, R., Simonsen K., Snowden, J., Higgins J. and Beck G \(2016\) 'The effectiveness of e-learning in pediatric medical student education', Medical Education Online, 21\(29516\), pp. \[Online\]. Available at: <http://dx.doi.org/10.3402/meo.v21.29516>\(Accessed: 9th June 2017\). 5\) Schmidt H \(2000\). Assumptions underlying self-directed learning may be false. Med Educ 34\(4\):243-5. 6\) Wood, D.F. \(2003\) 'ABC of learning and teaching in medicine: Problem based learning', BMJ, 326\(7384\), pp. 328-330. 7\) Abraham et al \(2008\) 'Learning approaches of undergraduate medical students to physiology in a non-PBL- and partially PBL-oriented curriculum', Advances in Physiology Education, 32\(1\), pp. 35-37.](http://late-</a></p>
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**Poster No. 167 - Neonatal**

**CASE REPORT OF CONGENITAL PULMONARY AIRWAY MALFORMATION (CPAM) IN NEWBORN**

**N Abdul Halim<sup>1</sup>, W I Idris<sup>1</sup>, M Akram<sup>1</sup>**

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15 days old baby presented to PAU with acute respiratory distressed on a background of CPAM diagnosed antenatally and delivered in tertiary centre in Dublin. He was discharged home with conservative management.

He was having difficulties in breathing and feeding for one day prior to presentation. On arrival, he was clinically in respiratory distressed and requiring oxygen supplement to maintain his oxygen saturation above 94%.

Examination revealed displaced apex beat. Heart sounds was heard loudest on the right thorax. Auscultation of the thorax noted reduced air entry on the left side and normal breathe sound of the right side. Abdominal examination was unremarkable.

CXR showed left lung hyperinflation and hyperlucent consistent CPAM. There was mediastinal shift to the right. The right lung looked clear.

His case was discussed with tertiary centre in Dublin, patient was advised to be commenced on CPAP and transferred for further management. He was retrieved by the Neonatal Transport Team to PICU in Crumlin.

**Case discussion:** Congenital pulmonary airway malformation (CPAM), previously known as congenital cystic adenomatoid malformation (CCAM), is a rare developmental anomaly of the lower respiratory tract.

Affected patients may present with respiratory distress in newborn period or may remain asymptomatic until later in life. Many cases are detected by routine prenatal ultrasound examination.

The incidence in the range of 1 per 8300 to 35,000 live births. CPAMs are hamartomatous lesions that are comprised of cystic and adenomatous elements arising from lower respiratory tract.

CPAMs are divided into five major types (type 0, 1, 2, 3 and 4) based upon the size of the cysts and their cellular characteristics. Lesions are usually limited to one lobe, but infrequently they can involve multiple lobes. Surgical resection is the definitive treatment.



[https://www.uptodate.com/contents/congenital-pulmonary-airway-cystic-adenomatoid-malformation?source=search\\_result&search=ccam&selectedTitle=1~20#references](https://www.uptodate.com/contents/congenital-pulmonary-airway-cystic-adenomatoid-malformation?source=search_result&search=ccam&selectedTitle=1~20#references)

**Poster No. 168 - Neonatal**

**WHEN ARE “STICKY EYES” A NEONATAL EMERGENCY?**

**NEONATAL GONOCOCCAL CONJUNCTIVITIS: CASE REPORT AND LITERATURE REVIEW**

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<sup>1</sup>Department of Neonatology, Cork University Maternity Hospital , Cork, Ireland

<sup>2</sup>Department of Ophthalmology, Cork University Hospital, Cork, Ireland

**Background:** Ophthalmia neonatorum as a result of *Neisseria Gonorrhoeae* infection is rarely encountered in modern neonatal practice. It is, however, a sight threatening medical emergency and an awareness of this pathogen, the consequences of infection and up to date management strategies is paramount. We present the first reported case from a maternity hospital in Ireland.

**Aims:** The objective of this report was to describe a case of neonatal gonococcal conjunctivitis and review the literature relating to this condition.

**Method:** We present the case of a two day old term infant, noted to have bilateral purulent exudate and periorbital oedema, more pronounced on the right side. An ophthalmological assessment revealed right haemorrhagic conjunctivitis and left conjunctival injection with no corneal involvement or evidence of endophthalmitis. A history of paternal genital infection requiring antibiotics during pregnancy was given, however the infant’s mother was not investigated or treated. Investigations included eye swabs for culture and sensitivity, Chlamydia and Gonococcus PCR. Empiric treatment was commenced with IV Cefotaxime, PO Azithromycin and Chloromycetin ophthalmic drops. *Neisseria Gonorrhoeae* was grown and RT-PCR was also positive for *N. Gonorrhoeae*. Clinical improvement was noted within 12 hours of initial therapy and had completely resolved by 48 hours. Antibiotic therapy was rationalized and baby was treated for three days with systemic antibiotics. Maternal swabs were positive for *N. Gonorrhoeae* and both parents received treatment.

**Conclusion:** The incidence of gonorrhoea notifications has been increasing among the Irish population. From 2009 to 2014 there was a 200% increase in notifications<sup>1</sup>. This reflects European trends where there was a 19% increase in gonorrhoea cases between 2013 and 2014 with 55% of cases occurring in the young heterosexual population<sup>2</sup>. Potential consequences of gonococcal infection include keratitis, endophthalmitis, globe perforation and visual loss. An awareness of this serious neonatal complication is necessary as prompt recognition and empiric treatment are sight saving interventions.

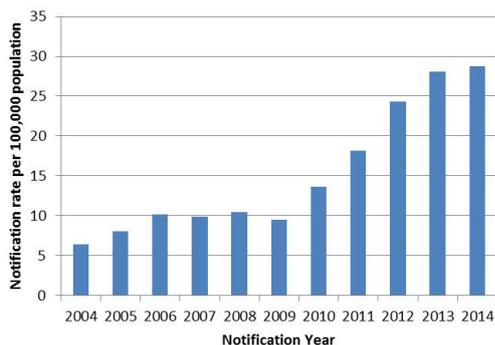


Figure 1: Notification rates per 100,000 for gonorrhoea in Ireland 2004



Figure 2: Bilateral purulent exudates and peri-orbital oedema presenting at 62 hours of life

References 1 Health Protection Surveillance Centre, Ireland. National Guidelines for Prevention and Control of Gonorrhoea and for minimizing the impact of antimicrobial resistance in *Neisseria Gonorrhoeae*. Available at:<http://www.hpsc.ie/AZ/HIVSTIs/SexuallyTransmittedInfections/Gonorrhoea/Publications/File,15839,en.pdf> 2 Public Health England Sexually transmitted infections and Chlamydia screening in England, 2014. Health Protection Report 2015;9(22).

**Poster No. 169 - Neonatal**

**MEASUREMENT OF NEONATAL NOISE LEVELS AND NOISE REDUCTION IN NICU: A CASE STUDY**

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National Neonatal Transport Programme: Rotunda Hospital, Coombe Women & Infants University Hospital, National Maternity Hospital; Dublin.

**Aims:** Noise is an environmental hazard causing hearing loss, autonomic disturbances, behavioural and cognitive changes. Both peak and mean levels are harmful. Recommended safe sound pressure levels (SPL) in NICU should not exceed 45 dB, but some studies show levels above 50 dB, peaking at 105dB. We measured SPL in the NICU from the infant's perspective in the incubator and the efficacy of noise protective equipment.

**Methods:** A 4-channel input sound level meter connected to 3 microphones measured SPL in dBA. A mannequin was placed in an incubator and SPLs were recorded at the ear, inside the incubator and outside the incubator. After baseline readings (**Standard NICU**) were obtained, 3 types of noise protection were used and noise levels measured again: **Neonatal MiniMuffs**, Noise Protective Ear Muffs (**NPEM**) and Active Noise Cancelling (**ANC**) Headphones. 15 minutes of recording was performed in all 4 situations and transferred to specialist software for analysis.

**Results:** Peak SPL (**Lpeak**) and total sound energy (**Leq**) were measured (dBA). Mean **Lpeak** were; 59.5 (at ear), 66.7 (inside incubator) and 73.8 (outside incubator). The mean **Leq** were 44.1 (at ear), 52.8 (inside incubator) and 58.9 (outside incubator). All noise protective equipment reduced SPLs, and the percentage reduction achieved in noise level was calculated. The mean % **Lpeak** detected: 80.8 (**standard NICU**), 83.6 (**Minimuffs**), 78.1 (**NPEM**) and 74.8 (**ANC**). All reductions in noise levels were statistically significant ( $p < 0.000$ ) for both **Lpeak** and **Leq**.

**Conclusion:** Noise levels in the NICU detected at the neonatal ear reach over 60 dB-A, which may be harmful. Neonates in an incubator are exposed to 80% of the environmental peak SPL and 75% of **Leq** during standard care. Noise protective equipment reduces the noise experienced by the neonate and should be further evaluated.

**Poster No. 170 - Neonatal**

**WHITE CELL COUNTS IN EARLY ONSET NEONATAL SEPSIS – ARE THEY USEFUL?**

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**Aims:** We compared newborn infants with clinically significant positive blood cultures to a control group of negative blood cultures in order to establish the usefulness of WCC values in predicting Early-Onset clinically significant bacteraemia. Previous studies have shown that the predictive value of a WCC in neonatal sepsis is low(1).

**Methods:** All positive blood cultures less than 48hours from birth in infants born in the Rotunda from 2001 to 2017 were identified. WCC and neutrophil values at the time of culture were recorded, and compared to a similar cohort of infants aged less than 48hours with negative blood cultures from 2017. Data was analysed using MedCalc.

**Results:** 105 positive blood cultures were returned for the time period. Six did not have an FBC result performed close to the time of culture (N=99). These were compared to a control group of 269 negative blood cultures.

Table 1 demonstrates the results with Receiver Operator Characteristic (ROC) analysis when a cut-off of  $WCC < 5 \times 10^9/L$  is compared to one of  $< 9 \times 10^9/L$ .

Analysis of the mortality rate amongst positive cultures revealed that a  $WCC < 5 \times 10^9/L$  gave an Odds Ratio (OR) for death of 3.59 (CI 1.12-11.5;  $p < 0.05$ ) amongst infants with positive cultures.

**Conclusion:** Our research has demonstrated the potential benefit of a Full Blood Count in the identification and management of EOS. We suggest that the WCC can be used to stratify infants into at-risk groups and define management accordingly. If the WCC is less than 5 at time of culture then these infants are at a high risk of clinically significant bacteremia and could merit more intensive care.

A WCC less than  $5 \times 10^9/L$  is associated with an increase in the Odds Ratio for mortality in EOS. This information can aid clinicians in managing infants with bacteremia.

1. Use of the complete blood cell count in early-onset neonatal sepsis. Hornik CP, Benjamin DK, Becker KC, Benjamin DK Jr, Li J, Clark RH, Cohen-Wolkowicz M, Smith PB. *Pediatr Infect Dis J.* 2012 Aug;31(8):799-802

### **Poster No. 171 - Sub-Specialty and Special Interest Paediatrics**

#### **TIME TO ANTIBIOTICS IN PAEDIATRIC FEBRILE NEUTROPENIA - EXPERIENCE OF A REGIONAL UNIT**

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#### **Aim:**

The aim of this study was to identify the mean Time To Antibiotics (TTA) for children with cancer who present with Febrile Neutropenia to a regional paediatric unit, and explore the barriers to achieving a TTA  $< 60$  minutes. Research has shown an increase in mortality and adverse outcomes when delays occur (M, 2013).

#### **Methods:**

All eligible children admitted with Febrile Neutropenia between 1<sup>st</sup> January 2016 and 31<sup>st</sup> March 2017 were identified. Both the median and logarithmic mean times to clinical assessment, investigation and TTA were calculated using MedCalc. Medical staff completed a survey to identify barriers to achieving the TTA.

#### **Results:**

Ten children were admitted with febrile neutropenia during the timeframe of the study. Three children did not have their arrival time recorded, therefore were excluded (N=7). All were successfully treated. The mean time to phlebotomy was 35 minutes (median 25; range 5-135). The mean time to clinical assessment was 72 minutes from arrival (median 60; range 10-135mins), and mean time to peripheral culture was 77 minutes (median 70; range 20-155). Our primary outcome, Time to Antibiotics, was calculated as a mean of 144 mins (median 135; range 60-225).

20 medical staff members were surveyed. 19/20 (95%) agreed that Febrile Neutropenia was a medical emergency. 17/20 (85%) correctly identified the target of Time To Antibiotics (TTA) as  $< 60$  minutes. Respondents identified workload and lab turnaround times as factors adversely affecting the TTA.

#### **Conclusion:**

A TTA of  $< 60$  minutes can be difficult to achieve. These results suggest an opportunity to improve the timeliness of clinical assessment and peripheral culture. The views of nursing staff and parents would provide further insight.

This study is limited by the small sample size and lack of standard data recording – specifically related to timing of task completion.

M, F. (2013). Prompt administration of antibiotics is associated with improved outcomes in febrile neutropenia in children with cancer. *Pediatric Blood & Cancer*, 60(8), 1299-306.

**Poster No. 172 - Neonatal****The Impact of Maternal Gestation Hypertension and Antihypertensive Use on Neonatal Myocardial Performance.**

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<sup>4</sup>Department of Paediatric Cardiology, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland.

**Aims** Assessment of myocardial performance in neonates using advanced techniques such as deformation imaging and rotational mechanics has gained considerable interest. Their applicability in elucidating abnormal myocardial performance in various clinical scenarios is becoming established. We hypothesise that infants born late preterm / term to mothers with gestational hypertension (GH) may have impaired left (LV) and right (RV) ventricular performance during the early neonatal period. We aimed to assess LV and RV function using echocardiography in infants born to mothers with GH and co

**Methods** Term infants (>36<sup>+6</sup> weeks) born to mothers with GH underwent assessment to measure biventricular function using ejection fraction (EF), deformation imaging, LV rotational mechanics [apical rotation, basal rotation, twist, twist rate and untwist rate], and RV-specific functional parameters [tricuspid annular plane systolic excursion (TAPSE) and fractional area change (FAC)] over the first 48 hours of age. A control group comprising infants born to healthy mothers was used for comparison.

**Results** Fifteen infants with maternal GH and 30 age matched controls were enrolled. GH infants exhibited no difference in birthweight, LV or RV length but had lower EF (54% vs. 61%, p<0.01), LV global longitudinal strain (-20% vs. -25%, p<0.01), and LV twist (11° vs. 16°, p=0.04). There were no differences in any of the RV functional parameters.

**Conclusion** Infants born to mothers with GH exhibit lower LV function when compared to healthy controls while RV function appears to be preserved. This relationship warrants further exploration in a larger cohort.

**Table 1: Maternal Characteristics and infant birth demographics**

	Gestational Hypertension n=15	Control n=30	p
Maternal age (Years)	32 [30 – 35]	29 [25 – 32]	0.03
Maternal weight (Kg)	71 [61 – 81]	63 [58 – 78]	0.61
Maternal Body Mass Index	26 [24 – 28]	24 [22 – 28]	0.30
Blood Pressure at Booking*			
Systolic (mmHg)	128 [115 – 133]	125 [113 – 129]	0.06
Diastolic (mmHg)	73 [68 – 85]	69 [66 – 76]	0.07
Ethnicity			
Caucasian	13 (87)	27 (90)	0.82
African	0 (0)	7 (7)	
Asian	2 (13)	1 (3)	
Smoker	0 (0)	6 (20)	0.16
Gestational age (weeks)	39.4 [38.8 – 40.5]	40.0 [39.7 – 41.1]	0.19
Birthweight (grams)	3390 [2910 – 3560]	3515 [3210 – 3900]	0.21
Male	7 (47)	18 (60)	0.53
Caesarean Section	8 (53)	4 (13)	0.01
5 Minute Apgar Score	10 [10 – 10]	10 [10 – 10]	0.78
Cord pH	7.31 [7.26 – 7.35]	7.29 [7.26 – 7.33]	0.81
Neonatal hypoglycaemia	3 (20)	0	0.03

Data presented as medians [inter-quartile range] or absolute value (%). \* between 14 – 16 weeks gestation.

**Table 2: Myocardial function in the two groups.**

	<b>Gestational Hypertension n=15</b>	<b>Control n=30</b>	<b>p</b>
<b>Time of Scan (hours after birth)</b>	27 [22 – 34]	27 [14 – 42]	0.94
<b>Heart Rate</b>	128 (9)	119 (15)	0.07
<b>PDA and Preload Surrogates</b>			
PDA Presence	1 (7%)	9 (31%)	0.13
PDA Diameter (mm)	2.8	2.0 (0.6)	0.22
LA:Ao	1.4 (0.3)	1.2 (0.1)	0.1
Mitral Inflow E:A ratio	1.1 (0.2)	1.1 (0.2)	0.98
Mitral Inflow VTI	8.4 (1.2)	8.3 (1.9)	0.94
<b>LV Dimensions</b>			
MV annular diameter (mm)	9.5 (1.3)	9.4 (1.1)	0.77
LVEDD (mm)	18 (2)	18 (2)	0.39
Septal wall thickness (mm)	2.7 (0.5)	2.6 (0.4)	0.41
LV Posterior wall thickness (mm)	2.2 (0.6)	2.3 (0.6)	0.53
LV Length (mm)	27 (2)	28 (2)	0.28
<b>LV Function</b>			
Ejection Fraction (%)	54 (6)	61 (6)	<0.01
Global Longitudinal Strain (%)	-20 (2)	-25 (3)	<0.01
Global Longitudinal systolic SR (1/s)	-1.9 (0.4)	-2.0 (0.3)	0.25
Apical Rotation (°)	15 (5)	17 (5)	0.31
Basal Rotation (°)	4 (8)	0.9 (4.3)	0.25
Twist (°)	11 (8)	16 (6)	0.04
Twist Rate (°/s)	145 (58)	151 (47)	0.74
Untwist Rate (°/s)	-170 (84)	-188 (53)	0.43
<b>RV Function and Dimensions</b>			
RV Length (mm)	26 (3)	27 (2)	0.44
TV annular diameter (mm)	9.7 (1.5)	9.9 (1.4)	0.55
RV mid cavity diameter (mm)	12.6 (1.9)	12.9 (1.4)	0.54
TAPSE (mm)	8.7 (1.7)	8.4 (1.1)	0.57
RV Fractional Area Change (%)	26 (7)	25 (4)	0.18
RV Longitudinal Strain (%)	-23 (4)	-25 (4)	0.18
RV Longitudinal SR (1/s)	-2.0 (0.8)	-2.3 (0.8)	0.30

Values are presented as medians [inter-quartile range], means (SD) or absolute value (%). PDA: patent ductus arteriosus; LA:Ao: left atrial to aortic root ratio; MV: mitral valve; LVEDD: left ventricular end diastolic diameter; LV: left ventricle; SR: strain rate; RV: right ventricle; TV: tricuspid valve; TAPSE: tricuspid annular plain systolic excursion.

**Table 3: Association between Group assignment (Maternal GH vs. Control) and functional measurements adjusting for maternal age, infant birthweight mode of delivery, and patent ductus arteriosus.**

<b>Dependent Variable</b>	<b>Group assignment <math>\beta</math> coefficient*</b>	<b>p value</b>
<b>Global Longitudinal Strain</b>	0.42	0.02
<b>Ejection Fraction</b>	0.54	0.003
<b>LV Twist</b>	0.37	0.09

\* Standardised  $\beta$

**Poster No. 173 - Sub-Specialty and Special Interest Paediatrics****THE IDENTIFICATION OF SUBCLINICAL ENTERIC PROTEIN LOSS IN CHILDREN WITH UNIVENTRICULAR CIRCULATION FOLLOWING TOTAL CAVOPULMONARY CONNECTION**CR Breatnach<sup>1</sup>, A Cleary<sup>1</sup>, D Vincent, T Prendiville<sup>1</sup>, H Murchan<sup>1</sup>, K Crumlish<sup>1</sup>, CJ McMahon<sup>1</sup><sup>1</sup>Department of Cardiology, Our Lady's Children's Hospital, Dublin, Ireland.

**Aims** Protein Losing Enteropathy post Fontan palliation is associated with significant morbidity and mortality. To date, very little research has been carried out to improve early identification of enteric protein loss in these patients. We hypothesise that subclinical enteric protein loss may occur in patients post Fontan surgery.

**Methods** A cross sectional study was performed on 43 patients post Fontan surgery. We collected specimens of stool and blood from well patients, with no symptoms of protein losing enteropathy post Fontan. Stool samples were assessed for alpha one antitrypsin. The stool samples of two patients were discarded, leaving 41 stool samples. Blood samples were also collected to review albumin, C-reactive protein, liver and renal function.

**Results** Twenty eight (65 percent) of those enrolled were male. The median (IQR) age between Fontan and collection of study specimens was 3.5 (2-7) years. Two (5 percent) patients had elevated levels of alpha-1-antitrypsin. There was no correlation between blood biochemistry and elevated stool alpha-1-antitrypsin.

**Conclusion** Subclinical protein loss is rare in asymptomatic children after Fontan procedure with only 5 percent of patients having elevated stool alpha-1-antitrypsin but no other symptoms. These findings may relate to our small cohort size and the time to testing post cardiac surgery. Future longitudinal follow up studies should assess the ability of alpha-1-antitrypsin to provide earlier detection of protein losing enteropathy in asymptomatic patients post Fontan. Given the serious prognosis of protein losing enteropathy in this patient group further work is warranted.

**Table 1. Demographics and diagnoses of patients with fontan circulation.**

Gender	
Male	26 (63)
Female	15 (37)
Diagnosis	
HLHS	12 (29)
Tricuspid atresia	7 (17)
DORV	3 (7)
DILV	5 (12)
Pulmonary stenosis/atresia	8 (20)
Atrial isomerism	2 (5)
Other	4 (10)
Age at Fontan (years)	4 (3.1-5.3)
Weight at Fontan (kg)	15.2 (14.2-18.9)
Fenestration at Fontan	36 (84)
Fenestration open at stool sample	11 (25)
Saturations at discharge post Fontan (%)	87 (6.5)
Age at stool specimen collection (years)	8.3 (5.8-11.4)
Time from Fontan to stool specimen collection (years)	3.5 (2-7)

Values are presented as means (SD), medians [IQR] or absolute count (%).

**Table 2. Results of stool and blood sampling for study population.**

Samples	Results
Stool alpha-1-antitrypsin (mg/dl)	0.12 (0.06-0.17)
Albumin (g/L)	43 (3)
Protein (g/L)	69 (8)
CRP (mg/L)	6 (3)
Alkaline Phosphatase (IU/L)	230 (200-287)
Creatinine (mg/dL)	42 (12)
AST (IU/L)	37 (12)
ALT (IU/L)	24 (7)

Values are presented as means (SD) or medians [IQR].

## Poster No. 174 - Neonatal

### Determinants of the Need for Treatment in Premature Infants with Suspected Necrotising Enterocolitis

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**Background:** Necrotising enterocolitis is a devastating illness of the preterm and low birth weight infant, the risk of which is inversely related to the birthweight and gestational age. There is a possibility of the issue of over diagnosis and treatment of necrotising enterocolitis due to the fear of the overwhelming illness that can ensue. <sup>[1]</sup>

Studies have shown that when gut microbiota of a neonate is exposed to 48 hours of broad-spectrum antibiotics, there is a rise in pathogenic Proteobacteria and a fall in “good bacteria”. <sup>[2]</sup>

This leads us to believe that over-diagnosis of necrotising enterocolitis and subsequent treatment with antibiotics can be harmful and should be avoided where possible.

We aimed to assess the determinants of the need for treatment in premature infants with suspected necrotising enterocolitis resulting in a prolonged course of antibiotics in addition to discontinuation of feeds for the duration of the illness.

**Methods:** This was a retrospective review of all infants weighing less than 1500g admitted to the neonatal intensive care unit who underwent an abdominal radiograph for a clinical suspicion of NEC over a one year period (2016).

### Results

Forty-two infants with a median [IQR] gestation and birthweight of 26.2 [24.7 – 28.5] weeks and 820 [660 – 1065] grams respectively were enrolled:

- 21 infants who had an initial clinical suspicion of NEC did not receive treatment following normal radiology;
- 10 infants had confirmed NEC and continued treatment;
- 11 infants did not have evidence of NEC yet continued a full course of NEC treatment.

**Conclusion:** In this review, we identified that clinicians continue NEC treatment in a sizable proportion of infants who do not have radiological signs of NEC.

Only 20% of those defined as NEC had pneumatosis. They appear to be guided by clinical concerns and continue to do so despite the lack of objective evidence of the condition.

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## Poster No. 175 - Neonatal

### Respiratory Red: A rare association of persistent pulmonary hypertension of the newborn (PPHN) secondary to aspiration of maternal blood.

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**Introduction:** Aspiration of maternal blood by a newborn infant could result in respiratory distress due to secondary surfactant deficiency<sup>1,2</sup> and predispose infants to PPHN. This case highlights a rare presentation of PPHN in a term infant secondary to aspiration of maternal blood.

**Case report:** A term female infant weighing 2.9Kg was born to a 32-year old primigravida by emergency caesarean section for suspected uterine abruption. Intra-operatively placental abruption was confirmed with frank blood in amniotic fluid. There was no history of maternal drug exposure, septic screen was negative and no meconium noted in the amniotic fluid.

Infant required active resuscitation and intubation for poor respiratory effort and persistently low O<sub>2</sub> saturation. A significant amount of blood was aspirated from the trachea and stomach. She required respiratory support with high frequency oscillatory ventilation (HFOV) and FiO<sub>2</sub> of 100% for severe respiratory failure and hypoxaemia shown on her blood gas with an oxygenation index (OI) of 38. Surfactant (poractant alfa, Curosurf®) was administered and inhaled nitric oxide (iNO) at 20ppm commenced. Empiric antibiotic cover was started along with appropriate sedation. Chest X-rays showed widespread bilateral airspace infiltrate of fluctuating appearances consistent with possible aspiration of maternal blood. Diagnosis of PPHN was made based on clinical presentation with confirmatory echocardiography findings. A Second dose of surfactant was required after 8 hours, by 12 hours of life FiO<sub>2</sub> improved to 40%.

Infant was extubated on day three and was off respiratory support by day nine. She had an incidental systemic hypertension with a non-occlusive abdominal aortic embolus possibly secondary to UAC insertion. All microbial cultures were reported negative.

**Discussion:** To the authors' awareness this is one of the rare reported cases of PPHN secondary to maternal blood aspiration<sup>3,4</sup>. Our patient responded well to surfactant, HFOV and iNO. Baby had a good cardio-respiratory and short term neurodevelopment outcome.

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#### **Poster No. 176 - Neonatal**

#### **WEIGHT AND OFC GROWTH OF PRETERM BABIES FROM BIRTH TO TWO YEARS CORRECTED AGE COMPARED TO UK-WHO GROWTH STANDARDS**

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**Aim:** To quantify postnatal weight and occipitofrontal circumference (OFC) growth in infants born before 32 weeks gestational age (GA) from birth to 2 years corrected age (CA) and to compare those measurements to the UK-WHO growth standards.

**Methods:** This was a retrospective cohort study of babies born before 32 weeks GA between September 2014-February 2015. Weight and OFC measurements from day 1, 7, 14 and 28, discharge and outpatient clinic visits were obtained. Categorisation based on GA (very preterm: 28-31 weeks, extremely preterm: <28 weeks). A standard deviation score (SDS) was calculated for each measurement using the appropriate UK-WHO growth standard LMS values.(1)

**Results:** 59 subjects were included. At birth, the weight regression lines for the very and extremely preterm groups were just below the 50th centile. By day of life 7, both had dropped to between the 9th and 25th centiles. The very preterm line climbed to the 50th centile by 6 weeks CA. The extremely preterm line remained between the 9th and 25th centiles until 6 months CA. At 2 years CA, the very and extremely preterm weight lines were between the 50th and 75th, and 25th and 50th centiles respectively.

At birth, OFC lines were around the 25th centile. The very preterm line eventually climbed to the 75th centile by 6 weeks CA. The extremely preterm line fell to between the 2nd and 9th centiles by four weeks after birth, but rose to the 50th centile by 6 weeks CA. Between six weeks and 18 months CA, the very and extremely preterm lines lay between the 75th and 91st, and the 50th centiles respectively.

**Conclusions:** By two years CA, the cohort's weights and OFCs were in line with the UK-WHO growth standards. Small sample size and incomplete follow-up limit generalizability but findings agree with existing evidence showing that postnatal weight growth depends on gestational age at birth.(2)

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**Poster No. 177 - Neonatal**

**TIME MATTERS: AUDITING ASSESSMENT TIMES FOR NEONATES IN A PAEDIATRIC EMERGENCY DEPARTMENT**

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**Aim:** To assess how promptly neonates are assessed and treated in our emergency department.

**Methods:** A retrospective review of all neonates ( $\leq 28$  days old) attending our department over a 6-month period. Timestamps were obtained using the department's electronic recording system Symphony. Clinical information was obtained from patient charts where required. Guidelines for time to triage, time to clinician review, and time to antibiotics (where appropriate) were based on the National Emergency Medicine Report (NERP, 2012), the Irish Children's Triage System (ICTS) and NICE guidelines. Time to antibiotics was considered only for patients treated for suspected sepsis in the emergency department. Neonates who were admitted for observation and later started antibiotics were not included in this section.

**Results:** 95 neonates attended our department during this period. The average time to triage was 23 minutes, with 46% of patients triaged within 15 minutes. 97% of cases were allocated triage category 2, and 3% were allocated triage category 1. 29% of patients were assessed by a clinician within 10 minutes of triage, 47% within 10 minutes-1 hour, and 23% after 1 hour.

35 neonates were admitted, of which 6 received IV antibiotics for suspected sepsis in the emergency department (n=6). 2 patients received their first dose within 1 hour of clinician review, both of whom were clinically unwell at time of review. The remaining 4 patients were clinically well at time of clinician review and received antibiotics within a range of 1 hour 45 minutes to 6 hours after initial review. 5 neonates were admitted with localised skin and soft tissue infections and all received antibiotics within 2 hours of clinician review.

**Conclusions:** Current national and international best practice guidelines are not being met. Consideration should be given to devising specific guidelines for this vulnerable population in order to prioritise and expedite their care.

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**Poster No. 178 - Neonatal****SUSPECTED SEPSIS: AUDITING SEPSIS WORKUP RATES FOR CLINICALLY WELL NEONATES WITH SEPTIC RISK FACTORS****S Casey<sup>1</sup>**, T Corrigan, N Goggin<sup>1</sup>Paediatric Department, University Hospital Waterford

**Aim:** To assess the reliability of our septic risk factor algorithm for predicting rates of early-onset neonatal sepsis in a level 2 hospital.

**Methods:** A retrospective review of all septic workups (SWU) performed over a 4-month period. Inclusion criteria were clinically well neonates receiving SWU and intravenous antibiotics immediately after birth for septic risk factors with inadequate intra-partum antibiotics prophylaxis (IAP). Septic risk factors were defined as a maternal pyrexia in labour, maternal history of Group B Streptococcus colonisation (high vaginal swab and urine), prematurity  $\geq 34$  weeks' gestation, or Prolonged Rupture Of Membranes (PROM)  $> 18$  hours. IAP was considered adequate if given  $\geq 2$  hours prior to delivery. Exclusion criteria were clinical suspicion of sepsis or prematurity  $\leq 34$  weeks. All neonates receiving SWU in our unit are admitted to NICU for observation, therefore NICU discharge letters were used to collect data. The electronic lab system was used to confirm blood culture results.

**Results:** A total of 145 neonates were admitted to NICU during the investigation period, of which 62 (43%) met inclusion criteria. Of these, 50 patients (81%) received antibiotics for 48 hours until blood cultures were reported negative. The remaining 11 patients (18%) had antibiotics continued for 5-7 days for clinical concern.

3 patients had positive blood cultures, two for Coagulase Negative Staphylococci and one for Micrococcus Luteus. Only the latter case had antibiotics extended for 5 days.

The length of NICU admission varied from 12 hours to 27 days, with a mode of 48 hours (35%). Most cases requiring prolonged admission related to issues other than sepsis.

**Conclusion:** Our current septic risk factor algorithm poorly predicts early neonatal sepsis. A new septic risk factor algorithm is therefore being designed with an aim to increase reliability. A re-audit will take place 6 months after this guideline has been implemented.

Local septic workup guideline (UHW)

**Poster No. 179 - Neonatal****HYPOGLYCAEMIA IN THE HIGH RISK NEWBORN: AN AUDIT OF CURRENT SCREENING PRACTICE.****F Caulfield<sup>1</sup>**, S Cronin<sup>1</sup>, R Khan<sup>1</sup>, N Al-Assaf<sup>1</sup><sup>1</sup>Neonatology department, University Maternity Hospital, Limerick, Limerick

**Background:** Neonatal hypoglycaemia is associated with abnormal neurological outcomes with the duration of hypoglycaemia having a direct impact on outcome<sup>1</sup>. Current guidelines for screening of high risk babies on postnatal wards in a university maternity hospital are adapted from the national childbirth trust 1997<sup>2</sup> and UNICEF 2008<sup>3</sup> guidelines. New guidelines were published by the Canadian Paediatric society (CPS) in 2016<sup>4</sup>.

**Aims:** To evaluate whether current screening practices of hypoglycaemia among high risk infants conforms with current local guidelines and how these compare with international standards.

**Method:** Retrospective chart review of infants born in July 2017 identified as high risk for hypoglycaemia under current guidelines and compared to CPS guidelines. Information gathered included baseline infant characteristics, timing of blood sugar measurements (BM) and management of hypoglycaemia.

**Results:** 39 infants born in July 2017 were identified as at high risk of hypoglycaemia under current guidelines. 4 charts were not available for review. 34 infants had BM screening and 1 infant did not. The mean time to first BM was 4 hours (Range 1-10). 38% (n=13) infants developed hypoglycaemia, of these

15% (n=2) required NICU admission. There was no significant difference in timing of BM measurements between normoglycaemic and hypoglycaemic infants ( $p = 0.35$ ). An additional 9 infants were identified as high risk for hypoglycaemia when CPS guidelines were applied. These infants did not have BM screening and

1 infant subsequently became symptomatic with hypoglycaemia.

**Conclusion:** Adherence with current local guidelines is satisfactory however these guidelines warrant evidence based modification. 19% of high risk infants were not routinely screened. There was large variation in timing of BM in those infants who were screened. Detection of hypoglycaemia in high risk infants could be optimised if recent international standards were adopted. We plan to implement CPS guidelines and re-audit to evaluate the outcome.

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#### **Poster No. 180 - Sub-Specialty and Special Interest Paediatrics**

#### **SCOPING PARENTAL ATTITUDES TOWARD AMBULANCE USE IN CHILDREN**

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**Aims:** Following the tragic incident in Carndonagh Co Donegal in 2013, there have been several reviews looking at the management of ambulance resources in Ireland. Under resourcing apart, slow hospital turnaround times and inappropriate ambulance use, are significant contributors to this problem. A recent audit of a tertiary paediatric emergency department found 27% of patients presenting by ambulance were categorised as non-urgent at triage. Lack of education has been highlighted as a possible cause for these findings (1). This research project was carried out to assess parental attitudes towards ambulance use for non-emergent conditions.

**Method:** A questionnaire was administered to parents attending the paediatric emergency department. The questionnaire outlined 11 hypothetical scenarios and asked parents to indicate when they would call an ambulance. Participants were also asked to give their opinion on statements of common ambulance misconceptions.

**Results:** 100 parents were recruited to this study. All parents surveyed were attending the Emergency Department with their ward. Of these 17-26% indicated they would call an ambulance for a variety of non-urgent conditions. 59% of participants believed that children brought to hospital by ambulance were seen faster than other children. 46% of participants believed having no other means of transport available was an indication for calling an ambulance.

**Conclusion:** Our research confirms that there is a significant lack of knowledge among the general public with regard to the role of the ambulance in emergency care. This suggests that there is potential for an education campaign to reduce the burden of ambulance misuse. Furthermore it highlights specific common minor conditions that could be targeted in such a campaign.

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**Poster No. 181 - Neonatal**

**NEONATAL OUTCOMES IN TWINS; A RETROSPECTIVE COHORT STUDY**

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The number of twins is increasing worldwide, as in Ireland. It is accepted that there is an increased incidence of adverse outcomes with multiples. This study aimed to investigate neonatal outcomes in twins born at CUMH 2009-2015.

A retrospective cohort study of all twins (n=1,242) delivered 2009-2015 in a tertiary-referral centre in Ireland was conducted. Birth-registers and NICU records were reviewed to examine perinatal-outcomes.

The study investigated 1,242 sets of twins (n=2,484 infants). Gender was split almost equally, 51.7% male, 48.3% female. IUGR occurred in 8.7% and TTTS in 10.8%. Two-fifths of twins (41.8%; n=1,035) were delivered at term. Birth asphyxia occurred in 2.1% (Twin1 1.6%, Twin2 2.6%; p>0.05). Almost half the babies were admitted to the NICU (44.4%). The most commonly cited indications for admission to the NICU included prematurity (79.5%), low body weight (62.9%) and respiratory difficulties (41.5%). Jaundice occurred in 37.5% of neonates and 84.9% of these required phototherapy. Infection was documented in 47.5% of babies, sepsis was diagnosed in 3.4% and IV antibiotics were given to 24.2%. NEC occurred in 1% of infants, intra-ventricular haemorrhage in 2.2% and chronic lung disease in 0.4%. Twin1 was admitted to the NICU more often (47.2% vs. 41.5%; p=0.005), but Twin2's average stay was longer (19.24 vs. 17.38days). Twin2 was significantly more likely to have a neonatal death (1.4% vs. 0.5%; p=0.034). The most common cause of neonatal death in both was fetal anomaly.

Neonatally, twins are at a much higher risk of complications than singletons. While a difference in neonatal death rate was observed, the total numbers are small and should be interpreted with caution. Few statistically significant differences were observed between Twin1 and Twin2 indicating that both twins should be monitored closely. This information would be useful in educating parents and could also be valuable to healthcare professionals.

**Poster No. 182 - Neonatal**

**TRENDS IN NICU ADMISSIONS FOR "TRANSIENT TACHYPNOEA OF THE NEWBORN" OVER A 17 YEAR PERIOD.**

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**Aim:** To assess the change in rate of neonatal intensive care unit (NICU) admissions with transient tachypnoea of the newborn (TTN) over a 17 year period and to explore the impact of the rising caesarean section (LSCS) rate.

**Methods:** Data was collected retrospectively over a 17 year period between 1998 and 2015 using HIPE coding system and published annual reports. Any infant admitted to the NICU with TTN and all mothers undergoing caesarean section were identified.

**Results:** 155,002 babies were born during the study period; 28,904 (18%) by LSCS. 2,992 infants developed TTN. 1348 (45%) of these were born by LSCS. The rate of babies born by LSCS who developed TTN was 4.6%. The rate of LSCS rose from 12.8% in 1998 to 24% in 2015. The rate of TTN per 1000 live births has been consistent about a median rate of 20 per 1000.

**Conclusion:** LSCS is a well known risk factor for TTN and our upward trend in LSCS rate reflects a worldwide increase. Our figures suggest that birth by LSCS incurs an almost 1 in 20 risk of developing TTN. However, the rate of TTN has not seen as impressive a rise as might have been expected; the explanation for which is likely multifactorial.

**Poster No. 183 - Sub-Specialty and Special Interest Paediatrics**

**A SNAPSHOT OF CHILDREN WITH COMPLEXITY IN AN ACADEMIC TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT**

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<sup>2</sup>National Children's Research Centre, Dublin

**Aim:** To establish the utilisation of the Emergency Department (ED) by children with medical complexity, such as those with neurologic impairment, complex chronic conditions and those with technology assistance.

**Methods:** Data sources were identified prospectively over a 7 day period from 12/6/17 to 18/6/2017 inclusive. The ED census over this period was reviewed and patients with complex medical issues identified by a manual review. Medical complexity was defined using ICD-10 diagnostic codes within 3 clinical categories: neurological impairment, complex chronic conditions, and technology assistance. For each patient identified, diagnosis, presenting complaint, time spent in, and disposition from the department, was collated.

**Results:** Total census was 744 patients with 86 admissions (86/744, 11.6%). Forty seven (47/744, 6.3%) patients met the criteria for medical complexity with 15 (15/47, 31.9%) admitted (15/86, 17% of all admissions). The mean total minutes in the ED for all patients was 248 minutes, whilst the mean amongst the complex cohort was significantly higher at 350 minutes. Eighteen (18/86, 38.2%) of the complex group spent greater than 6 hours in the ED compared with 17% of the total census. One complex patient was cared for more than 30 hours, after decision to admit, in the ED to be discharged directly home by the specialist team.

**Conclusion:** This is the first Irish descriptive study of the paediatric complex care patients' utilisation of an academic paediatric ED. There were significantly longer mean times to discharge and higher admission rate in this population compared with all other ED attendees. Further longer term prospective research will delineate how to develop hospital services and emergency services to meet this populations' health care needs.

**Poster No. 184 - Neonatal**

**THE SURGICAL NEONATE: THE LINK BETWEEN INTESTINAL DISEASE IN THE NEONATAL PERIOD AND INCIDENCE OF CENTRAL CATHETER-ASSOCIATED INFECTIONS.**

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**Aim:** Neonatal intestinal disease is rare and there is a varied case definition. Temple Street Neonatal High Dependency Unit (NHDU) is the tertiary referral centre for these uncommon conditions. Causes include necrotizing enterocolitis, Gastroschisis, Intestinal atresia, Hirschsprung's disease, malrotation and volvulus. Intestinal failure has been defined as the need for parenteral nutrition for at least 90 days. (1) Prolonged parenteral nutrition is life-saving but not without complications, commonly central catheter associated bloodstream infections. The aim is to highlight the incidence of line sepsis in this cohort and improve practice.

**Method:** Patients were identified retrospectively via the internal Neonatal Discharge Database. Neonates who were transferred to the NHDU in Temple Street Children's University Hospital, over a four

month period from July to October 2017 were identified. Those with a diagnosis that could potentially cause intestinal failure were selected. These patients were stratified based on their need for central access for total parenteral nutrition (TPN).

**Results:** Over the 4 month period 10 neonates with intestinal disease were identified. 2 patients not requiring total parenteral nutrition were excluded. Of the 8 remaining patients 6 were male, 2 were female. 38% of patients receiving TPN had a diagnosis of blood culture positive central line sepsis during their inpatient course. The duration of TPN did not influence incidence of line sepsis. The most common site for central access was the cephalic vein, in 50% of patients, 1 of whom had line sepsis. The only patient with internal jugular access developed line sepsis.

**Conclusion:** Neonatal intestinal disease is a rare condition with a small cohort of patients. Although survival rates have improved, central catheter associated bloodstream infections are still a common complication. We have devised a 'PICC Passport' checklist for patients with central PICC lines to monitor for daily signs of infection and will reaudit this cohort.

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**Poster No. 185 - Neonatal**

**REVIEW OF ANTIBIOTIC USE IN TERM INFANTS UNDERGOING THERAPEUTIC HYPOTHERMIA**

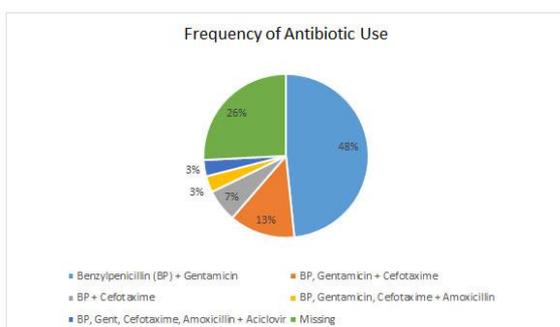
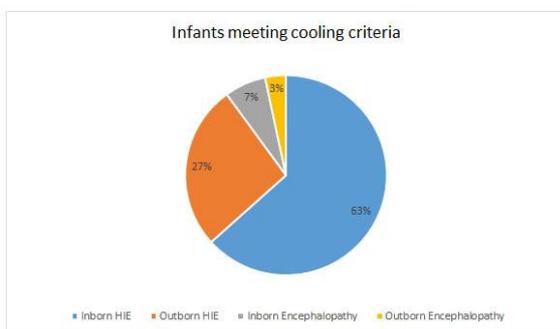
L Dann<sup>1</sup>, C Stephens<sup>1</sup>, D Sweetman<sup>1</sup>

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**INTRODUCTION:** Neonatal encephalopathy can cause significant morbidity and mortality. Current best practice includes therapeutic hypothermia (TH) when specific criteria are met (1). What remains unanswered is the role of antibiotics in infants undergoing TH. There is little guidance in the literature regarding this.

**AIMS:** (1). To review antibiotic use and duration in all infants in 2015 that underwent TH in the National Maternity Hospital (NMH). (2) 2. To investigate if septic screens yielded positive results and influenced antibiotic usage.

**METHODS:** Retrospective audit carried out in the NMH. Medical notes and the laboratory database were used to review the data. Inclusion criteria: all infants meeting national TH guidelines who were cared for in NMH in 2015, including both inborn and outborn infants.



**RESULTS:** 31 charts were reviewed. Antibiotics were used in 29 cases. Antibiotics used included Benzylpenicillin, Gentamicin, Cefotaxime, Amoxicillin and the antiviral, Acyclovir. The frequency of combinations is demonstrated in the chart below. Duration of antibiotics ranged from 1 to 21 days. Mean duration was 6.2 days. Mean (SD) duration in days of Benzylpenicillin was 5.2 (2.3); Gentamicin 5 (2.1); Cefotaxime 5.9 (6.3); and Amoxicillin 2. Blood cultures were performed in 29 cases. One blood culture was positive and treated with a 10-day course of Benzylpenicillin. A Lumbar puncture (LP) was performed on 17 infants. One LP was positive and treated with 21 days of antibiotics. Eighteen infants had seizures. The duration of antibiotics in these infants was 6.4 days compared with 5.3 days in those without seizures (p-value= 0.63).

**CONCLUSION:** There was a large variation of antibiotic usage in this cohort. A national audit looking at the use of broad spectrum antibiotics in this cohort is planned for the near future. This along with the formation of national guidelines is warranted given the emergence of multi-drug resistant bacterial strains.

REFERENCES: 1. [http://www.nntp.ie/downloads/Cooling\\_Protocol\\_25June2014.pdf](http://www.nntp.ie/downloads/Cooling_Protocol_25June2014.pdf)

#### Poster No. 186 - Neonatal

##### **ARTHROGRYPOSIS MULTIPLEX: A CASE REPORT.**

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We describe a case of arthrogyrosis multiplex in a premature male infant, we outline multidisciplinary investigations required to delineate the underlying cause in such cases. Arthrogyrosis multiplex is a highly heterogeneous disorder<sup>1</sup>. Recurrence risks vary and so accurate diagnosis is important for family planning. A newly identified lethal mutation associated with arthrogyrosis, NEK9 mutation, has been described in UK based Irish Traveller families<sup>2</sup>. Thus a thorough pedigree analysis in this case is important to help target genetic testing.

Baby R was born prematurely by SVD at 27+5 weeks gestational age. Mother was a 24 year old G3P2. Both parents are Irish Travellers. Antenatal USS revealed arthrogyrosis and cardiac views showed an abnormal 4-chamber view, with query large pulmonary artery. Amniocentesis revealed a normal male karyotype. Baby R was in poor condition at birth, required extensive resuscitation including endotracheal intubation which proved challenging due to short neck and flexion contracture of his neck. He showed minimal movement of limbs with marked contractures and joint pterygia. He had fused microphthalmia, overlapping fingers, rockerbottom feet and a large ventral hernia with body wall oedema. Prominence of the thoracic spine was noted.

Apgars were 3,3,3 and 4 at 1,5,10 and 15 minutes. Maximal intensive care was required to achieve normoxia and stability of haemodynamics. Multidisciplinary consultations and investigations to determine an underlying cause of Baby R's condition included geneticist, radiologist and cardiologist reviews, pedigree analysis, skeletal survey, echocardiography, cranial and abdomen USS. Baby R had severe pulmonary hypertension, severe hypoplasia of the pulmonary branch arteries, and multiple VSDs. Geneticist consultation advised on specific athrogyrotic conditions prevalent in the Travelling population.

Baby R's phenotype, radiology and pedigree revealed high possibility of NEK9 mutation. Serial family meetings with updates on Baby R's critical status and significant anomalies resulted in the decision to withdraw care. Definitive test results are pending.

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## Poster No. 187 - Neonatal

### THE ROLE OF BIOMARKERS IN IDENTIFYING HYPOXIC ISCHAEMIC ENCEPHALOPATHY IN NEONATES AND PREDICTING LONG TERM NEURODEVELOPMENTAL OUTCOMES – A LITERATURE REVIEW

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#### Aims

Currently, identification of Hypoxic Ischaemic Encephalopathy (HIE) relies on clinical signs and diagnostic imaging<sup>7</sup>. These modalities have limitations, prompting the identification of specific biomarkers which are elevated in HIE, thus identifying and risk stratifying HIE patients. This literature review aims to:

- Review recent work on biomarkers which are associated with HIE
- Determine which biomarkers predict neurodevelopmental outcome

#### Methods

A systematic review was conducted using articles from: Pubmed, Embase, Medline, Web of Science, ScienceDirect

Search terms included: Hypoxic ischaemic encephalopathy, predictors of outcome, biomarkers and HIE, cord blood biomarkers and HIE.

Inclusion criteria: Studies from 2010 - present.

Exclusion criteria: Studies performed on animal subjects.

#### Results

Searches revealed 4 reviewed neuronal tissue specific markers; Glial fibrillary acidic protein (GFAP), Ubiquitin carboxyl-terminal esterase L1 (UCHL1), Neuronal specific enolase (NSE) and S100 $\beta$ , which are released in HIE. Other markers identified were Lactate and Lactate Dehydrogenase (LDH). Serum UCHL1 was significantly higher in the earlier stages post birth (6-24 hours), in cases of HIE<sup>10,14</sup>. GFAP levels do not raise until a later stage post birth, with higher levels correlating with poor neurodevelopmental outcome<sup>12-15</sup>. Umbilical cord blood biomarker levels demonstrated little correlation with neurodevelopmental outcome, suggesting that biomarkers do not raise until hours post birth<sup>16,17</sup>. S100B also increases with severe presentations of HIE and correlates with poor neurodevelopmental outcome<sup>19-21,27</sup>. The only significant relationship between NSE and neurodevelopmental outcome was measured at 24 hours post birth<sup>18</sup>.

LDH is a strong predictor of neurodevelopmental outcome suggesting it's potential in risk stratification of HIE patients. Elevated serum lactate levels also correlate with poor neurodevelopmental outcome<sup>24,25</sup>.

#### Conclusion

UCHL1, GFAP and S100B increase in the presence of HIE. They correlate with severity of HIE and poor neurodevelopmental outcome. LDH levels may also be a useful predictor of outcome.

Most studies involved small sample sizes but provide a direction for future work.

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**Poster No. 188 - Neonatal  
COOL BABIES, NOT SO COOL....**

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**Aims**

- To assess the incidence of hypothermia in newborns in an Irish peripheral hospital
- To develop a care bundle to reduce the incidence of hypothermia

**Methods**

Prospective audit of babies born over an eight-week period. A Plan-Do-Study-Act cycle was used. Prior to commencement, staff were educated on the mechanisms of reducing heat loss in the newborn. A quality improvement care bundle was developed and used to collect data. Data was reviewed and analysed on a weekly basis and improvement steps were implemented. Babies born in the labour ward during a one-week period of the study were used as control.

**Results**

200 babies were born during the study period;166 (83%) of these were included in the study(10% were preterm). 18 infants in the study had hypothermia on admission to the postnatal ward. In the hypothermia group, a third of these were preterm; median gestational age was 36 weeks. The median birth weight was 2.79kg(range 1.26kg-4.12kg). The average room temperature recorded was lower in one theatre being 22.5° compared to another theatre(24.9°). Increasing the temperature in theatre to

the optimal level of 23-25° reduced the incidence of hypothermia. 3 babies(17%) were hypothermic prior to leaving theatre. The average room temperature recorded in the labour ward was 24.8°. Only two babies born on the labour ward during the one week audit period had hypothermia on admission to the postnatal ward.

### **Conclusions**

Eleven percent of babies born in the lower temperature environment had hypothermia on admission to postnatal ward, compared to 3% of babies born in the higher temperature environment. Continued education of staff and implementation of a care bundle to ensure newborns are normothermic prior to leaving the delivery environment is essential. Delivery environmental temperature should be set at the recommended 23-25 degrees to reduce the risk of hypothermia.

### **Poster No. 189 - Neonatal**

#### **MICROCEPHALY SECONDARY TO CONGENITAL ZIKA VIRUS INFECTION**

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**Introduction:** Zika virus is a mosquito borne flavivirus, whose infectious manifestations vary greatly from asymptomatic infection to significant neurological impairment and death<sup>1</sup>. The World Health Organization declared zika virus infection a public health emergency in February 2016 due to rising concerns of severe neurological complications including severe microcephaly following congenital zika virus infection as well as emerging concerns regarding<sup>1</sup>. This is the first confirmed case of congenital zika virus infection in Ireland.

### **Case Report**

Baby T was delivered at term with an antenatal diagnosis of severe microcephaly. First trimester booking bloods confirmed maternal zika virus infection and although Baby T did not have zika virus RNA or IgM in her blood or urine at birth, she had multiple features of congenital zika virus infection. At 1 year of age Baby T has severe spastic quadriplegia, global developmental delay and seizures, requiring extensive input from a multidisciplinary healthcare team.

**Discussion:** The outcomes and prognosis for congenital zika virus infection are not yet fully determined<sup>1</sup>. Moore et al have put forward 5 features that help differentiate congenital zika syndrome from other congenital infections including (1) severe microcephaly with partially collapsed skull; (2) thin cerebral cortices with subcortical calcifications; (3) macular scarring and focal pigmentary retinal mottling; (4) congenital contractures and (5) marked early hypertonia with symptoms of extrapyramidal involvement<sup>2</sup>. Baby T showed 4 of these 5 features. The CDC put forward guidelines on how to diagnose congenital zika virus infection<sup>3</sup>. Baby T did not have serological or PCR evidence of zika virus at birth. However her clinical features and neuroimaging pattern in the setting of first trimester maternal zika virus infection have confirmed her diagnosis.

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## Poster No. 190 - Sub-Specialty and Special Interest Paediatrics

### Orkambi: The Cork Paediatric Experience

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Orkambi (Lumacaftor/Ivacaftor) is indicated for the treatment of cystic fibrosis (CF) in patients aged 12 years or older who are homozygous for the F508def mutation in the CFTR gene. To date 14 adolescent patients have commenced on Orkambi in Cork University Hospital including 5 girls and 9 boys. The average profile of our patient cohort pre commencing Orkambi was 13.2 years, 46kg in weight, BMI 18.9, FEV<sub>1</sub> 91% and FVC 96%. Three of the patients were commenced on Orkambi in hospital; including 2 patients in a day unit setting due to a baseline bronchodilator response >12% and 1 patient who has severe CF respiratory disease (54% prior to commencing Orkambi). This patient subsequently experienced an adverse reaction in the form of chest tightness and tachypnoea requiring oxygen upon commencing Orkambi, which resolved on reduction of the dose to 200mg lumacaftor /125mg ivacaftor and commencing inhaled terbutaline 4 hours post Orkambi along with inhaled twice daily formoterol. She has since tolerated an increase in her dose to 400mg lumacaftor / 250mg ivacaftor. One other patient had significant drop in FEV<sub>1</sub> which was asymptomatic. Two further patients were commenced on Orkambi at a precautionary reduced starting dose of 400mg lumacaftor / 250mg ivacaftor per day due to CF liver disease though both children had a normal Child Pugh score. We are currently awaiting serial data at 3 months for all 14 of the patients.

<http://www.medicines.ie/medicine/16641/SPC/Orkambi>

## Poster No. 191 - Neonatal

### Neonatal TFTs: A Change In Practice

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#### **Aim:**

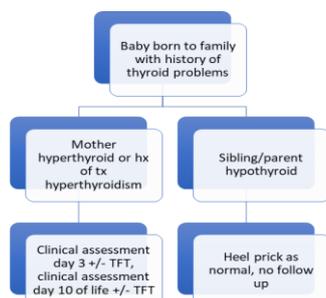
The inclusion of TSH levels in the newborn “blood spot” screening has enabled the prompt recognition of infants with congenital hypothyroidism (CH)(1)(2). The sensitivity of this test is reported at 97.5% (1). Despite this, routine Thyroid Function Tests (TFT) had been carried out on infants of mothers with hypothyroidism between day of life 10-14 in Midlands Regional Hospital Portlaoise (MRHP). This practice is not supported or recommended by international guidelines (3) and has been discontinued in other units (4).

A 12 month audit of neonatal TFTs performed in MRHP in 2016 revealed no diagnostic yield in addition to TSH results already made available through the newborn screening programme. Based on this data and a review of the literature (1,3,4), a local guideline was implemented

Our aim was to re-audit all TFTs carried out within the first two weeks of life to establish whether this change in practice resulted in a decrease in unnecessary TFTs.

#### **Method:**

A re-audit of TFT's carried out within the first two weeks of life was undertaken from 01/02/2017 to 31/07/2017, with a chart review to further evaluate whether these TFT's were required.



## **Results:**

	01/09/2015 – 31/09/2016	01/02/2017 – 31/07/2017
Total number of TFT's preformed	57	4
Number of results with TSH >15	2	2

Of the TFTs preformed on re-audit between February and July 2017, the following were the reasons for preforming same:

Reason given for preforming TFTs	
Mather Hyperthyroidism	1
Maternal Hypothyroidism	1
Follow up of abnormality detected on new born screening	1
Clinical condition associated with thyroid dysfunction	1

**Conclusion:** All cases of confirmed CH were diagnosed by newborn screening. One set of TFTs were carried out on an infant of a mother with hypothyroidism, which is not in keeping with best practice. A significant reduction in TFTs over the six month course of this re-audit was noted, resulting in decreased cost, time, parental anxiety and unnecessary phlebotomy for these infants. Continuing education will be required to ensure the further implementation of this policy.

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## **Poster No. 192 - Neonatal**

### **Extreme Prematurity - Are we helping or harming?**

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**Introduction:** Baby RH was an extreme premature infant who succumbed to a complication secondary to medical intervention on day of life 15.

**Case presentation:** Baby RH was born at 26+3 weeks gestation by emergency Caesarean section with a birth weight of 850g. At the delivery Baby RH had no respiratory effort and was resuscitated. Baby RH was stabilised with high frequency oscillation ventilation and insertion of umbilical venous catheters(UVC) but continued along a stormy clinical course including:

- Severe PPHN
- Pulmonary hypoplasia
- Evolving chronic lung disease
- Infective endocarditis
- Extensive thrombus
- Coagulase negative Staph aureus septicaemia

- Large PDA
- Pulmonary haemorrhage
- Grade II intraventricular haemorrhage
- Tension pneumothorax
- Necrotising Enterocolitis

**Investigations and results:** An echocardiogram was carried out on day of age 11 as part of a persistent thrombocytopenia work-up. This showed the UVC tip in the portal vein with an intravascular thrombus extending into the inferior vena cava and the right atrium. Tinzaparin was used in an attempt to treat. A follow-up scan on day of age 14 showed further extension of the clot beyond the foramen ovale into the left atrium abutting the ventricular walls and mitral valve.

#### **Differential diagnosis**

Thrombocytopenia in neonates:

Sepsis

Necrotising enterocolitis

Haemangioma

Wiskott-Aldrich syndrome

Fetal alloimmune thrombocytopenia

NAIT: neonatal alloimmune thrombocytopenia

Maternal PET

#### **Discussion**

UVCs have been associated with extensive thrombus. A recent Irish review of incidental findings on echocardiogram showed liver haematomas in 17% of the cohort[1]. Intra-cardiac clots in the preterm infants have been associated with 25% mortality[2].

Central access is important in critical neonates for administration of medications however their high pro-thrombotic activity and low levels of natural anticoagulants increases the level of associated risk. It is the greatest acquired risk factor for the development of postnatal thromboembolic events in neonates, perhaps this warrants discussion regarding heparinizing UVCs.

#### **Conclusion**

Medical procedures can be life-saving however consideration must be given to their risk profile and areas for improvement. We must continue to re-evaluate patient care on a daily basis as their needs are constantly evolving.

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**Poster No. 193 - Neonatal**

**THE FIRST SIX MONTHS OF A NEW SCREENING PROGRAMME TO IDENTIFY SEVERE COMBINED IMMUNODEFICIENCY IN BABIES BORN TO IRISH TRAVELLERS.**

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**Aims:** Adenosine deaminase deficiency (ADA-SCID) is an autosomal recessive form of severe combined immunodeficiency which affects roughly 1 in every 1,000 babies born to Irish Traveller parents. Early identification improves long term survival. Therefore, a national targeted screening programme was recently introduced [1].

The programme's protocol states that all babies of Irish Traveller ethnicity should have a full blood count (FBC) performed either on umbilical cord or neonatal blood before discharge. Infants found to have significant lymphopenia ( $<1.5 \times 10^9/L$ ) should have a sample sent for lymphocyte subset analysis. Babies with lymphopenia above  $1.5 \times 10^9/L$  should be evaluated clinically for causes other than ADA-SCID. The aim of this audit was to evaluate the adherence to this protocol within the Rotunda hospital.

**Methods:** All liveborn Irish Traveller neonates delivered from the introduction of the programme on 19/12/2016 to 30/06/2017 were eligible. Cases were identified from the list of babies who had Beutler test screening for galactosemia. Data on FBC samples taken prior to discharge were collected retrospectively from electronic records.

**Results:** Seventy-four cases were identified. Sixty-eight (92%) had any FBC results recorded. No infants were found to have significant lymphopenia ( $<1.5 \times 10^9/L$ ). Nine (13%) were lymphopenic above the threshold for subset analysis ( $1.5-2.7 \times 10^9/L$ ), three of whom had a repeat FBC. Eleven (16%) were incidentally found to have a haematocrit over 0.65L/L. Five (7%) were incidentally found to have a white cell count over  $30 \times 10^9/L$ . Fourteen (21%) had a repeat FBC based on any incidental abnormality.

**Conclusion:** Considering its recent introduction, the adherence to the screening protocol could be considered acceptable. However, based on the severity of ADA-SCID, perfect adherence is an appropriate aim. The results of this audit will be circulated to relevant midwifery and neonatology staff, and the audit will be repeated in June 2018.

1. Neonatal Screening for ADA-SCID in the Irish Traveller Community. Information leaflet for healthcare professionals. Version 1 (23/10/2016)

**Poster No. 194 - Neonatal**

**DOES THE INTRODUCTION OF DEXTROSE GEL IMPROVE BREAST FEEDING RATES ON POSTNATAL WARDS IN A TERTIARY MATERNITY HOSPITAL?**

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**Aim :** Breastfeeding provides infants with optimal nutrition for development, prevents infection, reduces rates of obesity and atopy, along with having maternal health benefits. Despite extensive campaigning Ireland's breastfeeding rates remain low.

Dextrose Gel has recently been incorporated into the neonatal hypoglycaemia treatment protocol in this hospital and has previously been shown to promote exclusive breastfeeding at 2 weeks (1). The aim of the study was to assess the rates of exclusive breastfeeding before and after the introduction of Dextrose Gel.

**Methods :** This study was designed as a quality improvement project. Data on infant demographics, risk factors for hypoglycaemia and infant feeding was collected before and after the introduction of the new hypoglycaemia protocol incorporating Dextrose Gel. Infants included were greater than 35 weeks

gestation and admitted directly to the post-natal wards. The pre-specified outcomes were SCBU admissions and exclusive breastfeeding on discharge. 476 infants were included in the pre-intervention group, 229 infants in the post-intervention group.

**Results :** In our pre-dextrose gel group 65% of mothers stated breastfeeding as their intended method of feeding immediately after birth. During inpatient stay, 49% of breastfed infants received formula 'top-ups'. On discharge, 37% of mothers were breastfeeding exclusively, 39% were formula feeding, 24% combined feeding.

In our post-dextrose gel group 70% of mothers stated breastfeeding as their intended method of feeding. 49% of breastfed infants received formula 'top-ups'. On discharge, 43% were exclusively breastfeeding, 34% formula feeding, 23% combined feeding.

**Conclusion :** Despite high numbers of mothers intending to breast feed, there were low rates exclusive breastfeeding on discharge in both groups. This represents an area of need, to support mothers in their decision to breastfeed. Dextrose gel did not produce a significant increase in exclusive breastfeeding rates in this study, however a trend improvement was noted, we hope to expand this study to a larger sample size.

1. Oral dextrose gel for the treatment of hypoglycaemia in newborn infants. Cochrane Database Syst Rev. 2016 May 4;(5), Weston PJ, Harris DL et al

### **Poster No. 195 - Sub-Specialty and Special Interest Paediatrics Radiological Findings of Pulmonary Aspiration in Children – Interim analysis**

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**Aim :** Over 250 Videofluoroscopic Swallowing Studys (VFSS) are carried out in OLCHC each year. This is the gold standard investigation to diagnose pulmonary aspiration in children.

There is very limited up to date literature describing the chest x-ray findings of aspiration in the paediatric setting. Our aim is to review chest x-rays of children with confirmed aspiration in a structured manner.

**Methods :** This is a retrospective observational study of children who have undergone VFSS in OLCHC in the previous year. They are divided into two groups, patients with a definitely abnormal VFSS and patients with normal VFSS. Radiological findings compared between the two groups include right upper lobe changes, bilateral changes, peri-bronchial wall thickening, atelectasis, consolidation and clear lungs.

**Results :** Data collection is ongoing. To date data on 20 children with aspiration and 13 without have been collected. Among those with aspiration, X-ray abnormalities were seen in 15/20 children, with peribronchial thickening the most prevalent finding (70%), bilateral abnormalities in 35% and right upper lobe abnormalities in 35%.

**Conclusion :** Our pilot data would suggest that pulmonary aspiration is associated with rather non-specific x-ray changes. This will be confirmed in a larger cohort.

## Poster No. 196 - Neonatal

### Bifid Thumb

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#### Introduction:

Polydactyly can occur in isolation but has been reported in over 300 clinical entities<sup>1</sup>. Pre-axial polydactyly (bifid thumb), is a common congenital malformation occurring in 1 in 3000 livebirths<sup>2</sup>.

#### Case report:

A baby boy was born at 37+2 weeks by elective caesarean with asymmetrical intrauterine growth restriction (IUGR) (birth weight 2.12kg) and a right bifid thumb. Postnatally an extra digit on his right hand was noted he also required admission to the high dependency unit for hypoglycemia. The x-ray reported a bifid thumb with two proximal and two distal phalanges, with normal humerus, radius, ulna and five metacarpals. Urine cytomegalovirus and a cranial ultrasound were done to investigate asymmetrical IUGR and a renal ultrasound and microarray for the polydactyly. He was referred to plastics for reconstructive surgery.

#### Discussion/Conclusion:

Pre-axial polydactyly is much rarer than post-axial, usually unilateral, right sided and without gender predominance<sup>3</sup>. Wassel's classification Type's I-VII is used, with Type VI being the most common<sup>4</sup>. It can be an immediate indicator that the baby has a multiple congenital anomaly syndrome and therefore microarray is useful<sup>1</sup>. Studies have identified novel mutations which lead to variable spectrums of limb phenotypes<sup>5</sup>. Mutations in enhancers of Sonic Hedgehog protein are thought to be responsible for pre-axial polydactyly in multiple independent families<sup>6</sup>. Reconstruction follows a model of preservation of the dominant thumb frequently using the Bilhaut-Cloquet procedure. Surgery should be done between 6 to 12 months old as at six months gross grasp and grip are seen. Dexterity of the thumb for fine and gross motor development is essential and surgery should not be delayed when possible. Specifically for type IV, a safe and effective method is used showing good functional outcomes<sup>7</sup>. Complications include radial instability, clinodactyly, zigzag deformities, physeal growth injury, etc.<sup>8</sup> This case highlights the importance to consider potential associations between signs in the newborn period including asymmetrical IUGR, hypoglycemia and polydactyly.



**Fig 1:** Image of pre-axial bifid thumb

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**Poster No. 197 - Neonatal**

**DONOR BREAST MILK – SHOULD IT BE IN ROUTINE USE FOR PRETERM AND LOW BIRTH WEIGHT INFANTS?**

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**Aims:** Human breast milk (HBM) provides optimal nutrition to infants and is the recommended form of enteral nutrition for all neonates. Currently 60.7% of UK NICUs offer donor breast milk (DBM) yet there are no national consensus guidelines on its use in Irish practice. We conducted a literature review examining the positive and negative aspects of DBM use to inform consensus guidelines for Ireland.

**Methods:** Following standard search strategies, 18 studies were analysed, focusing on the potential disadvantages (pasteurisation effects) and benefits (cost effectiveness and necrotising enterocolitis [NEC] prevention in the preterm). A comparison was made between DBM and formula milk. The population studies included premature and low birth weight (LBW) infants who consumed DBM instead of, or in addition to, their mother's own milk (MoM).

**Results:** In preterm and LBW infants, feeding with formula compared with DBM resulted in a RR of 2.77 of NEC development but no statistical difference in mortality between the groups. Decreased hospital stay, and the prevention of sepsis and NEC in sick hospitalised neonates supports the cost effectiveness of DBM. While the pasteurisation of DBM inactivates bacterial and viral contaminants including cytomegalovirus, there are some concerns regarding the risk of infection due to the coincidental inactivation of beneficial immune cells.

**Conclusion:** In preterm and LBW infants, adequately screened (pasteurised) DBM is a suitable alternative to formula. There is limited data available on the comparison of feeding with formula versus nutrient-fortified DBM. This limits the applicability of the findings of this review, as nutrient fortification of breast milk is now common practice in neonatal care. The cost of DBM was variable, but the processing cost of DBM is modest in comparison with the cost of managing a single case of NEC or short bowel syndrome secondary to NEC.

**Poster No. 198 - Neonatal**

**The InSurE (Intubation, Surfactant administration and Extubation) procedure in neonates with respiratory distress syndrome: A regional neonatal unit's experience.**

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**Background:** Respiratory distress syndrome (RDS) is a result of surfactant deficiency and it is the commonest cause of respiratory distress in premature infants. Surfactant replacement therapy plays an important role in the management of these infants and administration protocols in recent years have focused on trying to limit or avoid positive pressure ventilation through an endotracheal tube in order to minimise lung injury. One such protocol is the InSurE (Intubation, Surfactant administration and Extubation) procedure.

**Objective:** The purpose of this study was to report our experience, in a regional neonatal centre over a two year period, with the use of the InSurE method of surfactant administration in infants with a wide range of gestational ages.

**Methods:** A retrospective chart review of all infants who received surfactant treatment between May 2015 and April 2017. Demographics and clinical characteristics of InSurE infants were compared with non-InSurE infants

**Results:** A total of 835 infants were admitted to the neonatal unit during the 2 year study period. Twenty-four percent of these infants (199/835) required some form of respiratory support and 68/199 (34%) of them were administered surfactant. Of the 68 surfactant treated infants 70% had the treatment administered via the InSurE procedure: 33% of the babies < 28wks gestation, 80% of infants between 28wks and 32 wks, 90% between 32wks and 37 wks and 43% of infants > 37 wks. Antenatal steroid exposure rates were high in all premature (< 37wks) surfactant treated infants. Non-InSurE infants < 28 wks gestation were smaller (Mean BW 900gms v 690gms) and more immature (25wks v 26.5wks) than InSurE infants in this group.

**Conclusion:** The majority of infants who received surfactant therapy during the study period had the treatment delivered via the InSurE procedure. Non-InSurE patients tend to be very immature (< 28 wks) and very small (<700gms) or critically ill term infants.

1. Sweet, D. et al (2017) European Consensus Guidelines on the Management of Respiratory Distress Syndrome- 2016 Update. Neonatology 111: 107-125

#### **Poster No. 199 - Neonatal NEONATAL ANTIBIOTICS AND SEPSIS AUDIT**

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#### **AIMS:**

- 1-Are we compliant with our new 36 hours antibiotics guideline in our neonatal unit.
- 2-Are we discontinuing antibiotics too early at 36 hour duration.

#### **METHODS:**

Prospective observational study including every baby admitted to NICU and commenced on antibiotics after septic work up at one or more than one occasion for presumed septic episode. Data was collected for 2 months from 01/04/2015 to 31/05/2015 and the following parameters were recorded from clinical notes and computer lab data: Name, Chart No, Gender, Gestation, Birth weight, Mode of delivery, Indications for Antibiotics, Day of Life, Antibiotics given in 1<sup>st</sup> hour, blood culture, initial CRP, repeat CRP, Were FBC, Urine, Lumbar puncture and CXR done, Duration of Antibiotics.

#### **RESULTS:**

The data showed 85 suspected septic episodes in 75 babies during the audit period. Out of these, 74 episodes were treated with antibiotics in 68 patients. Only one blood culture was positive after 36 hrs in the treated episodes, which later turned out to be contaminant. In the treated suspected episodes, blood culture were taken in all 74 babies (100%), Antibiotics given in 1st hour 52 (70%), Initial CRP taken in 73 (99.5%) and repeat CRP in 42 (56%), FBC taken in 73 (99.5%), MSU in 7 (9%), Lumbar puncture in 5 (6%) and Chest X ray done in 37 (50%). Antibiotics were stopped at ≤36 hrs in 45 (60.8%) episodes in babies with risk factors and or symptoms resolved. While antibiotics were continued for >36 hrs in 21 (28.37%) episodes in babies with ongoing symptoms or raised markers. In 8 (10.8%) episodes antibiotics were continued for >36 hrs in babies with no ongoing symptoms or raised markers.

#### **CONCLUSIONS:**

- 1-This study showed overall compliance of 89% with our current antibiotics policy.
- 2-There was only one positive blood culture after 36 hrs which later turned out to be contaminant.
- 3-There was no indication to continue antibiotics beyond 36 hrs in 8 babies costing approximately 4471 euro.

4-We are good in doing blood culture,FBC,Initial CRP but not good in repeating CRP,Checking MSU and performing LP as a part of septic work up.

5-To document the reason for continuing antibiotic greater than 36 hrs,to check and document the blood culture in blood culture book at 48 hrs.

#### **Poster No. 200 - Neonatal**

##### **Intraventricular haemorrhage complicated by hydrocephalus in a preterm delivered clinically stillbirth.**

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**Aims:** Intraventricular haemorrhage (IVH) is characterized by bleeding of the immature subependymal germinal matrix in preterm infants, but the aetiology is multi factorial. IVH and post-hemorrhagic hydrocephalus (PHH) are common causes of neonatal morbidity and mortality among preterm infants. We describe a preterm infant who had a stormy perinatal period with an incredible outcome.

**Methods:** Clinical, laboratory and radiological data were reviewed.

**Results:** A male infant, weighing 2376g was born at a 33+4 weeks gestation to a 36-year-old Irish mother. Antenatal period was uneventful. Mother presented with 3-day history of lower back pain and 6-hour decreased fetal movement. Cardiotocography revealed a pathological tracing which warranted emergency caesarean section. Placental abruption with a large retroplacental clot was revealed at delivery. At birth, there was no sign of life. Apgar scores were 0, 3 and 3 at 1, 5 and 10 minutes respectively following resuscitation. Arterial blood gas showed profound metabolic acidosis (pH 6.76, base excess -25.7mEq/L, lactate 21mmol/L). An eligibility criterion for therapeutic hypothermia was not met because of gestational age. Clinical seizures were noted on the third day of life. MRI brain showed bilateral IVH, grades III and IV on the right and left respectively. Bedside electroencephalography confirmed moderately severe encephalopathic activity. Sepsis work up and coagulation studies were negative. Clinical examination demonstrated an increasing head circumference with post-haemorrhagic hydrocephalus on cranial ultrasound scan. Interestingly, there was steady improvement in clinical state. He was discharged at 40 weeks postnatal age. Follow up by multidisciplinary team is ongoing.

**Conclusion:** Preterm infants with moderate to severe IVH (grades III and IV) are at high risk of neurological sequelae. Long-term follow-up is needed to evaluate the severity of deficits as the children mature. Whether therapeutic cooling would have made a difference or not is debatable.

#### **Poster No. 201 - Neonatal**

##### **ASSESSMENT OF THE MANAGEMENT OF HYPOGLYCEMIA ON THE POSTNATAL WARDS, IN 'AT RISK' NEONATES.**

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**Aim:** This study aims to improve the identification and management of babies on the Postnatal Ward at risk of hypoglycemia in the first 24 hours of life.

Prolonged hypoglycemia is associated with adverse neurodevelopmental outcomes<sup>1,2</sup>. In the CUMH guidelines, 'at risk' infants include the following: Birthweight <2.5kg or >4.5kg, maternal Diabetes and maternal Labetalol treatment. These babies should be fed within the first hour of life<sup>3</sup>, and have a blood sugar checked before their second feed. 'Pre-feed' checks should continue until two consecutive readings are >3mmol/L. If a reading is <3mmol/L, the neonatal team should be contacted regarding further management.

**Methods:** This study prospectively identified babies born from 1<sup>st</sup> June 2017 to 30<sup>th</sup> June 2017 who were 'at risk' of hypoglycemia and assessed whether the screening guideline was adhered to. Data was gathered from the mothers' and babies' charts, via the Electronic Patient Record system. Infants who did not complete their sugar checks due to admission to SCBU/NICU or Neonatal Death were excluded.

**Results:** In June 2017, there were 701 infants born in CUMH; 107 were identified as 'at risk' (41.1% BW<2.5kg; 12.1% BW>4.5kg; 37.4% maternal Diabetes; 15% maternal Labetalol). Of the babies fulfilling the criteria, 33.3% had a first sugar <3mmol/L. No second sugar check was completed in 25% of babies. Almost 20% of babies with sugars <3mmol/L did not have appropriate follow up action. There were significant delays with the first (31.6%) and second (41.5%) sugar checks. The majority (93%) of neonates <2.5kg were managed adhering to the guidelines.

**Conclusion:** Prolonged hypoglycemia remains a preventable cause of adverse neurodevelopmental outcomes. The CUMH guideline is poorly adhered to with omitted or delayed sugar checks in 40%. Measures should be taken to educate relevant staff, particularly regarding the Labetolol group (29% adherence), and re-audit to improve outcomes for these babies.

References: 1. Patterns of Cerebral Injury and Neurodevelopmental Outcomes After Symptomatic Neonatal Hypoglycemia. Charlotte M. Burns, Mary A. Rutherford, James P. Boardman, Frances M. Cowan. American Academy of Paediatrics. July 2008, Vol 122/ Issue 1 2. Neurodevelopmental Outcome in Neonates with Hypoglycemia and Associated Risk Factors: A Follow up Study. N. Melana, N Ahmed, R.K. Soni and M. Goyal. Department of Paediatrics, Sardar Patel Medical College, Bikaner, India. Journal of Pregnancy and Child Health 2017, 4:3. DOI: 10.4172/2376-127X.1000323 3. ABM Clinical Protocol #1: Guidelines for Blood Glucose Monitoring and Treatment of Hypoglycemia in Term and Late-Preterm Neonates, Revised 2014. N Wight and K.A. Marinelli. Connecticut Children's Medical Center, Hartford, Connecticut. Breastfeed Med. 2014 May 1; 9(4): 173–179. 10.1089/bfm.2014.9986

#### Poster No. 202 - Neonatal

#### NEONATAL HYPOGLYCAEMIA: BURDEN OF CARE AND INTRODUCTION OF ORAL DEXTROSE GEL

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#### Introduction:

Neonatal hypoglycaemia is associated with worse neurodevelopmental outcomes. Risk factors include prematurity, maternal gestational diabetes mellitus and labetalol therapy. Management includes early, frequent feeding and close blood glucose monitoring. Recent studies have recommended the use of oral dextrose gel for neonatal hypoglycaemia(1).

**Aims/Methods:** The aims of this study were to establish the burden of care associated with hypoglycaemia on postnatal wards and to assess the effectiveness of a revised protocol incorporating the use of dextrose gel in the treatment of hypoglycaemia. Data was collected retrospectively from infants' medical notes before and after the introduction of the new protocol.

**Results:** Medical charts of 503 infants were selected for review prior to the intervention with 33 infants excluded (missing data n=16, direct admission to NICU n= 17). Of 470 infants included, the median gestation was 39.4 weeks and median weight was 3425 grams. 94/470(20%) had risk factors for hypoglycaemia, most commonly gestational diabetes mellitus [40/94(43%)]. The average number of blood tests performed per patient was 5(range 0-18) with mean duration of monitoring 20.5 hours. Hypoglycaemia occurred in 43/470(9.1%) of infants. Of those infants who developed hypoglycaemia, the majority had risk factors [33/43(77%)]. The median number of episodes of hypoglycaemia per patient was 2 (range 1-5 episodes). There were five admissions to the neonatal unit for treatment of hypoglycaemia [5/470 (1%)]. Following the introduction of the revised hypoglycaemia protocol, medical notes of twenty infants who received dextrose gel were identified. The average number of blood glucose tests performed was 7(range 1-16) and mean duration of monitoring was 24hours. There were no side effects of dextrose gel and no admissions for hypoglycaemia during the follow-up period.

**Conclusion:** This study demonstrates the significant burden of care of neonatal hypoglycaemia. Dextrose gel was well tolerated, but did not reduce frequency or duration of monitoring, although the number of cases analysed was small.

Harris et al. Dextrose gel for neonatal hypoglycaemia (the Sugar Babies Study): a randomised, double-blind, placebo-controlled trial. *The Lancet* (2013). Vol 182; 2077-2083.

**Poster No. 203 - Neonatal**

**AN AUDIT OF PAEDIATRIC STAFF ATTENDANCE AT PREMATURE DELIVERIES ≤ 32 WEEKS GESTATION IN CAVAN GENERAL HOSPITAL A LOCAL UNIT**

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**Background and Aims:** Based on the model of care for neonatal services in Ireland 2015, Cavan General Hospital is classified as a level 1 local unit. Therefore it offers routine and special care to infants ≥32 weeks gestation. Infants ≤32 weeks should usually be transferred to a regional/tertiary unit, preferably in-utero, however this is not always possible. Currently there is no national/local guideline in place to indicate which paediatric staff should be called routinely to attend premature deliveries. The aim of this audit was to establish who currently attends premature deliveries. Also to explore what would be best-practice in a level 1 unit like Cavan and make appropriate recommendations.

**Methods:** A retrospective chart review was carried out of all premature deliveries ≤32 weeks gestation over a 3 year period from 2012 to 2014. Data such as mode of delivery, indication for delivery, members of the resuscitation team in attendance and use of steroids were recorded and analysed.

**Results:** In total, 27 deliveries were reviewed, 12 vaginal deliveries and 15 Emergency Cesarean Sections. Based on gestation; < 26/40: (n=3), 26-30/40: (n= 7), 30-32/40: (n=17).

Table 1: Members of Neonatal Resuscitation Team present at ≤32/40 weeks gestation deliveries  
The Paediatric Registrar was present at 26/27 (96%) of deliveries, a SCBU Nurse at 18/27 (66.6%), the Paediatric Consultant at 12/27 (44%) and the Paediatric SHO only documented at 9/27 (33.3%). Of note a paediatric consultant attended all 3 deliveries <26/40 and 6/7 deliveries between 26-30/40.

Table 1: Members of Neonatal Resuscitation Team present at ≤32/40 weeks gestation deliveries

All in Attendance (Consultant, Reg, SHO, SCBU Nurse)	3
<b>Reg &amp; SCBU Nurse</b>	<b>8</b>
Consultant, Reg, SCBU Nurse	4
Reg Alone	4
Consultant, Reg, SHO	3
Reg, SHO, SCBU Nurse	2
Consultant & Reg	1
Reg & SHO	1
Consultant Alone	1

**Conclusion:** In our small cohort, there was wide variation with no consistent practice. Resuscitation documentation needs improving. A SCBU Nurse and Paediatric Registrar were the commonest resuscitation team. Deciding on a gestational cut off and defining high-risk deliveries would be helpful in establishing a standardised protocol for when a consultant paediatrician should be in attendance at a delivery.

**Poster No. 204 - Neonatal****EXPERIENCE OF INFANTS BORN WITH DOWN SYNDROME: BURDEN OF DISEASE IN THE EARLY NEONATAL PERIOD**

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**Background:** The incidence of structural abnormalities and neonatal morbidities in infants with Down syndrome (DS) is under-reported. Many advocate keeping infants with confirmed/suspected DS on the postnatal ward (PNW) to facilitate bonding and feeding. We hypothesise that the majority of infants with DS require admission due to high incidence of neonatal morbidities.

**Objectives:** In a retrospective cohort of infants with a diagnosis of DS, we aimed to examine rate of admission to the PNW versus primary NICU admission, and to present the rate of morbidities including congenital heart disease (CHD), echocardiography-confirmed persistent pulmonary hypertension of the newborn (PPHN) and gastrointestinal disorders.

**Methods:** This was a retrospective cohort study of infants born with DS between January 2011-June 2016. Relevant clinical demographics, admission details, early neonatal morbidities, NICU related treatments, outcomes and length of stay were recorded.

**Results:** 121 infants were accessible. Antenatal diagnosis occurred in 31(26%), who had a higher overall rate of structural anomalies [19/31(61%) vs. 21/90(23%),  $p < 0.01$ ]. There was a high incidence of structural anomalies and neonatal morbidities: 84(69%) CHD; 41(34%) PPHN; 21(17%) polycythaemia; 15(12%) gastrointestinal morbidity; and 60(49%) neonatal jaundice. 67(55%) were admitted directly to NICU while 54(45%) infants were initially cared for on PNW of which 38 were later admitted to NICU; only 16(13%) remained on the PNW prior to discharge.

**Conclusion:** Infants with DS have a high rate of neonatal morbidities. The incidence of echocardiography-confirmed PPHN in our cohort is much higher than previously reported. The presence of identifiable antenatal anomalies increases the likelihood of antenatal diagnosis. However, infants initially admitted to the PNW have a high likelihood of requiring NICU admission and have a high rate of neonatal morbidities. Therefore, elective admission of all infants with DS is recommended to screen for PPHN, CHD and other important morbidities.

Table 1 illustrates the morbidities in the three admission groups. PPHN was an independent predictor of death before discharge [adjusted OR 11 (95%CI 2 – 110)].

**Table: Demographics and morbidities in the three admission groups.**

	Primary NICU Admission (n=67)	NICU after PNW (n=38)	PNW care only (n=16)	p
<b>Gestation (weeks)</b>	38.0 [34.4 – 39.0]	38.5 [37.7 – 39.1]	38.9 [37.1 – 39.6]	0.10
<b>&lt; 34 weeks</b>	11 (16)	0	0	<0.01
<b>Birth weight (kg)</b>	2.9 [2.3 – 3.4]	2.9 [2.7 – 3.3]	3.1 [2.7 – 3.7]	0.51
<b>Caesarean Section</b>	35 (52)	10 (26)	4 (25)	0.01
<b>Small for Gestation</b>	17 (25)	7 (8)	0	0.07
<b>Male Gender</b>	29 (43)	23 (61)	10 (63)	0.15
<b>5 minute Apgar Score</b>	9 [8 – 10]	10 [9 – 10]	10 [10 – 10]	<0.01
<b>Antenatal Diagnosis</b>	28 (42)	2 (5)	1 (6)	<0.01
<b>Any CHD</b>	56 (84)	24 (63)	4 (25)	<0.01
<b>AVSD</b>	20 (30)	3 (8)	1 (6)	<0.01

PPHN	28 (42)	11 (29)	1 (13)	0.06
GI morbidity	12 (18)	3 (8)	0	0.09
Polycythaemia	13 (19)	8 (21)	NA	0.14
Jaundice	32 (48)	19 (50)	9 (56)	0.83
Ventilation Days	4 [2 – 9]	4 [3 – 4]	NA	0.62
O2 Days	13 [5 – 26]	13 [8 – 16]	NA	0.63
Inotropes	15 (22)	5 (13)	0	0.08
Nitric Oxide	14 (21)	4 (11)	0	0.07
First pH	7.34 [7.28 – 7.37]	7.36 [7.33 – 7.38]	NA	0.04
pCO2 (Kpa)	6.0 [5.6 – 7.0]	5.5 [4.8 – 6.2]	NA	<0.01
HCO3 <sup>-</sup>	23.4 [21.0 – 25.0]	23.1 [21.6 – 25.0]	NA	0.91
First haemoglobin	197 [186 – 206]	215 [201 – 208]	NA	0.02
Platelets	151 [100 – 201]	169 [102 – 208]	NA	0.39
White Blood Cells	18.6 [12.9 – 24.0]	21.1 [16.4 – 26.7]	NA	0.02
TAM	5 (8)	1 (3)	0	0.34
Days on TPN	7 [2 – 11]	3 [2 – 11]	NA	0.69
Hospital Days	26 [11 – 47]	26 [19 – 29]	NA	0.20
Death	7 (10)	0	0	

Data are presented as medians [IQR] or count (%) and compared using the Kruskal-Wallis test or Chi square/Fisher's exact test as appropriate. CHD: Congenital Heart Disease; AVSD: atrioventricular septal defect; GI: gastrointestinal; TAM: Transient abnormal myelopoiesis; TPN: total parenteral nutrition.

#### Poster No.205 - Sub-Specialty and Special Interest Paediatrics

#### ACUTE ENCEPHALOPATHIC CRISIS IN A PRE-SCHOOL CHILD - LATE PRESENTATION OF METHYLMALONIC ACIDAEMIA (MMA)

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**Background:** MMA is an inborn error of metabolism, which is characterized by accumulation of methylmalonic acid due to deficiency of methylmalonyl-coA mutase. It is a rare AR disease which occurs as a result of mutation(s) in the MUT, MMAA, MMAB, MMADHC, and MCEE genes.

Incidence in Europe is recorded as approx 1:50,000 livebirths.

Classically, patients with complete enzyme deficiency present in the neonatal/infantile period, most commonly the first few weeks of life, with severe metabolic acidosis, acute encephalopathy, hyperammonaemia, neutropenia and/or thrombocytopenia.

**Aim:** We aim to highlight the importance of being mindful as to late presentations MMA.

**Methods:** We report on the clinical features and biochemical findings during the first acute presentation of a four year old female, who presented to our Paediatric Emergency Department (PED) in an acute encephalopathic crisis and in whom we later confirmed a diagnosis of MMA. A literature search of current research on the condition was undertaken.

**Results:** We present the case of a 4 year old female, who presented to the PED in acute encephalopathic crisis, following a 3 day history of poor oral intake and 1 day history of vomiting. Prior to this presentation, she was described as an otherwise healthy female with no previous admissions. Her metabolic investigations were consistent with a diagnosis of MMA. On reflection her parents reported a long standing history of self selecting protein avoidance.

Her acute encephalopathic crisis resulted in residual damage to the basal ganglia, with subsequent mobility issues. Clinically she has residual ataxia, difficulties with co-ordination but with preserved age appropriate cognitive development.

**Conclusion:** Our case highlights the fact that MMA, while most common in early infantile life, can present at any stage of life and emphasises the importance of early consideration of metabolic disease in your differential diagnosis in patients presenting in encephalopathic crises.

#### **Poster No. 206 - Sub-Specialty and Special Interest Paediatrics**

#### **HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH) MASQUERADING AS SEPSIS IN THE PAEDIATRIC EMERGENCY DEPARTMENT (PED); A CASE REPORT**

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#### **Background**

HLH is a disorder of the final common cytokine pathway, resulting in hypercytokinaemia and end-organ damage +/- death. It is a likely under-recognised and often fatal disease, which is most common in infancy. It has a varied presentation, often presenting with signs similar to sepsis. It should be suspected in patients presenting with unexplained onset of systemic inflammatory response syndrome (SIRS). Laboratory findings include cytopenias, hypofibrogenaemia, hypertriglyceridaemia, and raised ferritin levels. An elevated ferritin level > 10,000 µg/L is almost pathognomonic of HLH (90% sensitivity, 96% specificity). Histopathologic findings include prominent lymphocytic accumulation. Research to date has enabled a treatment protocol which aims to suppress the associated exaggerated immune response. Stem cell treatment is indicated in certain cases improving 3 year survival to 50%.

**Aim:** We aim to highlight this rare disorder and to stress the importance of a timely diagnosis as research shows that untreated HLH has a 1-2 month survival time.

#### **Methods**

We describe the clinical findings, results of haematological, biochemical, radiological and histological investigations and outcome to date of a neonate who presented to our PED with presumed sepsis in whom we ultimately diagnosed HLH.

We performed a literature review of current research on this rare disorder.

**Results:** We report the case of a 3 week old male infant, born to non-consanguineous parents. He had previously presented at one week of age with bilious vomiting due to volvulus. He presented to the ED with signs and symptoms similar to sepsis. Despite multiple investigations and optimal treatment, no source of infection was found. Further testing revealed an increased ferritin level (peak 90,000), hypertriglyceridemia and thrombocytopenia. A diagnosis of HLH was confirmed. He was commenced on the HLH 2004 protocol, with marked improvement.

**Conclusion:** Our case highlights the need for an index of suspicion for treatable rare disorders in atypical neonatal emergencies.

## Poster No. 207 - Neonatal

### EFFECTIVENESS OF PLASTIC BAGS VERSUS INCUBATOR IN PRETERM AND LOW BIRTH WEIGHT NEONATES

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**AIMS:** Use of Plastic bags to prevent heat loss can be a feasible and cheaper option. Utilization of plastic bags or wraps has been shown to prevent heat loss among very low birth weight and preterm infants. Our aim is to compare the effectiveness of plastic bags in comparison to incubator in preterm and low birth weight neonates.

**METHODS:** We conducted a Randomized control trial at the Paediatrics Unit, Civil Hospital, Karachi for six months from 18<sup>th</sup> May 2016 To 17<sup>th</sup> November 2016. Non-probability consecutive sampling was used for the study. Newborns with gestational age <37 weeks and birth weight between 1000 and less than 2500 grams of either gender were included. Neonates with congenital malformation, skin blisters, open neural tube defects, abdominal wall defects and congenital heart defects were excluded. Total 100 newborns were randomly allocated into Interventional group and in control group. In control group initial axillary temperature was obtained. Repeat was obtained at 1 hour. In intervention group the infants remained in the plastic bag for at least 1 hour after birth, axillary temperature was noted and if the temperature found to be >36.5°C, effectiveness was positive. Descriptive statistics were calculated. Stratification was done. Chi-square test was applied post stratification and p-value ≤0.05 was considered as significant.

**RESULTS:** In group-A (Plastic Bag Group) , mean neonatal temperature at admission was 32.88±1.27°C and in group-B (Incubator group), it was 32.05±1.28°C. In group-A, mean neonatal temperature after 1 hour was 36.97±0.70°C and in group-B it was 36.82±0.76°C. In group-A effectiveness was 52.5% and in group-B it was 47.5%.

**CONCLUSION:** Our study found out that thermal protection of the newborn can relatively easily be achieved by wrapping the infant with plastic bag after birth. Use of plastic bags was found more effective than incubators.

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## Poster No. 208 - Neonatal

### Can Continuous Glucose Monitoring Systems be Successfully Implemented into the Routine Management of Neonatal Hypoglycaemia? – Insights from a Quality Improvement Project

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**Introduction:** Research suggests that continuous glucose monitoring systems (CGMS) have the potential to optimise the management of neonatal hypoglycaemia, but they have yet to be validated for use in real-life, resource-limited clinical practice. We designed a quality improvement project to assess the feasibility of CGMS as a tool to improve neonatal hypoglycaemia management in Neonatal Intensive Care Unit (NICU).

**Methods:** This study was conducted from June 2017 to July 2017 in a level 3 NICU. Eligible for inclusion were term neonates 1.5kg who were admitted for hypoglycaemia (<2.6mmol/L) within the first 48 hours of life. A New Generation Enlite™ Sensor (Medtronic, Northridge, California) was inserted into five consecutive babies admitted with hypoglycaemia over a one-month period and removed when normoglycaemia was achieved. The sensor transmitted interstitial glucose readings to a Minimed® REAL-Time Transmitter and displayed an averaged glucose value every 5 minutes on a MiniMed® 530G System (both Medtronic, Northridge, California). Five “Plan-Do-Study-Act” (PDSA) cycles tested the change intervention.

**Results:** The first two cycles tested CGMS acceptability and practicality of the device using qualitative feedback from nursing staff and families and quantitative data from the Neonatal Infant Pain Scale (NIPS). Subsequent cycles focused on optimizing the insertion process, trouble-shooting calibration errors, and on promoting NICU staff confidence in device usage. Key recommendations included manually inserting the device on smaller babies, using Duoderm® to reduce subcutaneous bruising, timely insertion of calibration readings to avoid sensor errors, adaption of nursing cares to avoid signal loss, and using near-peer teaching techniques to educate medical and nursing staff on CGMS usage. Bland-Altman analysis comparing point-of-care and sensor glucose readings showed no significant proportional bias.

**Conclusions:** PDSA cycles revealed aspects of CGMS use that need to be adapted for its successful implementation in real-life clinical practice. Further studies are required to assess the potential of CGMS as a decision-making tool in hypoglycaemia management.

## Poster No. 209 - Neonatal

### Labour physiology and its relationship to arteriovenous umbilical cord glucose concentrations of term neonates

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#### AIM

We aimed to establish normative values of arteriovenous umbilical cord blood glucose concentrations in term neonates during labour, and examine how they are influenced by labour physiology.

#### METHODS

This was a single-institution prospective cohort study of nulliparous non-diabetic women diagnosed in labour with singleton pregnancies at term (>37 weeks). Paired arterial and venous cord blood glucose concentrations were tested using a blood gas analyser after delivery. ANOVA and Chi-square tests were used to compare mean glucose concentrations (mmol/L) and demographic variables between groups.

#### RESULTS

Data from 358 women and babies were studied. 95.5% (n=342) delivered vaginally; 67% (n=240) were spontaneous. 28.5% (n=102) were instrumental deliveries; 4.5% (n=16) were emergency CS. Arterial glucose was significantly lower than venous glucose (5.31.2 vs 5.61.2, p<0.01). There was no significant

difference between the arterial nor venous cord glucose of babies delivered by spontaneous vaginal delivery, instrumental delivery, or emergency CS. Women who had a spontaneous rupture of membranes had higher arterial cord glucose concentrations than women who had an artificial rupture (5.51.2 vs 5.21.1,  $p=0.04$ ). Cord glucose concentrations were significantly lower if an epidural had been used (arterial: 5.11.0 vs 5.91.4,  $p<0.01$ ; venous: 5.41.0 vs 6.21.4,  $p<0.01$ ). There were no significant predictive effects of maternal age, baby gender, birth weight, nor gestation on glucose concentrations.

## CONCLUSION

This study offers normative values for arteriovenous cord glucose concentrations, and explores the interplay between labour physiology and cord glucose values. While higher cord glucose concentrations have been reported in infants delivered vaginally compared to by elective CS, our study found no difference between infants delivered vaginally or by emergency CS. This suggests that infants exposed to labour experience a catecholamine surge regardless of delivery method. Lower glucose concentrations associated with epidurals and artificial membrane rupture suggest that interruption of physiological labour diminish this phenomenon.

## Poster No. 210 - Neonatal

### Influence of fetal distress on the arteriovenous umbilical cord glucose concentrations of term neonates exposed to labour

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## AIM

We aimed to establish the relationship between umbilical cord glucose concentrations and known markers of fetal distress among term neonates exposed to labour.

## METHODS

This was post-hoc analysis of a single-institution prospective cohort study of nulliparous non-diabetic women diagnosed in labour with singleton pregnancies at term (>37 weeks). Acid-base status and glucose concentrations of paired arterial and venous cord blood were tested using a point-of-care blood gas analyser. Delivery method, Apgar score, and presence of meconium were recorded. SPSS was used for statistical analyses.

## RESULTS

Data from 358 women and babies were studied. Mean arterial and venous cord glucose concentrations were  $5.3\pm 1.2$  and  $5.6\pm 1.2$  mmol/L respectively. 95.5% ( $n=342$ ) delivered vaginally (67% ( $n=240$ ) spontaneous; 28.5% ( $n=102$ ) instrumental) and 4.5% ( $n=16$ ) by emergency caesarean section (CS)). There was no significant difference in cord glucose concentrations between labours with and without fetal distress. Arterial glucose correlated negatively with venous pH ( $r=-0.16, p<0.01$ ), venous base excess (BE) ( $r=-0.30, p<0.01$ ), and arterial BE ( $r=-0.19, p<0.01$ ). Arterial glucose correlated positively with venous ( $r=0.29, p<0.01$ ) and arterial ( $r=0.20, p<0.01$ ) lactate. Venous glucose correlated negatively with venous pH ( $r=-0.16, p<0.01$ ), venous BE ( $r=-0.30, p<0.01$ ), arterial pH ( $r=-0.13, p<0.01$ ), and arterial BE ( $r=-0.19, p<0.01$ ). Venous glucose correlated positively with venous ( $r=0.24, p<0.01$ ) and arterial ( $r=0.18, p<0.01$ ) lactate. Arterial glucose was significantly higher in infants with Apgar scores <9 at five minutes compared with those scoring 9 or above ( $6.4\pm 1.2$  vs  $5.2\pm 1.1$  mmol/L,  $p=0.01$ ). Presence of meconium had no statistically significant impact on glucose concentrations.

## CONCLUSIONS

Arteriovenous umbilical cord glucose concentrations rise as lactate rises and as pH and BE fall, possibly due to stress-induced anaerobic metabolism and catecholamine-induced glucose release. However, several clinical markers of fetal distress had no significant impact on cord glucose. Thus, while a cord glucose concentration outside normative ranges may be part of the biochemical picture of perinatal distress, it is unlikely to be a reliable diagnostic marker.

## **Poster No. 211 - Neonatal**

### **“CAPILLARY BLOOD GAS ANALYSIS FOLLOWING LOW UMBILICAL CORD PH – A COMPLETED AUDIT CYCLE”**

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#### **Aims**

At the time of the initial audit CWIUH local guidelines recommended that all babies delivered with a cord pH of <7.2 should have CBG analysis at 1 hour of age.

#### **Methods**

All umbilical cord blood samples from July 2016 were reviewed with patient charts and practice compared to local guidelines.

#### **Results**

281 samples were analysed, with 24.9% meeting the criteria for CBG analysis. 55/70 met inclusion criteria. 42/55 had CBG performed of which 38/42 had a normal pH. 4 required a further CBG test due to persistent low pH. In the remaining 13/55, in 5/13 a clinical decision was made not to perform CBG and 7/13 were missed. Mean time to CBG was 141mins. All 55 babies had uncomplicated postnatal courses.

#### **Intervention**

The CWIUH guideline was revised aiming to reduce the number of unnecessary tests performed on healthy babies.

It states that babies with a cord blood pH of <7.2 and  $\geq 7.1$  should have a medical review at 1-2 hours of age, with CBG not required unless there are medical concerns. In babies with a pH <7.1 medical review and CBG analysis should be performed at 1-2 hours of age.

#### **Results of Re-Audit**

All 238 samples from March 2017 were analysed, 26.4% met criteria for medical review, or medical review and CBG analysis at 1-2 hours of age.

Of 51/63 included, 39/51 had cord blood pH <7.2 and  $\geq 7.1$ , of which 32/39 had medical review at a mean time of 106mins post delivery. 7/39 were missed.

23% had cord pH of <7.1, 12/12 of whom had CBG analysis completed at a mean time of 127mins. 1/12 required a further repeat due to persistent low pH.

#### **Conclusion**

This audit enabled guideline revision, optimising patient care, minimising the number of unnecessary tests and reducing interference with mother-baby bonding.

## **Poster No. 212 - Neonatal**

### **PHYSICAL STABILITY OF HUMAN MILK TO PROCESSING AND STORAGE**

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**Aims:** The objective of this study was to elucidate some fundamental physical properties of human milk, and how they relate to its constituents. Such properties become increasingly important with common storage methods of breast milk, for example where mothers express their milk for refrigeration storage. Also, a substantial number of infants may require donor expressed breast milk, which is heat-treated and frozen and provided to infants after storage from the human milk bank. It is important that nutritional and bioactive properties are not impaired during this time due to the instability of human milk constituents.

**Method:** Human milk samples (n=15) were collected from the Western Trust Milk Bank. A Turbiscan instrument was used to measure the stability of human milk samples, which were pre-treated under various conditions, at a range of temperatures. Results were compared to those from fresh human milk.

**Results:** Creaming, an important physical property of milk, appears relatively unaffected by freezing or by the length of freezing time, while it is affected by preheating treatments. Preterm human milk showed faster and more complete creaming than term human milk at the same temperature. It was observed that 37°C is the optimum temperature for creaming fresh, term and preterm human milk, which is very different to the properties of milk from other species.

**Conclusion:** More rapid creaming happens at body temperature rather than refrigeration temperature, and frozen preterm human milk has a higher tendency to cream compared to either fresh or frozen term milk. This may have implications for storage practice, and studies are ongoing to understand the currently ill-defined mechanisms that drive fat separation in human milk.

#### **Poster No. 213 - Neonatal**

#### **REVIEW OF THE NEONATAL FALLS ON THE POSTNATAL WARD IN A LEVEL TWO NEONATAL UNIT 2015-2017**

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**Aim:** The postnatal period is a high-risk time for neonatal falls (NF) due to parental exhaustion, immobility and the use of narcotic analgesia. Falls can lead to serious injury like skull fractures and intracranial haemorrhages<sup>1-4</sup>. When managing NF, we wish to avoid unnecessary disruption to breastfeeding and radiation exposure. The incidence of NF is 1.6 -5.9/10,000 births.<sup>3,1</sup> There are no national guidelines recommending a particular management strategy. NF are also of medico legal importance. Our aim was to describe the incidence of NF in UHG, review our management of NF and the incidence of injury post fall.

**Methods:** This was a retrospective chart review of neonatal and maternal medical notes. Infants were identified from the clinical risk incident reports. The data was collected, input into Excel and analysed.

**Results:** We identified five neonates who fell on the postnatal ward during this period (6.3/10,000 births). 4/5 falls occurred between 1 am and 5am. The mechanism of fall was the same in each case, the mother dropped the infant from her bed to the floor. All infants were admitted to SCBU for neurological observation (12-48 hours). Two infants had superficial physical findings on exam. Two infants had a skull x-ray and one had a CT head. No skull fractures or intracranial haemorrhages were identified. All infants had a normal neurological examination at discharge.

#### **Conclusion:**

In the largest published case series (n=24) two infants sustained skull fractures and two had intracranial haemorrhages. All 58 neonates in the published case series had a normal examination at discharge<sup>1</sup>. The incidence of NF in UHG and the disparity in management of such cases is consistent with that identified in the literature. In UHG antenatal classes will specifically educate parents about NF and we are developing a guideline for their management in our unit.

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**Poster No. 214 - Neonatal****MASSIVE FETOMATERNAL HAEMORRHAGE FOLLOWING MILD MATERNAL ABDOMINAL TRAUMA**

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**Aim:** Massive fetomaternal hemorrhage (FMH) is a rare cause of anaemia, that can lead to neurologic injury, stillbirth or neonatal death.

**Methods:** Clinical data of our case were reviewed.

**Results**

A term 3.38kg male was born by EMLSCS due to reduced fetal movement, reduced variability and CTG decelerations. Mother is a 20yr old Caucasian primigravida known to have menorrhagia requiring RCC transfusion prior to conception. Her antenatal course was uncomplicated, and her (FBC) at delivery was normal. Her blood group was A+ve with a negative antibody screen. A week prior to delivery, she sustained a mild trauma to her abdomen by banging a door knob, but no vaginal bleeding occurred. At the c/section there was no active bleeding and blood loss was estimated at 150 mls. The baby was vigorous, his apgar score was 8<sup>1</sup>, 9<sup>5</sup>, 9<sup>10</sup>, however was pale and had low SPO2 requiring (CPAP) which was gradually weaned over 48hrs, (VBG) showed mixed acidosis and (HB) was 6. He was given O-ve (RBC) transfusion followed by a 2nd RBC transfusion. His peripheral smear showed marked hypochromic anisopoikilocytosis anaemia with circulating erythroblasts; occasional fragments, spherocytes target cells, elliptocytes and teardrops, binucleate erythroid precursor, neutropenia with left shift. Baby's Blood Group was O+ve, with a negative DCT, he had a normal coagulation profile, (LDH) was 825U/L, serum haptoglobin was 0.1, urinary haemosiderin was negative. Maternal peripheral blood smear with Kleihauer-Betke test was positive at 128 mls. CRUSS was unremarkable, and an ECHO revealed trivial tricuspid regurgitation. He received antibiotics until sepsis was ruled out. Follow up FBCs were normal. At 1 week of age baby was discharged with normal physical examination.

**Conclusion:** Massive FMH is defined as transmission of 80-150mL of fetal blood volume into maternal circulation. Sinusoidal heart rate pattern and decreased fetal movement are important signs. Diagnosis is confirmed by KB test

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## Poster No. 215 - Neonatal 2

### INFLAMMASOME ACTIVATION IN NEONATAL ENCEPHALOPATHY

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#### Introduction

Systemic inflammation has been demonstrated in both animal and human models of neonatal brain injury. The Inflammasome is a component of the Innate immune system involved in regulating and inducing inflammation. It has been implicated in a host of inflammatory disorders and there have been recent developments toward promising therapeutics that target Inflammasome activity.

Components of the Inflammasome need exploration as potential therapeutic targets in NE, as an adjunctive treatment to Therapeutic Hypothermia (TH). We profiled the Inflammasome components, Interleukin (IL)-1 $\beta$  and ASC (Apoptosis-associated Speck-like protein containing a carboxy-terminal CARD), and NLR Family Pyrin Domain Containing 3 (NLRP3).

**Methods:** Serial blood samples in infants with NE undergoing TH day 1 to 3 of life were compared to healthy neonatal controls. Inflammasome components IL-1 $\beta$ , NLRP3 and ASC in infants with NE (n=10) were compared to healthy neonatal controls (n=8) in response to endotoxin stimulation (Lipopolysaccharide: LPS). RT-PCR analysis was carried out on the ABI 7900 with analysis using GraphPad Prism Version 7.

**Results:** IL1 $\beta$  expression was increased on day 1 and day 3 and upregulated with LPS stimulation, day 1 (p=0.009) and day 3 (p=0.01). NLRP3 was increased day 1 and decreasing by day 3 in NE and upregulated in response to LPS on day 3 (p=0.009). ASC was increased day 1 NE and further increased on day 3 life without significant upregulation with LPS stimulation.

**Conclusion:** Inflammasome activation was evident in NE and upregulated in response to LPS. The Inflammasome and inhibition of systemic inflammation may have a role as a future immunomodulatory therapeutic target in NE.

## Poster No. 216 - Neonatal

### EVALUATION OF EARLY ONSET E.COLI SEPSIS IN AN IRISH MATERNITY CENTRE

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**Aim:** To compare characteristics of neonates who developed *E. coli* bacteraemia with matched infant controls whose mothers were colonized with *E. coli* on high vaginal swab (HVS) but who did not develop *E. coli* bacteraemia.

**Methodology:** This was a retrospective cohort study. All cases of early onset *E. coli* bacteraemia over a 14 year period confirmed on blood culture were evaluated. Maternal and neonatal charts were reviewed to identify relevant clinical information episodes. The Laboratory Information System was interrogated for relevant samples. The cohort of neonates with *E. coli* detected in blood cultures was compared with neonates whose mothers had *E. coli* recovered from a HVS within 24 hours of delivering their baby who did not develop sepsis. Data was analysed using SPSS version 24 to identify possible risk factors for early onset *E. coli* sepsis.

**Results:** There were 21 cases of *E. coli* affected neonates and 39 controls. There was no significant difference between groups in terms of gender, maternal age, maternal white cell count or cord pH. There were statistically significant differences found between gestational age (mean of 38wks vs 32wks  $p<0.01$ ), weight (3.34kg vs 1.91 kg  $p<0.001$ ) and duration of PPRM (1 day vs 11.1days  $p=0.04$ ) in the control group vs the *E. Coli* affected group respectively.

**Conclusion:** From our results we can see clear identifiable risk factors for *E. coli* sepsis. The most important of which is duration PPRM as this may indicate we need to evaluate choice of antimicrobial therapy in neonates of mothers with a latency of more than five days.

1) A Retrospective Audit of Clinically Significant Maternal Bacteraemia in a Specialist Maternity Hospital from 2001 to 2014. Drew RJ et al. Infect Dis Obstet Gynecol. Epub 2015 Oct 1. 2) Early Onset Neonatal Sepsis. Simonsen et al. Clin Microbiol Rev. 2014 Jan; 27(1):21-47 3) *E coli*: a growing problem in early onset neonatal sepsis. Jones et al. Aust NZ J Obstet Gynaecol. 2004 Dec;44(6):558-61 4) Risk of early-onset neonatal infection with maternal infection or colonization: a global systematic review and meta-analysis. Chan et al. PLOS Medicine 2013. 10(8):e1001502

#### **Poster No. 217 - Neonatal**

#### **DONOR BREAST MILK USE IN NEONATAL UNITS: PRACTICES AND OPINIONS IN THE REPUBLIC OF IRELAND**

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**Aim:** To examine practices and opinions regarding use of donor breast milk in neonatal Units in the Republic of Ireland.

**Methods:** Cross-sectional postal survey of all Neonatologists and Paediatricians working in each of the 21 neonatal units in the Republic of Ireland.

**Main Results:** Eighty-eight Paediatricians and Neonatologists were surveyed and 44 (50%) replied. Responses were received from 20 (95%) neonatal units, of whom 15 (75%) reported using donor milk. Sixty percent of units had a written donor milk policy however significant variation existed in birth weight and gestational age thresholds for its use. Thirty-eight (86%) of respondents were opposed to the use of donor milk for supplementation of otherwise healthy term neonates. Ten (23%) of respondents believed that supplementation with donor milk compared to formula improves long-term breastfeeding rates. Twenty-two (56%) agreed that the majority of studies supporting the use of donor milk to prevent necrotising enterocolitis in preterm infants were undertaken in the past 15 years.

**Conclusion:** This is the first study to evaluate current practices and opinions regarding donor milk use in the Republic of Ireland and highlights the necessity to develop a national guideline of evidence-based best practice.

#### **Poster No. 218 - Sub-Specialty and Special Interest Paediatrics**

#### **MITOCHONDRIAL DISEASE DUE TO AN SDHD GENE MUTATION: CASE REPORT AND LITERATURE REVIEW.**

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**Aim:** We present an infant with confirmed mitochondrial disease, due to an SDHD gene mutation.

**Methods:** Case notes were summarised. A review of the current available literature was undertaken.

**Results:** We report a female infant, now 17 months old, the product of a consanguineous relationship, who was diagnosed antenatally with dilated cardiomyopathy. A sibling died in infancy, with post-mortem studies revealing a cardiomyopathy that had developed as a consequence of a mitochondrial disorder due to a SDHD gene mutation. Following delivery, a postnatal echocardiograph confirmed the presence of dilated cardiomyopathy. She was commenced on beta-blockers, ACE-inhibitors, digoxin, aspirin. The neonate was homozygous for the identical familial SDHD gene mutation as her sibling. At eight months old, she presented in status epilepticus requiring intubation. She has had a complicated infantile course with severe refractory epilepsy requiring multiple antiepileptic medications. Brain imaging at one year old revealed periventricular nodular heterotopia. In addition, she has global developmental delay.

**Conclusions:** The succinate dehydrogenase (SDH) complex, also known as mitochondrial complex II (MT-C2), is a key metabolic enzyme, the only enzyme involved in both the citric acid cycle and the metabolic respiratory chain, also known as the electron transport chain.

Autosomal recessive mutations in the genes coding for the SDH subunits are associated with a number of clinical conditions, typically hereditary cancer predisposition syndromes and isolated mitochondrial complex II deficiency (MT-C2D). Neoplastic syndromes associated with SDH mutations include hereditary paraganglioma-pheochromocytoma syndrome, non-syndromic paraganglioma or pheochromocytoma and Cowden syndrome. As with all mitochondrial diseases, isolated MT-C2D results in inability to generate sufficient ATP, particularly affecting organ systems with high energy demand, including skeletal and cardiac muscle, the central nervous system, kidneys and liver. Clinical features of isolated MT-C2D include psychomotor regression, poor growth, delayed speech, spastic quadriplegia, dystonia, leukoencephalopathy and cardiomyopathy.

Our case highlights the clinical syndrome resulting from a SDHD mutation.

#### **Poster No. 219 - Sub-Specialty and Special Interest Paediatrics**

#### **NOVEL SKELETAL FEATURES IN SIBLINGS WITH SCHIMKE IMMUNO-OSSEOUS DYSPLASIA.**

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<sup>3</sup>Department of Paediatric Nephrology, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland.

**Aim:** To report novel skeletal features in a sibship with genetically confirmed Schimke Immuno-Osseous dysplasia (SIOD).

**Methods:** Case notes were summarised and a review of previously published cases of SIOD was undertaken.

**Results:** The female proband presented with failure to thrive in infancy and echocardiogram revealed a perimembranous ventricular septal defect (VSD). Marked proteinuria was identified at age 5 and renal biopsy subsequently confirmed Focal-segmental glomerulosclerosis (FSGS). Physical examination was notable for short stature, dysmorphic features, Klippel-Feil syndrome and a Sprengel shoulder. She progressed to end-stage renal failure in adolescence. Her clinical course also included an ischaemic stroke from cerebral vasculopathy, hypothyroidism and T-cell immunodeficiency. Heterozygous c.2114C>T and c.2070+2\_3insT mutations in the SMARCAL1 gene were identified. The proband's younger brother had incidental detection of mild proteinuria in early adolescence. His physical and skeletal features are similar to those of the proband. He has subclinical hypothyroidism and laboratory evidence of T-cell immunodeficiency. His renal function is currently normal aged 19 years. Genetic analysis confirmed identical mutations to his sister.

**Conclusions:** SIOD due to SMARCAL1 mutation is an autosomal recessive disorder with a prevalence of one in 1 to 3 million. It is characterised by a diagnostic triad of spondyloepiphyseal dysplasia, T-cell immunodeficiency and progressive renal disease.

To date, no published case has outlined cardiac septal defects as a clinical feature of SIOD. Klippel-Feil syndrome and Sprengel shoulders in patients with SIOD have not been previously described in the literature, but cardiac abnormalities can be a feature of Klippel-Feil syndrome. In addition, this case series describes both a case of early-onset SIOD with multiple, life-threatening co-morbidities and a case of juvenile-onset SIOD with a significantly milder phenotype despite an identical genotype.

## Poster No. 220 - Neonatal

### Infection prevention in NICU: HH opportunities and time to perform

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**AIMS:** The study aimed to investigate Hand Hygiene(HH) performance and compliance with recommended time, according to the WHO HH guidelines[1], in a Neonatal ICU of an Irish tertiary maternity hospital. The secondary objective was to determine the number of hand hygiene opportunities (HHOs) in the observation period and estimate the time required for a 100% HHC.

**METHODS:** An observational study was conducted in a NICU department in the Rotunda hospital. Observations were carried out in different patients' zones from 7:30am to 12:30pm for 7 weekdays.

A single observer documented and stratified HHOs and HHC with the WHO HH observation tool according to the different days, personnel groups and HH indication moment[2]. The time spent performing HH was recorded with a chronometer.

The time needed for HH practice in a single patient-zone during one shift was extrapolated as the result of the hourly average of the HHOs, multiplied by the standard length of a NICU shift (12hours) and the minimum recommended duration for Handrub (20 seconds).

Figures

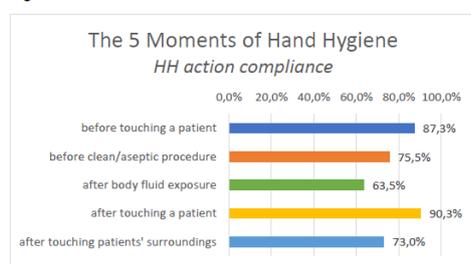


Figure 1

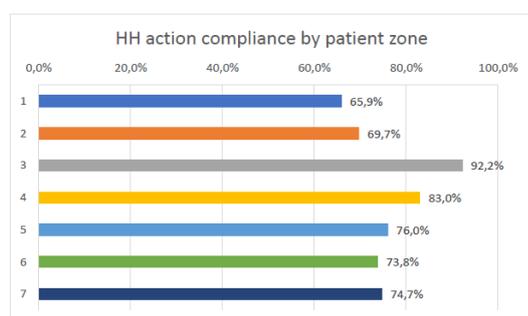


Figure 2

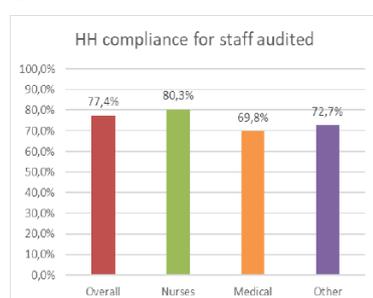


Figure 3

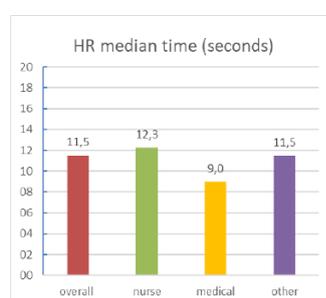


Figure 4

**RESULTS:** The HHOs recorded were 393.

The overall HHC was 77.4%, with a significant difference among days (P=0.0289) but not among personnel groups (P=0.1013).

Compliance with recommended time of HH practice was 18.8 %; with a significant difference among days (P<0.0001) but not among groups (P=0.0230).

The mean number of HHOs during a single shift was calculated to be 94 for a Nurse and 29 for medical staff, which equals to 31.33 and 10.06 minutes respectively.

**CONCLUSIONS:** Compliance with recommended time is less than desirable and it is important to address this aspect during HH educational moments for all staff group. Optimization of HH performance may be an additional reason to aim for a NICU nurse:patient ratio of 1:1.

[1]World Health Organization. WHO Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge Clean Care is Safer Care. 2009 [2]World Health Organization. HH – Observation Tool. Retrieved from <http://www.who.int/gpsc/5may/tools/en/>. Date of access: 05/05/2017.

**Poster No. 221 - Neonatal**

**SEPTIC WORK UP AND THE USE OF ANTIBIOTICS IN A SPECIAL CARE BABY UNIT**

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**AIM:** To determine the frequency and indications of performing a partial septic work-up (PSW) consisting of a Full Blood Count, C-Reactive Protein and Blood Cultures in neonates and whether antibiotics were commenced appropriately.

Prior to the review it was noted that PSW was occasionally performed without clear indications and antibiotics were not commenced immediately.

**METHOD:** Retrospective analysis of neonates admitted to the Special Care Baby Unit in Wexford General Hospital over a 2-month period. A template was created in order to establish indication for PSW as per local guidelines based on number of red and yellow flags, whether antibiotics were appropriately started and discontinued once PSW was negative.

**RESULTS:** 80 newborn babies were admitted between the 10th July to the 20th September 2017. 30% (n=24) of neonates had a PSW performed, 2 patients had a Lumbar Puncture which was negative. Of the 24 patients, 4 did not meet the criteria for PSW, 15 had at least one red flag and 5 had two yellow flags. 22 patients had antibiotics commenced immediately. 2 patients had no antibiotics commenced as there were no indications to perform a PSW.

There were 4 positive blood cultures three of which were deemed likely contaminants and were negative on repeat. There was only one true positive blood culture which grew Group B Streptococcus (GBS) which was also isolated from the placenta.

66.7% (n=16) neonates had antibiotics stopped after negative PSW. 29% (n=7) neonates remained continued on antibiotics despite negative blood cultures at 48 hours.

**CONCLUSION:** PSW is frequently performed in neonates due to maternal risk factors. We found a need to reinforce awareness of the local guidelines to avoid inappropriate PSW and the use of antibiotics. We also found a need to review the current local guidelines and to develop national guidelines.

1. National Institute for Health and Care Excellence (2012) Neonatal infection (early onset): antibiotics for prevention and treatment (NICE Clinical Guideline 149). Available at: <https://www.nice.org.uk/guidance/cg149/resources/neonatal-infection-early-onset-antibiotics-for-prevention-and-treatment-pdf-35109579233221> [Accessed 22nd October 2017]. 2. Wexford General Hospital Maternity Department Guideline (2014) Identification of clinical indicators and risk factors for the prevention of early onset neonatal infection. PPPG No: CLIN 000 029, Revision No: 0. Authors: A Bone Staff Nurse. Unpublished online.

**Poster No. 222 - Neonatal****AN AUDIT OF NEONATAL RESUSCITAIRE EQUIPMENT IN THE ROTUNDA HOSPITAL****A Smith<sup>1</sup>, C McDermott<sup>1</sup>, E Woolhead<sup>1</sup>, A El-Khuffash<sup>1</sup>**<sup>1</sup>Department of Neonatology, The Rotunda Hospital, Dublin**Background**

A Rotunda Hospital Neonatal Resuscitation Trolley Checklist was implemented in June 2016 in order to improve the consistency of resuscitation equipment available on resuscitaires. The aim of this closed loop audit is to assess compliance with this checklist in the delivery suite.

**Methods**

This prospective audit was first performed during a two week period in June 2017 (Audit Period 1) and re-audited (Audit Period 2) over a one week period in September 2017. Neonatal resuscitaire equipment was then evaluated for compliance with the Rotunda Hospital Neonatal Resuscitation Trolley Checklist.

**Results**

The Rotunda Hospital Neonatal Resuscitation Trolley Checklist is a 25 point checklist. Twenty delivery suites rooms were first evaluated over a two week period in June 2017 (Audit Period 1) and then 16 delivery suite rooms were re-audited over a one week period in September 2017 (Audit Period 2) for compliance with the Checklist. Reduced compliance during both audit periods for the neonatal resuscitaire drawers was documented for size 3.5 endotracheal tubes, Pedicap™ CO<sub>2</sub> detectors, suction tubing and SaO<sub>2</sub> probes. This is likely a reflection of the equipment which is used most frequently during newborn resuscitation of term infants.

**Conclusion**

This audit identified a number of key areas to improve compliance with the Rotunda Hospital Neonatal Resuscitation Trolley Checklist. Ongoing staff education and audit is essential to ensure that vital resuscitaire equipment is readily available when neonatal resuscitation is required.

**Poster No. 223 - Neonatal****A REVIEW OF THE PARENTERAL NUTRITION SUPPLY SERVICE IN AN IRISH NEONATAL UNIT****A Smith<sup>1</sup>, AC Glynn<sup>2</sup>, A Shankar<sup>3</sup>, C McDermott<sup>1</sup>, N McCallion<sup>1</sup>**<sup>1</sup>Department of Neonatology, The Rotunda Hospital, Dublin<sup>2</sup>Clinical Nutrition and Dietetics Service, The Rotunda Hospital, Dublin<sup>3</sup>The Royal College of Surgeons, Dublin**Background**

Neonatal Intensive Care (NICU) patients have individual nutritional requirements often requiring Patient Specific Parenteral Nutrition (PSPN). From October 2015, the national PSPN compounding service availability changed from 7 days per week service to 5 days per week (i.e. no weekend and limited bank holiday ordering available).

**Aims**

The aim of this study was to examine the introduction of a 5 day only PSPN supply on neonatal patient parenteral nutrition availability in a tertiary NICU.

**Methods**

We performed a prospective assessment of the provision of a 5 day rather than 7 day ordering of PSPN over a one month period (June 2017).

**Results**

Fifteen neonatal patients received a cumulative 89 days of PN during June 2017. 10 (66%) patients received PSPN during this time period. Side arms of sodium chloride (NaCl) were required in 4 (27%) patients. Additional IV cannulas were necessary in 5 (33%) infants in order to administer their requisite side arm IV infusions. Additional phlebotomy, directly related to monitoring electrolytes while in receipt

of side arm infusions, was required in 4 (26%) infants. The same day supply of PSPN was available to the Rotunda on 62 (69%) days of PN during June.

### **Conclusion**

The provision of PSPN is a national issue affecting all Irish neonatal units. 608 infants were born in Ireland weighing less than 1,500g at birth in 2014, a cohort for whom early and tailored nutrition is vital. The availability of 7 day PSPN ordering would improve the provision of clinically indicated PSPN to premature infants in NICU in Ireland.

### **Poster No. 224 - Neonatal**

#### **THE TRIANGULAR SIGN, A USEFUL DIAGNOSTIC MARKER FOR BILIARY ATRESIA: A CASE SERIES OF THREE IRISH INFANTS**

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### **Background**

Biliary atresia (BA) is an idiopathic, chronic cholangiopathy leading to progressive obliteration of the intra and extrahepatic biliary tracts. The incidence of BA in the UK and Ireland is estimated at 1/16700 livebirths. The triangular cord (TC) sign is the appearance of a triangular shaped echogenic density visualised immediately cranial to the portal vein bifurcation on ultrasonographic examination. Several studies have reported that this ultrasonographic sign is a reliable and helpful marker in identifying BA.

### **Aims**

To report the identification of the TC sign in three infants with BA in the Rotunda Hospital, Dublin.

### **Methods**

A retrospective chart review was performed to evaluate the clinical presentation and imaging of the three patients with positive TC sign and BA.

### **Conclusion**

Early diagnosis of BA is essential as the condition is fatal unless surgical correction is performed. A 2017 meta-analysis of 17 eligible studies with 1,444 patients reported that the triangular cord sign had a high accuracy for diagnosing BA with a sensitivity and specificity of 85 % (95% confidence interval, 77%-90%) and 97% (95% confidence interval, 94%-99%) respectively<sup>1</sup>. In conclusion, the TC is a valuable ultrasonographic sign to aid early identification of BA as demonstrated in this case series of three Irish neonates.

1. Yoon HM, Suh CH, Kim JR, Lee JS, Jung AY, Cho YA. Diagnostic Performance of Sonographic Features in Patients With Biliary Atresia: A Systematic Review and Meta-analysis. *Journal of ultrasound in medicine : official journal of the American Institute of Ultrasound in Medicine*. 2017.

## Poster No.225 - General Paediatrics

### AETIOLOGICAL EVALUATION OF 42 INFANTS IDENTIFIED WITH A PERMANENT CHILDHOOD HEARING IMPAIRMENT THROUGH THE IRISH NEWBORN HEARING SCREENING PROGRAMME: FINDINGS AND RECOMMENDATIONS

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**Background & Aim:** The Newborn Hearing Screening Programme (NHSP) was established in Cork University Maternity Hospital (CUMH) in April 2011. Between April 2011 and July 2014, 42 infants were identified with a Permanent Childhood Hearing Impairment (PCHI). Following this diagnosis infants underwent a paediatric assessment according to recognised guidelines with the intention of identifying the underlying aetiology of the PCHI. The aim of this study was to assess the findings of this aetiological workup via retrospective chart review.

#### Results:

16 (38%) infants were diagnosed with a bilateral sensorineural hearing loss. 2 infants had congenital CMV infection. There were no cases of congenital rubella, syphilis, toxoplasma or bacterial meningitis. An aminoglycoside was administered to 9 (21%) infants in the neonatal period, the most frequent of which was gentamicin. A Connexin 26 gene mutation was detected in 1 infant. 2 infants were diagnosed with Waardenburg syndrome, 1 with Pendred syndrome and 1 with Pfeiffer syndrome. 5 babies underwent cochlear implantation.

#### Conclusion:

Through adherence to the recommended protocol a possible cause of PCHI may be determined. This study has identified areas of future improvement for this service in Ireland.

## Poster No. 226 - Neonatal

### Parenteral Nutrition in Very Low Birth Weight Infants

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**Aims:** To improve the use of parenteral nutrition in infants with birth weights less than 1500g by decreasing the time to starting parenteral nutrition (PN) and securing central access.

**Methods:** A retrospective chart review of 20 infants admitted to the NICU between June and August 2016. Following intervention a further 24 infants' charts were reviewed between November 2016 and March 2017. All infants had birth weights <1500g and gestation < 32 weeks.

**Results:** We present 20 infants pre intervention and 24 infants post intervention, with mean gestational ages of 28+0 and 27+3 and mean birth weights of 970g and 972g respectively. Patient Specific PN (PSPN) was required by 12/20 infants in the pre intervention group versus 17/24 post intervention in their first week of life. The average time to commencement of PSPN was 4.5 days vs 3.2 days. The mean time to discontinue PN was 9.1 days (range 6-20 days) vs 9.45 days. Pre intervention the average time to gaining central access was 46.3 hours, however four infants received peripheral PN though out. The mean time to regain birth weight was 9.6 days (range 5-14 days). Post intervention, 23/24 infants had central access during their first week of life with an average time of 32.9 hours to gaining access. In the pre intervention group the average time to commencement of PN was 2.8 hours which subsequently reduced to 2.02 hours.

**Conclusion:** Infants time to starting on parenteral nutrition was improved as was the time taken to gaining central access. The majority of infants required patient specific PN, it is therefore imperative that this service is available 7 days a week.

**Poster No. 227 - Neonatal**

**AUDIT OF POSTNATAL CARE FOR BABIES DELIVERED WITH MECONIUM STAINED AMNIOTIC FLUID IN LOW RISK PREGNANCIES & REVIEW OF COMPLICATIONS**

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Meconium-stained amniotic fluid carries the postnatal risk of complications, requiring a team with full resuscitation skills. New NRP guidelines recommend that vigorous infants with good respiratory effort and muscle tone should receive normal newborn care on postnatal ward.

**AIM:** To audit postnatal outcome and resuscitation level required in infants delivered with meconium stained fluid following low risk pregnancy

**METHOD:** Retrospective chart review one month in January 2016 and re-audited January 2017 to review compliance to practice change in our new NRP guidelines. Standardised proforma data collection used.

**INCLUSION CRITERIA:** Infants born 37-42 weeks gestation, weight >2kg, uncomplicated vaginal/elective caesarian section.

**MAIN RESULTS:** First month: Total 50 babies: Mean gestation 40+1(±2SD)weeks and weight 3380 grams(±370). Mostly females (70%). APGAR<9 at 1min 20%, 64% attended by paediatrics team. 24% required resuscitation (including suction). 34% attended for follow-up to baby clinic. Postnatal complications 16% infants (2 babies vomiting, 2 poor feeding,3 jaundice requiring phototherapy. 5 represented to clinic with feeding issues).

In second audit month :26 babies over 15 day period. Mean gestation 40+4(±2SD)weeks, median weight 3575(±437g) grams, 65% females, 8% low Apgars at 1 minute. Paediatric team member attendance:38% cases. Resuscitation including suction required :15%. Postnatally 4 babies (15%) had feeding issues. Median length of stay was 2 days in both studies

**DISCUSSION:** Significantly reduced resuscitation procedures were performed in babies born with meconium stained fluid after a low risk delivery with early postnatal period outcomes supporting the new practice.

Reference: 1. Foster JP etal: Routine oro/nasopharyngeal suction versus no suction at birth.Cochrane Database Syst Rev. 2017 Apr 18;4:CD010332. doi: 10.1002/14651858.CD010332.pub2. 2. Neonatal Resuscitation Program guidelines 2016

**Poster No. 228 - Neonatal**

**AN UNUSUAL CASE OF HYPOCALCAEMIC SEIZURES IN A NEONATE**

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**AIMS:**

To investigate the case of a non-dysmorphic breastfed male infant with seizures on day 8 of life. This infant was the first child of a non-consanguineous couple from Pakistan. It was an uncomplicated pregnancy. He was briefly admitted on day 1 due to low blood sugar, which normalised and he was discharged the following day. He presented on day 8 with a 48 hour history of abnormal twitching movements becoming more frequent and sustained and was found to be hypocalcaemic on admission.

**METHODS:**

A septic work-up and a seizure panel and EEG were performed. A detailed family history and maternal investigations were also performed. A karyotype for Di George was requested and an echo performed.

**RESULTS:**

The significant hypocalcaemia (0.723 mmol/l) on admission was determined to be the cause of the seizures. The remainder of his initial bloods were normal except for an elevated phosphate. The EEG, chest xray, cranial ultrasound and karyotype were all normal. Further biochemical testing revealed infant's parathyroid hormone (PTH) level of 3.3 pmol/ml (reference range: 1.6-6.9pmol/ml). His mother's parathyroid hormone level was high at 140.6 pg/ml (reference range: 15-65 pg/ml). Both maternal and infant vitamin D levels were negligible <8 nmol/l (reference range: 50-200nmol/l).

**CONCLUSION:**

This infant PTH value was low in the setting of hypocalcaemia. This presentation of neonatal seizures was secondary to maternal vitamin D deficiency causing hyperparathyroidism and hypocalcaemia. The ethnicity is relevant as Vitamin D deficiency is more common in dark-skinned mothers and in situations of low exposure to sunlight. High phytate consumption such as in chapati flour also contributes to Vitamin D deficiency and the dietary history was significant for consumption of several chapati daily<sup>1</sup>. Awareness of these risk factors is important in our increasingly diverse population and facilitates earlier diagnosis and appropriate treatment.

1.G R, Gupta A. Vitamin D deficiency in India: prevalence, causalities and interventions.Nutrients. 2014 Feb 21;6(2):729-75.

**Poster No. 229 - Neonatal****CORD BLOOD LYMPHOCYTE COUNT AS A POTENTIAL SCREENING TOOL FOR SEVERE COMBINED IMMUNODEFICIENCY (SCID)**

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**Background/Aim**

SCID is a rare inherited disease of the immune system commonly characterised by lymphopenia at birth. The condition is typically fatal unless corrected.

The aim of our study was to investigate a useful cut-off absolute lymphocyte value (cord blood sample) as a potential screening tool for SCID; a secondary aim was to evaluate the feasibility of cord sampling as a screening method for SCID.

**Methods**

All healthy term infants delivered during an 8-week study period were viable for inclusion. Consent was obtained as an 'opt-out' during antenatal visits or at onset of labour. A full blood count was performed on each cord blood sample focusing on a lower absolute lymphocyte limit of  $2 \times 10^9$  as a predictor for possible SCID. The study was approved by the Clinical Research Ethics Committee.

**Results**

Over the 8-week period, there were approximately 360 births in UCHG with 324 of these fitting our inclusion criteria, despite this cord samples were obtained from only 133 healthy term newborns. 26 of these samples were clotted; therefore 107 samples were fully analysed. We report a mean lymphocyte value at birth of  $5.51 \times 10^9/L$  (SD, 1.787; range, 0.9-11.7), neutrophils a mean of  $6.98 \times 10^9/L$  (SD, 2.67; range, 2.9-14.4) and platelets a mean of  $276.36 \times 10^9/L$  (SD, 65.2; range, 39-430). One newborn had a lymphocyte count below our cut off point ( $0.9 \times 10^9$ ), this child was followed up and values normalized within the first few weeks of life.

**Conclusions**

Cord samples are easy to obtain however many missed opportunities would negate this approach for a national screening approach. Normative data for full blood count values were generated. A lower white cell count of 1.5 would be acceptable for SCID screening purposes.

**Poster No. 230 - Neonatal****INDICATORS OF LUMBAR PUNCTURE IN WELL LOOKING NEONATES WITH EVIDENCE FROM NATIONAL QUESTIONNAIRE BASED SURVEY****S FAREED<sup>1</sup>, F YASIN<sup>2</sup>, Q MAHMOOD<sup>2</sup>, R KHAN<sup>1,2</sup>**<sup>1</sup>Paediatric Department, University Hospital Limerick, Limerick, Ireland<sup>2</sup>Paediatric Department, University Hospital Kerry, Tralee, Ireland**Background:**

The incidence of early onset neonatal bacterial meningitis (EONM) was estimated to be approximately 0.3 per 1000 live births. Sign of EONM in term infants typically present by first 6 hrs and the majority presents within the first 24hr of life. Diagnostic investigations varies widely. However, rationale to do lumbar puncture in well looking neonates with raised CRP varies widely

**Aims & Methods**

To perform a national survey via questionnaire to all paediatric consultant & neonatologist in Republic of Ireland. Questionnaire consists of questions regarding indication of lumbar puncture in well looking neonates with raised CRP and what level of CRP is indicative for Lumbar puncture.

**Result:**

97 questionnaires were sent. Response rate was 50%. 54% were from general Paediatric consultants, 30% from Neonatologist, 4% from Neurologist and 12% were unmentioned.

56 % will do lumbar puncture (LP) in well looking child with CRP >20. 35% will make decision of LP with clinical assessment of the neonates alone. In case of Clinical condition and elevated CRP, 33% will always do LP as compared to 50% who sometimes do LP and look for other blood markers. In case of positive blood culture and +/- positive blood PCR 56% will do the LP in stable neonates. According to survey 75% of the LP decisions were made by clinicians without considering any international guidelines.

**Conclusion:**

The decision to perform a lumbar puncture in neonate with suspected EONM remains unclear. In the high risk & healthy appearing babies, the data suggest that likelihood of meningitis is extremely low. Guidelines through national consensus & neonatal clinical advisory group is recommended.

1 [http://adc.bmj.com/content/99/Suppl\\_1/A172.2](http://adc.bmj.com/content/99/Suppl_1/A172.2) 2

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2082975/> 3

<https://www.ncbi.nlm.nih.gov/pubmed/7748701>

**Poster No. 231 - Sub-Specialty and Special Interest Paediatrics****ALLERGY EMERGENCY READINESS TRAINING: HOW ARE WE DOING?****A Alkhedir<sup>1</sup>, E Corbet<sup>1</sup>, A Byrne<sup>1</sup>**<sup>1</sup>Allergy, Our Lady's Children's Hospital Crumlin, Dublin, Ireland**Background**

Anaphylaxis is rapid in onset and potentially fatal. Immediate delivery of intramuscular adrenaline via an adrenaline auto injector (AAI) can be lifesaving. In our department, parents and patients receive standardised training in adrenaline delivery using a training tool that we have developed. Development of the training tool was prompted by an audit showing almost 10% of AAI prescriptions had not been filled. The purpose of this audit was to evaluate the effectiveness of the training tool.

**METHOD**

50 families, on regular follow up at OPD were interviewed using standardized questionnaire.

## RESULTS

35/50 were carrying at least 1 and 32/50 were carrying 2 AAI in clinic. 56.5 % of those trained more than 2yr ago, 66% of those trained over 1yr ago and 83% trained within the last year were carrying devices. Of those without devices, 7 were at home and 8 in the car but this was unconfirmed. Thus, all patients claimed to have purchased AAI devices. 48(96%) could demonstrate the correct site of injection. 44(88%) could correctly demonstrate how to administer. 42(84%) reported confidence in recognising the indications for adrenaline delivery. Only 35(70%) knew the name of their device but 45(90%) could identify their device when shown a variety of simulators. Only 31(62%) knew the expiry date on their device and 3 were carrying expired devices.

## CONCLUSION

The training tool is effective in teaching parents how and when to deliver AAI. Lack of awareness of expiry dates is a major concern. Similarly, too few families are always carrying AAI, increasing the risk of them not being available in an emergency. Although not statistically significant the data indicated an association between length of time since training and poor emergency readiness. A retraining tool will need to be considered along with other techniques to reinforce good practices

### Poster No. 232 - Sub-Specialty and Special Interest Paediatrics

#### POST-MALARIA NEUROLOGICAL SYNDROME: THE FIRST IRISH PAEDIATRIC CASE

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#### CASE REPORT:

##### Aims:

Post-malaria neurological syndrome (PMNS) is defined as a rare post-infective encephalopathy occurring within 2 months after *Plasmodium falciparum* infection with resolution of parasitaemia. Whilst the prevalence of PMNS is 0.12% in adults, the prevalence in children remains unknown.

In 1996, a Vietnamese study conducted over 4 years reported 23 patients with PMNS following full recovery from falciparum malaria. Of these, only 3 were children. A 2015 case report describes a further two children with post falciparum PMNS. There have been no further paediatric cases reported to date worldwide. Three neurological syndromes are recognised as PMNS at a time when the patient is aparasitaemic: Delayed cerebellar syndrome, Acute demyelinating polyneuropathy (GBS and Acute disseminated encephalopathy (ADEMs).

We report the first Irish paediatric case of falciparum PMNS, in a patient of African origin, born and living in Ireland. He recovered with mild neurological sequelae.

**Methods:** A case report and Review of the Literature looking for PMNS cases in paediatric population worldwide.

##### Results:

A 15 year old boy presented with 3 day history of progressive encephalopathy, raised ICP, seizures and myoclonic jerks. Treated with full recovery for severe falciparum malaria 6 weeks previously. Presumed PMNS after exclusion of other possible causes. He was sedated and intubated for 2 days and commenced on antimicrobials and antimalarial and Steroids. Clinical course was noted for improving left hemiplegia (GMFCS III) and recurrent headaches. MRI brain showed cerebral oedema and optic neuritis. EEG showed severe encephalopathy. No malaria parasites on repeated thick or thin films, but positive result from P. falciparum. CSF study only showed raised protein (1383g/dl. Viral PCRs were all negative. Repeated MRI post recovery showed resolved edema with mild brain volume reduction

## **Conclusion**

We present the first Irish paediatric case of PMNS. PMNS is an rare complication of malaria that must be differentiated from relapsing malaria, post infectious neurological syndromes such as ADEM.

Although the literature suggests that this is a self-limiting condition lasting 2-14 days requiring no specific treatment, in severe cases, steroids may help. Outcome is not always benign as demonstrated in our case.

1. Nguyen TH, Day NP, Ly VC, Waller D, Nguyen HP, Bethell DB, Tran TH, White NJ. Post-malaria neurological syndrome. *Lancet* 1996; 348(9032): 917–21 2. de Silva HJ, Gamage R, Herath HK, Abeysekera DT, Peiris JB. A delayed onset cerebellar syndrome complicating falciparum malaria. *Ceylon Med J* 1986; 31(3): 147–50 3. Schnorf H, Diserens K, Schnyder H, Chofflon M, Loutan L, Chaves V, Landis T. Corticosteroid-responsive postmalaria encephalopathy

## **Poster No. 233 - Sub-Specialty and Special Interest Paediatrics**

### **COELIAC DISEASE IN CHILDREN WITH DOWN SYNDROME**

**M Alsaftar**, J Balfe, F McGrane, M Nadeem, S Quinn, E Molloy

<sup>1</sup>Paediatrics, Trinity College, The University of Dublin, Dublin, Ireland

## **Aims**

Down syndrome (DS) is one of the commonest chromosomal abnormalities with an incidence of 1:444 births. Individuals with DS are at higher risk of developing coeliac disease (CD) than the general population (5-10% vs. 1%) and screening is recommended by both the European Society for Paediatric Gastroenterology, Hepatology and Nutrition and the National Institute for Health and Care Excellence.

We aimed to determine the screening rate and prevalence of CD in a cohort of children with DS attending a specialist clinic in Ireland.

## **Methods**

We performed a retrospective analysis of screening tests for CD in children with DS attending a single institution. All children attending the DS clinic have annual routine screening. Information was collated on Microsoft Excel. Ethical approval was obtained from the hospital ethics committee.

## **Results**

265 children with DS attended the paediatric service over the study period. Data was available for 212 children screened for CD using IgA anti-tissue transglutaminase antibody (IgA-tTG). 170/212 children (80%) also had serum IgA measured. 19/212 (9.4%) had elevated IgA-tTG. Subsequent serum anti-endomysial antibody (EMA) levels were elevated in all 19 cases.

CD was confirmed in 16/212 children at a rate of 7.5%. 15 were diagnosed using oesophagogastroduodenoscopy and duodenal biopsy. The final patient was diagnosed on the basis of clinical and biochemical findings. One child had a normal biopsy despite high IgA-tTG and EMA levels and in two further cases these biomarkers returned to normal.

## **Conclusion**

The rate of CD in children with DS in our cohort is higher than the rate of CD in the general population. Treatment of CD in children with DS has been shown to lead to better growth and bone mineral density. Thus, our findings support routine screening for IgA-tTG in patients with DS.

1. Loane M, Morris J, Addor MC et al. Twenty-year trends in the prevalence of Down Syndrome and other trisomies in Europe: impact of maternal age and prenatal screening. *European Journal of Human Genetics* 2013;21(1):27-33. 2. Carnicer J, Farre C, Varea V et al. Prevalence of coeliac disease in Down's syndrome. *European Journal of Gastroenterology & Hepatology* 2001;13(3): 263-267. 3. Husby, S, Koletzko S, Korponay-Szabo I.R. et al. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition Guidelines for the Diagnosis of Coeliac. *J Pediatr Gastroenterol Nutr* 2012;54(1): 136-60. 4. National Institute for Health and Care Excellence (2015) Coeliac disease: recognition, assessment and management. NICE Guideline [NG20].

**Poster No. 234 - Sub-Specialty and Special Interest Paediatrics****WHO USES A CHILDREN'S HOSPICE. A PROFILE OF SERVICE USERS AT A CHILDREN'S HOSPICE IN IRELAND****JM Balfe<sup>1</sup>, B Ritchie<sup>1</sup>, M Ahern<sup>1</sup>**<sup>1</sup>LauraLynn, Ireland's Children's Hospice, Dublin 18, Ireland**Background and Aims**

More than 3,800 children in Ireland are living with a life-limiting condition (LLC)<sup>1</sup>, there are approximately 350 childhood deaths per year. Children's hospice services meet the holistic needs of the child and family through a variety of services, including specialist short breaks, hospice in the home, end-of-life care, either in hospice or at home, symptom management, family support, and bereavement care.

This paper aims to describe the profile of children attending a children's hospice in Ireland in 2016.

**Methods**

Data was obtained from the hospice database, which maintains a record of demographic data, clinical details and service use by children and families.

**Results**

A total of 127 children accessed the service in 2016. The majority (45%) live in Dublin. The largest proportion (65%) have diagnoses in ACT category 4, 15% from ACT category 3, 14% ACT category 2 and only 6% from ACT category 1. Children who use the hospice services are most often diagnosed with neurological conditions (37%) and 27% have congenital problems. Only 4 children with cancer used the service in 2016.

Between Dec 2015 and Dec 2016, 62 new referrals were received, 48 children were accepted. The most frequent source of referral was the Children's Outreach nurse (42%), followed by paediatricians (15%) and social workers (5%).

26 children accessing the service died in 2016, 2 in the hospice, 10 in hospital and 13 at home, 1 child died abroad. Nursing support and memory making in the home was provided at end-of-life by the hospice home care team in 9 cases. All bereaved families have received support from the hospice bereavement team.

**Conclusion**

The above report provides initial data regarding the profile of children using a children's hospice in Ireland. This data helps to inform the needs of children with life-limiting conditions and to plan for future service provision.

1. Ling J, O'Reilly M, Balfe J, Devins M. Children with life-limiting conditions: establishing accurate prevalence figures. *Ir Med J.* 2015;108:93.

**Poster No. 235 - Sub-Specialty and Special Interest Paediatrics****CARDIAC MRI VOLUME AND PRE-EXISTING CONDITIONS AMONGST A LARGE PAEDIATRIC CONGENITAL HEART DISEASE POPULATION IN A TERTIARY CENTRE****C Broderick Farrell<sup>1</sup>, A Redmond<sup>1</sup>, S Drew<sup>2</sup>, R O'Connor<sup>2</sup>, O Franklin<sup>3</sup>, CJ McMahon<sup>3</sup>**<sup>1</sup>School of Medicine, Trinity College, Dublin, Ireland<sup>2</sup>Radiology, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland<sup>3</sup>Cardiology, Our Lady's Children's Hospital, Crumlin, Dublin, Ireland

**Aims:** To identify the volume of patients undergoing cardiac magnetic resonance imaging (CMRI). We also examined pre-existing patient conditions, patient age and general anaesthetic use.

**Methods:** This was a single centre retrospective study. Patients who had undergone CMRI between

January 2008 and July 2017 were identified from logbooks of MRI data. Individual patient records were found on the National Integrated Medical Imaging System (NIMIS). Patient reports on NIMIS were used to obtain information regarding pre-existing conditions in patients undergoing CMRI and use of general anaesthetic. The data collected was analysed to determine yearly and overall statistics in relation to CMRI volume, general anaesthetic use, patient age and pre-existing conditions in patients undergoing CMRI.

**Results:** 1627 patients underwent CMRI during the study period. 644 (39.58%) patients had CMRI under general anaesthetic. The mean age of our population was 8.25 years. The mean age of patients undergoing CMRI with general anaesthetic was 3.906 years. The number of patients with a syndrome undergoing CMRI increased from 4.62% in 2011 to 15.39% in 2016. Many patients in the study population had pre-existing conditions, of which the most common were tetralogy of Fallot, transposition of the great arteries, valvular heart disease and univentricular heart. There were 3 incidental extracardiac findings during the study period: 2 syringes and 1 paravertebral thoracic mass.

**Conclusion:** CMRI continues to be an important tool for the diagnosis and preprocedural assessment of congenital heart disease. [1] Both the volume of patients undergoing CMRI and the use of general anaesthetic have remained stable over the past 10 years. However, it has been shown that successful CMRI without general anaesthetic is feasible in many young patients. [2] This may be a safer option for our congenital heart disease population because of the potential increased anaesthetic risks. [3]

[1] Fratz S, Chung T, Greil GF, Samyn MM, Taylor AM, Buechel ERV, Yoo SJ, Powell AJ. Guidelines and protocols for cardiovascular magnetic resonance in children and adults with congenital heart disease: SCMR expert consensus group on congenital heart disease. *J Cardiovasc Magn Reson.* 2013; 15(51). [2] Kharabish A, Mkrtchyan N, Meierhofer C, Martinoff S, Ewert P, Stern H, Fratz S. Cardiovascular magnetic resonance is successfully feasible in many patients aged 3 to 8 years without general anaesthesia or sedation. *J Clin Anesth.* 2016; 34: 11-14. [3] Ntsinjana HN, Hughes ML, Taylor AM. The Role of Cardiovascular Magnetic Resonance in Pediatric Congenital Heart Disease. *J Cardiovasc Magn Reson.* 2011; 13(1): 51.

#### **Poster No. 236 - Sub-Specialty and Special Interest Paediatrics**

#### **A RARE CASE OF PANCREATIC PSEUDOPAPILLARY TUMOUR WITH METASTASIS IN A TEENAGE GIRL**

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#### **AIM:**

Pancreatic pseudopapillary tumours are rare and typically affect young women in their mid to late twenties with little to no clinical features. We describe a case of a teenage girl who presented with abdominal pain and was eventually diagnosed with this rare tumour.

#### **METHODS:**

*Case:* A thirteen year old girl was referred to the emergency department by her GP, complaining of a two week history of right upper quadrant pain. This pain was associated with nausea and poor appetite but no weight loss. She appeared well overall and her vitals were stable. On examination of the abdomen, there was a soft mass palpable in the right upper quadrant. The mass was tender on deep palpation.

#### **RESULTS:**

Blood tests showed a slightly raised alkaline phosphatase but otherwise normal renal and liver function tests. Amylase and full blood count were also normal. Ultrasound of the abdomen showed an indeterminate heterogenous 6.6 x 6.3 cm mass lesion in the right upper quadrant, associated with the liver, porta hepatis and head of the pancreas. CT thorax, abdomen and pelvis confirmed a large heterogenous necrotic right upper quadrant mass arising from the pancreatic head, associated with two lesions in the hepatic parenchyma concerning for metastatic disease. She was then transferred to a tertiary centre for further management. She went on to have a percutaneous liver biopsy and

laparoscopic pancreatic mass biopsy which revealed metastatic solid and cystic pseudopapillary neoplasm of the pancreas. Pancreaticoduodenectomy (Whipple procedure) and liver metastasectomy were performed successfully with a further operation planned in the coming weeks for resection of more metastatic disease.

**CONCLUSION:**

Pancreatic pseudopapillary tumours are rare and rarely metastasise although do have metastatic potential. Surgical excision is considered curative in many cases with 5 year survival as high as 96.5%. Prognosis in our case is currently uncertain.

1. Hruban RH, Pitman MB, Klimstra DS. Solid-pseudopapillary neoplasms. In: Silverberg SG, Sobin LH, editors. Tumors of the Pancreas, AFIP Atlas of Tumor Pathology. 4th Series, Fascicle 6. Washington, DC: ARP Press; 2007. pp. 231–50. 2. Speer AL, Barthel ER, Patel MM, Grikscheit TC. Solid pseudopapillary tumor of the pancreas: A single-institution 20-year series of pediatric patients. *J Pediatr Surg.* 2012;47:1217–22.

**Poster No. 237 - Sub-Specialty and Special Interest Paediatrics**

**THE INCIDENCE AND CLINICAL PRESENTATION OF PAEDIATRIC MALIGNANCIES IN UNIVERSITY HOSPITAL WATERFORD**

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**Aims:**

Paediatric malignancies are often a difficult diagnosis for paediatricians. Clinical presentation can often be quite non-specific.

This study aimed to determine what were the most common childhood malignancies presenting to a tertiary Paediatric department over a 15 year period. It then examined the clinical presentation of the most common malignancy, Acute Lymphoblastic Leukaemia (ALL).

**Methods:**

This was a retrospective chart review of children diagnosed with a malignancy in University Hospital Waterford between 2000 and 2015; N=100. The data was examined under the headings age at presentation, initial working diagnosis, confirmed diagnosis and clinical features.

**Results:**

Of the 100 cases in question 84 were diagnosed correctly on presentation to hospital. In order of incidence they were; ALL - 44 cases, Hodgkins Lymphoma - 9 cases, Osteosarcoma - 7 cases, Rhabdomyosarcoma - 7 cases, Medulloblastoma - 6 cases, AML - 4 cases, Optic Glioma - 3 cases, Nephroblastoma (Wilm's tumour) - 2 cases, Pontine Glioma - 2 cases, Other - 16 cases.

Of the 44 cases of ALL, 37 were diagnosed correctly on initial presentation.

In the cases of ALL the symptoms found in order of commonality were; fever – 33, fatigue – 29, abdominal pain – 9, cough – 9, weight loss – 7, anorexia – 4, dyspnoea – 4, bruising – 3, headache – 2, pallor – 2, vomiting – 2, petechial rash – 1, muscle weakness – 1, joint pain – 1, sore throat – 1, epistaxis – 1, rigors – 1, lower limb pitting oedema – 1.

**Conclusion:**

The presenting symptoms seen in ALL are among the most common symptoms seen in children in both the community and in emergency departments. As such it is important that clinicians keep the potential diagnosis of a childhood malignancy on their list of differentials as early detection and treatment can massively impact the long-term prognosis in this patient cohort.

**Poster No. 238 - Sub-Specialty and Special Interest Paediatrics**  
**CHILDREN WITH TRACHEOSTOMIES- AN INSIGHT INTO FAMILY LIFE**

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A tracheostomy is life-changing for families and brings many associated new challenges. This study offers an insight into the lives of children with tracheostomies and the impact this has on them, their caregiver(s) and the family unit on a daily basis. We explore how they have coped with the transformation in their life and the issues important to them. To date little is known about such families' experiences and quality of life once discharged from hospital. Patient experience is increasingly recognised as an important part of quality of care and as such we have a duty to allow our patients and their families to express their views.

In July 2015 all children who had tracheostomies, or had recently been de-cannulated, in our Trust were identified. The eligible nine families were invited to participate in the project by completing age appropriate questionnaires- Paediatric Quality of Life questionnaire, Strength and Difficulties questionnaire and Hospital Anxiety & Depression score and participating in a semi-structured face to face interview. Of the nine families contacted, six returned the questionnaires and five agreed to the face to face interviews. Interpretative analysis of transcribed interview data was performed by the lead researcher, and independently analysed by a Clinical Psychologist for quality assurance. Themes were developed from the analysis and agreed upon by both researchers.

Themes identified included adjustment to new roles, inconsistent care, effect on family relationships, present and future worries and coping with difficult decision-making. The study helped us gain a deeper understanding of what matters to these families and identify the following opportunities for improving care.

1. MDT tracheostomy teams with allocated slot at one-stop clinic for psychologist and social work to destigmatise these roles and to ensure families know how to access these professions when required.
2. Opportunity to meet other experienced families as standard.

**Poster No. 239 - Sub-Specialty and Special Interest Paediatrics**  
**FACTORS INFLUENCING DISCONTINUATION OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII), IN CHILDREN WITH TYPE 1 DIABETES: A POPULATION BASED COHORT STUDY.**

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<sup>2</sup>National Children's Research Centre, Dublin, Ireland.

**Aims:** Continuous subcutaneous insulin infusion (CSII) is a safe and effective mode of insulin delivery, in children and adolescents with Type 1 diabetes. Although there are numerous advantages to CSII therapy, barriers to success remain. CSII discontinuation rates in the paediatric population have not been well described to date. The aim of this study was to calculate the rate of CSII discontinuation, at an Irish tertiary paediatric centre, and to study the factors that influence the decision.

**Methods:** Eligible patients were identified through review of the electronic database "DIAMOND". All patients included had discontinued CSII therapy between January 2007 and December 2016. Subsequent electronic and medical paper chart review was performed to identify data variables of interest.

**Results:** There was an increase in the percentage of patients receiving CSII therapy at the centre, over the study period (16-52%). A total of 14 patients stopped CSII therapy, with an average annual discontinuation rate of 0.87%. All patients discontinuing CSII therapy were in the adolescent age group (12.5-16.8yrs). Persistent missing boluses (n=12), increasing Hba1c (n=10) and adolescent stress

(n=11), were the most common reasons quoted. Mean HbA1c in this group was highest at 75mmol/mol (58-99mmol/mol), in the year prior to discontinuation. Acute complications were high in this cohort, in the same period, with DKA (n=3), hypoglycaemia (n=3) and hospital admission (n=5). 4(28.5%) patients received shared care with a regional unit. There was a mean of 9(5-17) contacts per patient, with the diabetes team, in the preceding year. In 6 cases the decision was team initiated, with 8 patients requesting discontinuation.

**Conclusions:** CSII discontinuation is uncommon in our centre compared to published data. The factors contributing to CSII discontinuation are complex and the rate of pump failure appears to be significantly higher around the challenging adolescent years.

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#### **Poster No. 240 - Sub-Specialty and Special Interest Paediatrics**

#### **"A VERY SWEET NEONATE" - NEONATAL DIABETES CAUSED BY A RECESSIVELY INHERITED, NONSENSE MUTATION IN THE *INS* GENE.**

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**Aims:** Neonatal diabetes (NDM) is a rare (1:100-500,000 live births) form of monogenic diabetes that occurs in the first six months of life and is caused by inherited or sporadic mutations in single genes, that are critical for beta cell function. The role of genetic analysis in NDM is not limited to confirmation of the diagnosis, but also impacts treatment selection and expected outcomes. We describe the clinical course of a preterm, severely growth restricted neonate, who was transferred to our unit for management of hyperglycaemia and subsequently underwent genetic testing.

**Methods:** Following initial investigation and management, sequence analysis of *KCNJ11*, *INS* and *ABCC8* genes was undertaken.

**Results:** A severely growth restricted (Birth weight 1.48kg, <0.4th centile), preterm (35+6 weeks gestation), male neonate, was found to be significantly hyperglycaemic following delivery. Peak blood glucose level on the first day of life was measured at 46.8mmol/l. He was mildly acidotic (ph 7.27, HCO<sub>3</sub>-14mmol/l) and dehydrated, without significant ketosis. Following sepsis evaluation and fluid resuscitation, he was commenced on intravenous insulin and transferred to our unit for further management. Family history was remarkable for parental consanguinity. Clinical examination confirmed asymmetric intrauterine growth restriction, with no features of dysmorphism and an age appropriate neurological assessment. Insulin requirements varied from 0.9-1.5 unit/kg/day, suggestive of absolute insulin deficiency. He was gradually established on continuous enteral feeds. Insulin administration was complicated by inadequate subcutaneous fat, which prevented early transition to subcutaneous infusion. He was eventually established on continuous subcutaneous insulin infusion at a weight of 3.44kg on day 63. He had minimal hypoglycaemia, maintained a normal HbA1c (40 mmol/mol) and had normal neuroimaging at discharge. Sanger sequencing confirmed a nonsense homozygous mutation in the *INS* gene, with both parents confirmed heterozygous carriers.

**Conclusions:** Management of neonatal diabetes is particularly challenging in low birth weight infants and necessitates intensive monitoring and specialist input.

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**Poster No. 241 - Sub-Specialty and Special Interest Paediatrics**  
**FAMILIAL CRANIAL DIABETES INSIPIDUS - IT'S ALL IN THE HISTORY.**

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**Aims:** Cranial diabetes insipidus is characterised by polyuria and polydipsia secondary to partial or complete deficiency of antidiuretic hormone. Although in most patients non-hereditary causes underlie the disorder<sup>1,2</sup>, rarer genetic defects in arginine vasopressin (AVP) synthesis have been identified<sup>3,4</sup>. We describe the case of a 5 year old girl who posed a significant diagnostic challenge, with a suggestive history and strong family history of cranial diabetes insipidus, but non diagnostic biochemistry.

**Methods:** Our patient was reassessed and AVP gene testing was performed.

**Results:** A 5 year old girl, presented with a four year history of polyuria, polydipsia and associated enuresis. Family history was remarkable for suspected familial cranial diabetes insipidus responsive to desmopressin, in the patient's mother, maternal uncle and maternal grandfather. Genetic testing had not previously been undertaken. Our patient had previously been investigated with water deprivation test at age 3 years and was found to have normal biochemistry, without polyuria during the test. She represented at the age of 5 years to our service with ongoing symptoms and underwent repeat water deprivation testing. Serum sodium and osmolality remained normal (max 140mmol/l and 285mmol/kg respectively) with water deprivation, but she did not concentrate her urine (urine osmolality 222mmol/kg at the end of water deprivation test). AVP gene testing was requested and identified a heterozygous pathogenic missense mutation c.61T>C, confirming a diagnosis of familial cranial diabetes insipidus.<sup>5,6,7</sup> The same mutation was identified in the patient's mother, suggesting autosomal dominant inheritance. She was commenced on desmopressin with excellent response.

**Conclusions:** Genetic testing may be a useful aid in the diagnosis of inherited cranial diabetes insipidus. Since these patients have progressive loss of AVP, they may initially respond normally to water deprivation testing. If the index of suspicion remains high, genetic testing is recommended to guide treatment.

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## **Poster No. 242 - Sub-Specialty and Special Interest Paediatrics**

### **MPO-ANCA ASSOCIATED NECROTISING GLOMERULONEPHRITIS IN AN EIGHT YEAR OLD GIRL, WITH PRECEDING HISTORY OF BILATERAL ORBITAL HYPERPLASIA.**

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**Aims:** We describe the case of an 8 year old girl who presented with severe acute renal failure on a background of a previous presentation with bilateral orbital inflammatory lesions.

**Methods:** Our patient underwent extensive immunological testing.

**Results:** An eight year old female was referred to our unit with acute renal failure. History was significant for recent varicella infection, a six day history of vomiting, mild non-bloody diarrhoea and oliguria. Investigations indicated severe renal failure (creatinine 1398µmol/l, urea 68µmol/l) and hyperkalaemia. Urine microscopy revealed granular and white cell casts. Immunological studies showed positive perinuclear anti-neutrophil cytoplasmic antibody (P-ANCA) with a myeloperoxidase (MPO) titre of 9.3IU/ml (0.0-3.4 IU/ml). Renal biopsy showed severe necrotising glomerulonephritis. Interestingly, this patient had presented 1 year prior with bilateral orbital inflammatory masses with orbital biopsy showing reactive lymphoid hyperplasia and immunohistochemical analysis indicating IgG4 positive plasma cells. Orbital lesions had resolved with corticosteroid therapy. Following representation with severe renal failure, she was treated with haemofiltration, plasmapheresis, methylprednisolone and subsequent immunosuppression (complicated by recent varicella infection). She had a remarkable response to treatment and measured creatinine recovered to 53µmol/l. There was no evidence of other system involvement.

**Conclusions:** ANCA (Anti neutrophil cytoplasmic antibody) associated vasculitides are extremely rare in childhood, though are associated with significant morbidity, mortality and treatment challenges. Paediatric data remains limited, with most knowledge derived from larger adult studies. We describe the case of a young girl with severe acute renal failure and a previous presentation with bilateral orbital inflammatory masses associated with MPO-ANCA positivity. We postulate a link between both presentations. Fortunately she demonstrated an excellent response to treatment and continues to progress well without relapse. Further paediatric research is needed to ascertain true prognosis in this group.

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## Poster No. 243 - Sub-Specialty and Special Interest Paediatrics

### MEDICAL TOURISM IN THE METABOLIC WORLD!

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**Background** Enzyme replacement therapy (ERT) with Elosulfase Alpha is the only therapy that can potentially slow the progression of Morquio syndrome. It is a new medication, awaiting approval from the HSE and NHS with significant financial costs to be incurred by the providing healthcare system.

**Aims** Our aim is to report a sibship pair with an ultrarare genetic disorder for which treatment may soon be made available here with a view to raising awareness of the condition to facilitate prompt diagnosis and in addition, highlighting the cost implications to our economy. We examine the culture of “medical tourism” for treatment of rare disorders.

**Methods** We describe the presenting features, examination findings, results of haematological, biochemical, radiological and genetic investigations in addition to the natural history and outcome to date of two brothers in whom we diagnosed the rare inborn error of metabolism Mucopolysaccharidoses type 4a (Morquio syndrome).

**Results** Two brothers, (14 and 9 years) were referred by their General Practitioner to a Consultant Paediatrician for etiological medical investigation and subsequent management of their complex phenotype of coarse features, faltering growth, short stature, skeletal dysplasia, developmental regression and sensorineural deafness. Born to healthy consanguineous Pakistani parents, an older sibling undiagnosed but with a similar phenotype died aged 17 years. The children, their mother and 2 siblings had recently moved here from Pakistan to live with their father. The parents report 23 other children in their village with a similar condition.

**Conclusion** ERT with Elosulfase alpha is the only treatment available for Morquio syndrome 2 . The annual acquisition cost per patient is €486, 440. Many developing countries have a critical lack genetics and metabolic services needed to manage these rare disorders while many developed countries, including our own have inadequate funding structures for this purpose thus forcing families to seek help elsewhere.

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**Poster No. 244 - Sub-Specialty and Special Interest Paediatrics**

**Food refusal in autism: Is it undiagnosed food allergy?**

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**Background:** Autism spectrum disorder (ASD) is a neurodevelopmental disorder associated with restrictive or repetitive behaviours and difficulties with verbal and interpersonal communication. There has been a 269% increase in prevalence in ASD from 4.2 per 1,000 in 1996 to 15.5 per 1,000 in 2010 (1) . The incidence of food allergy is also increasing. Dysbiosis of the human microbiome has been linked with both food allergies and autism (2).

Estimates suggest upwards of 90% of children with ASD experience some type of feeding related concern (3). Food selectivity (i.e., only eating a narrow variety of foods by type texture, and/or presentation) represents the most pervasive feeding issue(4). The incidence of food allergy in children with autism is unknown but is likely significantly underestimated. Food refusal may represent avoidance from foods which cause symptoms of food allergy e.g oral tingling/itching.

**Report:** Table 1 reports the clinical characteristics of three children with Autistic Spectrum Disorder (ASD) attending our tertiary referral allergy service. All three have at least one confirmed immediate allergic reaction to food.

	Case 1	Case 2	Case 3
Referral source	ED	GP	dermatology
Reason for referral	Egg anaphylaxis	Multiple food refusals	Multiple food reactions
Age	3	7	9
Atopic disease	Eczema, asthma	Eczema, asthma	Eczema, asthma, AR
Clinical reactions to food	Egg anaphylaxis	Milk	Milk, egg, kiwi, wheat
Food intake	Repeatedly spits out food Multiple food refusals	Food refusal and aversion to most foods since weaning	Multiple food refusals, avoids all fruit and vegetables
Sensitisations (SPT or specific IgE)	Egg, peanut, treenuts, salmon, tuna, cod, sesame seed, beef, chicken, banana, broccoli.	Egg, peanut, treenuts, cod, wheat, chicken, sesame seed, banana, rice, carrot, pear, soya, Pru P 4 Profilin Peach,	Wheat, milk, peanut, tree nuts, cod, soya. rPru P 3 LTP Peach rPru P 4 Profilin Peach Birch PR-10 rBet v1 Birch Profilin rBet v2

Abbreviations: ASD: Autistic Spectrum Disorder; ED: emergency department; GP: general practitioner; AR: allergic rhinitis; SPT: skin prick test;

All children display behaviours to multiple foods that they may or may not be sensitised to including food refusal, aversion, spitting out, gagging leading to significant dietary restriction. It is impossible to know if food refusals were due to dysfunctional eating habits of ASD or true food allergy symptoms.

#### **Clinical relevance**

We wish to highlight that physicians face challenges both in the diagnosis and management of food allergy in the autistic child. The history may be that of multiple food refusal and food aversions. Investigations are limited and often multiple sensitisations are present. Skin prick testing and blood testing may not be successful with oral food challenges often impossible in an autistic child. We recommend that parents must be guided by food refusals in these children and that they are supported by dietetics and psychologists.

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#### **Poster No. 245 - Sub-Specialty and Special Interest Paediatrics**

#### **PREGNANCY-RISK AND NEONATAL-COMPLICATIONS AMONGST NEONATES OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS ADMITTED TO UNIVERSITY MATERNITY HOSPITAL LIMERICK (UMHL), IRELAND.**

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**Introduction:** The prevalence of pregnancies complicated with gestational-diabetes-mellitus (GDM) is increasing and is associated with an increased risk of complications in both mother and fetus. The aim of this research is to describe the neonatal complications of GDM in an Irish cohort.

**Methods:** Preliminary data from a retrospective observational cohort of pregnancies affected by GDM born in 2016 at UMHL are presented. Inclusion-criteria were singleton pregnancies with no treatment with insulin. Data were abstracted from maternal medical records. Pregnancy risk was defined as maternal-age (high risk>35years), delivery method, obstetric history, family-history of diabetes, pre-existing insulin-resistant condition and GDM in previous pregnancy. Neonatal complications described were large-for-gestational-age (LGA; weight>90<sup>th</sup> percentile for gestation), macrosomia, admission to neonatal-high-dependency-unit, neonatal-hypoglycaemia (plasma glucose<2.2mmol/L), neonatal-jaundice, pre-term delivery (<37weeks), respiratory-distress and low APGAR score(<7 at 1 or 5 minutes).

**Results:** Data from 152-pregnancies and 152 neonates were included 79 (52.0%) male and 73(48.0%) female. Maternal-age at birth was 32.8 years (range; 18.2-44.0y), forty-three (7.2%) mothers were aged>35years. Their BMI ranged from 18.6-48.2kgm<sup>-2</sup>. Twenty-eight (18.42%) women previously had GDM, and 10(6.6%) mothers had a parity of ≥3. Fifty-seven (37.5%) mothers reported a family-history of diabetes, and 12(7.9%) had a pre-existing insulin resistant condition. Sixty-neonates (39.5%) were born by caesarean-section, amongst these 17(11.2%) were emergencies. Mean gestational-age was 38.6±1.2weeks; 16(10.5%) neonates were born <37weeks. Mean birth-weight was 3.415±0.5 kg, 13 (8.6%) born LGA, and 16(11%) macrocosmic (birth weight >4kg). Thirty-five (23.0%) neonates were admitted to the neonatal high-dependency-unit. Complications included hypoglycaemia, experienced by 21(13.8%) neonates, 7(4.6%) suffered neonatal-respiratory-distress and 37(24.3%) experienced neonatal-jaundice. Low APGAR Score was reported in 7(4.6%) neonates.

**Conclusion:** Neonates born to mothers with diet-controlled-GDM in this study had higher rates of delivery by caesarean-section, admission to NICU, incidence of hypoglycaemia, macrosomia, neonatal-

jaundice and respiratory-distress-syndrome. These data suggest significant neonatal- morbidity related to maternal diet-controlled-GDM.

O'Sullivan EP, Avalos G, O'Reilly M, Denny MC, Gaffney G, Dunne F; Atlantic DIP Collaborators. Atlantic Diabetes in Pregnancy (DIP): the prevalence and outcomes of gestational diabetes mellitus using new diagnostic criteria. *Diabetologia* 2011; 54(7): 1670-5. Retnakaran R, Ye C, Hanley AJ, Connelly PW, Sermer M, Zinman B, Hamilton JK. Effect of maternal weight, adipokines, glucose intolerance and lipids on infant birth weight among women without gestational diabetes mellitus. *CMAJ*. 2012 Sep 4;184(12):1353-60. Yessoufou A, Moutairou K. Maternal diabetes in pregnancy: early and long-term outcomes on the offspring and the concept of "metabolic memory". *Exp Diabetes Res* 2011; 2011:218598.

#### **Poster No. 246 - Sub-Specialty and Special Interest Paediatrics**

##### **KETAMINE: A REVIEW OF USAGE WITHIN RBHSC PICU.**

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<sup>4</sup>RBHSC, Belfast trust, Belfast, UK

#### **BACKGROUND & AIMS:**

Ketamine is a commonly used controlled drug used within intensive care for sedation and analgesia. In the majority of cases we use only a small amount discarding the rest. This is a patient safety concern, as, in an emergency, time is wasted drawing up small amounts from a large vial. There is also no documentation to say where large volumes of this controlled drug are being discarded. The aim of this review is to provide evidence that the use of pre filled syringes is safer practice.

#### **METHOD:**

This was a retrospective review of the use of ketamine (200mg in 20ml) within Belfast PICU between July 2016 and February 2017. Data was collected from the ketamine controlled record book. The amount used and wasted each time was noted in milligrams.

#### **RESULTS:**

There was a total of 297 entries in the ketamine controlled record book during this time period with total wastage amounting to 89.9%. 49.5% of entries used 1ml or less and discarded the rest.

#### **CONCLUSIONS:**

Introducing 1ml and 2.5ml pre filled syringes into PICU would cover 77.1% of ketamine use based on this review. Our findings strongly suggest that pre filled syringes would lead to safer practice and lead to less wastage. Re-reviewing this after 6 months of using pre filled syringes would provide evidence of this.

#### **Poster No. 247 - Sub-Specialty and Special Interest Paediatrics**

##### **CASE REPORT: FIRST ISOLATION OF BOCAVIRUS AND PSEUDOMONAS AERUGINOSA IN A BAL SAMPLE FROM A PAEDIATRIC PATIENT WITH CYSTIC FIBROSIS**

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**Background:** Cystic fibrosis (CF) is an inherited condition characterised by progressive decline in pulmonary function, (Gangell, et al., 2014). Exacerbations, beginning in early life, are characterised by periods of infection/inflammation, with a drop in lung function that may not be reversed (Chin, et al., 2015). Bacteria are typically implicated in exacerbations. However recent literature suggests that viruses have an important role, (Asner, et al., 2012). Recently discovered, Bocavirus is associated with respiratory tract infections, however its role in CF patients as a pathogen is disputed (Frickmann, et al., 2012).

**Aim:** This study reviews the scientific literature to determine the detection rate and clinical significance of Bocavirus infection in paediatric patients with CF, and presents a clinical case.

**Methods:** Using the keywords “cystic fibrosis” and “bocavirus”, the scientific literature was reviewed, for the last 10 years. The patient’s medical records were studied.

**Results:** A 4-year-old male patient with CF underwent a routine surveillance bronchoscopy. Bronchial washings were sent to the National Virus Reference Laboratory and detected Bocavirus, Rhinovirus and Metapneumovirus. Standard culture grew *Staphylococcus aureus* and a new acquisition of *Pseudomonas aeruginosa*. The detection rate of Bocavirus in paediatric CF patients is reported in the literature as 0.5 – 3.2% however the clinical significance is unknown. Our case represents the first report of Bocavirus detected in a BAL sample from a child with CF with *P. aeruginosa* co-infection.

**Conclusion:** The clinical significance of Bocavirus in this 4-year-old with CF is uncertain, but suggests more research is needed to evaluate its potential role in the acquisition of *P. aeruginosa* infection of the lower airways.

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#### **Poster No. 248 - Sub-Specialty and Special Interest Paediatrics**

#### **EVALUATION OF THE PERSONAL AND LIFE SKILLS (PALS) PROGRAMME FOR EARLY ADOLESCENTS WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDER (ASD).**

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<sup>2</sup>Medicine, University College Cork, Cork, Ireland

**AIMS:** To evaluate the overall outcome of the PALS programme and assess the interventional impact on the reduction of autistic traits from pre-intervention to post-intervention.

**METHODS:** This study was facilitated in a specialist ASD clinic and designed as a non-trial based intervention in response to a growing demand for a social skills programme. The intervention provides support in the areas of language and behaviour. The programme was facilitated over 18 months with 30 children completing the programme.

**RESULTS:** In relation to the Autism Treatment Evaluation Checklist (ATEC), there was a significant difference across time points on the total ATEC score indicating a significant reduction in overall autistic traits. Equally, there was a significant difference across time points on the Spence evaluator indicating an overall reduction in anxiety levels across the group. Furthermore, the Social Participation subscale within the Autism Social Skills Profile (ASSP) evaluator demonstrated significance across time points. Social/pragmatic language skills, loneliness and self-esteem scores, while not statistically significant, demonstrated areas of improvement within subscales.

**CONCLUSION:** These findings suggest that a social-skills interventional programme may provide a key support structure to children with ASD during challenging times of transition. This support may have a positive impact in the reduction of overall autistic traits.

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Adolescent Psychiatric Clinics 24(1): 99-115. Reichow, B., A. M. Steiner and F. Volkmar (2013). "Cochrane review: social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD)." Evidence-Based Child Health: A Cochrane Review Journal 8(2): 266-315.

**Poster No. 249 - Sub-Specialty and Special Interest Paediatrics**  
**SUPRAVENTRICULAR TACHYCARDIA AS A COMPLICATION OF SEVERE DIABETIC KETOACIDOSIS IN AN ADOLESCENT WITH NEW ONSET TYPE 1 DIABETES**

**BP Finn<sup>1</sup>, B Fraser<sup>1</sup>, SM O'Connell<sup>1</sup>**

<sup>1</sup>Paediatric, Cork University Hospital, Cork, Ireland

**Aim:** We report the case of a new onset type 1 diabetic who presented in diabetic ketoacidosis and subsequently developed a supraventricular tachycardia.

**Methods:**

Numerous online databases were examined to identify relevant papers which could be included in this review. The clinical findings, electrocardiograms and blood profile of the index case were reviewed.

**Results:**

An eleven year old boy presented to the Emergency Department with a five day history of lethargy, intermittent vomiting and a self-limiting 24 hour history of diarrhoea. He subsequently collapsed with no loss of consciousness.

On admission, he had a Glasgow Coma Scale of 14/15. He was pale, tachypnoeic with Kussmauls breathing, and showed signs of shock (poor perfusion and tachycardia).

Hyperglycaemia (blood glucose 41.6mmol/L) was noted on venous blood gas which also showed a pH of 6.9 (7.35-7.45), pCO<sub>2</sub> 3.4kPa (4.7-6.0), lactate of 4.2 mmol/L (0.4-1.3), base excess -27.3 mmol/L (-2 to +2) and bicarbonate of 4.9 mmol/l (21-28) consistent with severe diabetic ketoacidosis (DKA). He had hyperkalaemia (Potassium 6.8mmol/l (3.5-5)) but no electrocardiogram changes were noted.

A resuscitation 10ml/kg bolus of normal saline was given and maintenance fluids with replacement for deficit were commenced. Insulin was started at 0.1units/kg/hour. Subsequently brief runs of supraventricular tachycardia (SVT) were noted on his cardiac monitor 19 hours since admission, the longest of 5 minutes duration, culminating in a prolonged (>1 hour) SVT which failed to respond to vagal manoeuvres and adenosine but was successfully converted with flecainide.

**Conclusion:**

Arrhythmias are a rare complication of DKA with only three other reported cases of SVT available<sup>1,2</sup>. The possible precipitating factors are the acidosis slowing the conduction pathways enabling a re-entry circuit to form<sup>3</sup> or the electrolyte abnormalities sensitising the conduction pathways<sup>3</sup> or a combination of both. DKA can also produce hypomagnesaemia and hypophosphataemia which can trigger SVT<sup>4</sup>.

1. Faruqi T, Hanhan U, Orlowski J et al. Supraventricular Tachycardia With Underlying Atrial Flutter in a Diabetic Ketoacidosis Patient. *Clinical Diabetes*. 2015;33(3):146-149.
2. Thomas N, Scanlon J, Ahmed M. Supraventricular tachycardia in association with diabetic ketoacidosis. *The British Journal of Diabetes & Vascular Disease*. 2007;7(5):244-245.
3. Orchard C, Cingolani H. Acidosis and arrhythmias in cardiac muscle. *Cardiovascular Research*. 1994;28(9):1312-1319.
4. Cubbon R, Kearney M. Review: Acute metabolic derangement and the heart. *The British Journal of Diabetes & Vascular Disease*. 2007;7(5):218-222.

**SVT 180bpm SVT run resolves spontaneously**

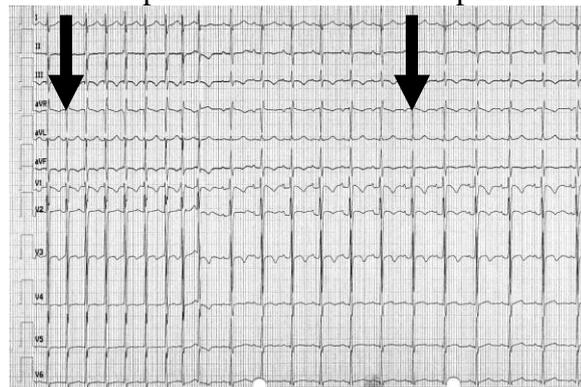


Figure 1: SVT run which self resolved – 19 hours since admission

**Poster No. 250 - Sub-Specialty and Special Interest Paediatrics**

**DIABETIC KETOACIDOSIS PRESENTATIONS IN PATIENTS WITH KNOWN AND NEW ONSET DIABETES AT CORK UNIVERSITY HOSPITAL OVER A FIVE YEAR PERIOD**

**B Finn<sup>1</sup>, J Trayer<sup>1</sup>, A Vatka<sup>1</sup>, SMP O'Riordan<sup>1</sup>, C Cronin<sup>1</sup>, SM O'Connell<sup>1</sup>**

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**Aims:**

To analyse all patients presenting with Diabetic Ketoacidosis (DKA) over a five year period from January 2012- October 2017, including the proportion of patients with new and known T1DM, treatment modalities (e.g. pump/multiple daily injections), demographics, severity, length of stay and outcomes.

**Methods:** Patients were identified from records prospectively maintained by the paediatric diabetes service and HIPE office at Cork University Hospital, and charts reviewed retrospectively. Data was collected on Microsoft Excel and results calculated.

**Results:** There were 129 admissions with Diabetic Ketoacidosis to CUH over the study period - mean age at presentation was 9.75 years (range 9 months to 17.58 years). Winter was the busiest season (29.4%). DKA was seen in 38.1% of new presentations of T1DM.

In 40% there was a known diagnosis of T1DM (mean age 13.23 years, 70.6% were over 12 years). Overall, the severity of DKA was mild in 60 (46%), moderate in 34 (26.4%) and severe in 35 (27.1%) cases. Of the 52 with known diabetes, 13 (25%) had severe and 15 (28.8%) had moderate DKA. The precipitating factors included poor compliance and psychosocial factors (28/52), acute illness (16/52), and pump technical failure (5/52). Overall, the mean time to correct acidosis was 17.9 hours and the average length of stay was 6 days. ICU admission was required for 10 (7.8%) children. There were two cases treated for suspected cerebral oedema and one case each of subarachnoid haemorrhage and cardiac arrhythmia; all had good outcomes. There were no deaths.

**Conclusion:**

DKA is a common and life-threatening presentation in new and established childhood diabetes. The current rate of new T1DM presenting in DKA is higher than international data. The high frequency of DKA in patients with known diabetes indicates a need for improved education with particular focus on the adolescent age group.

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2. Craig M, Jefferies C, Dabelea D, Balde N, Seth A, Donaghue K. Definition, epidemiology, and classification of diabetes in children and adolescents. *Pediatric Diabetes*. 2014;15(S20):4-17.

**Poster No. 251 - Sub-Specialty and Special Interest Paediatrics**

**SUBARACHNOID HAEMORRHAGE AS A COMPLICATION OF SEVERE DIABETIC KETOACIDOSIS IN A PRE-ADOLESCENT WITH NEW ONSET TYPE 1 DIABETES**

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<sup>3</sup>Department of Anaesthesia and Intensive Care, Cork University Hospital, Cork, Ireland

**Aim:** We report the presentation, management and outcome of a girl with new onset type 1 diabetes who presented with diabetic ketoacidosis (DKA) and subarachnoid haemorrhages.

**Methods:**

The clinical findings, radiological imaging, management and outcome of the patient were reviewed.

**Results:** A 10 year old girl presented to the emergency department with a history of progressive weight loss and polydipsia over the past few weeks. On the night prior to presentation, her speech had slurred, she had become obtunded and had developed an insatiable thirst with associated vomiting. On the morning of admission, the patient was found to be unrousable and had experienced incontinence of urine. On admission, Glasgow Coma Scale (GCS) was 6/15, she was cachectic and in shock.

Venous blood gas showed hyperglycaemia (blood glucose 41.6mmol/L), a pH of <6.8 (unrecordable) (7.35-7.45), pCO<sub>2</sub> 3.5kPa (4.7-6.0), lactate of 4.2 mmol/L (0.4-1.3), base excess -27.3 mmol/L (-2 to +2) and bicarbonate was incalculably low (21-28) consistent with severe DKA.

Her GCS rose to 11/15 following resuscitation fluids when neurological status suddenly deteriorated with a fall in her GCS to 8/15 with a sluggish left pupil which was not responding to light. An urgent CT brain 4.5 hours after arrival showed no cerebral oedema but extensive subarachnoid haemorrhages bilaterally with numerous punctate haemorrhages. Outcome was excellent with intensive treatment of the DKA.

**Conclusion:**

Spontaneous intracranial haemorrhages are a rare event by themselves in childhood with a prevalence of 0.0014-0.028%<sup>1</sup>. The differential for sudden focal neurological deterioration in the setting of DKA is cerebral oedema followed by ischaemic and haemorrhagic stroke<sup>2</sup>. Spontaneous intracranial haemorrhages can present with non-specific features frequently e.g. impaired consciousness, even when biochemical parameters are improving in the setting of DKA<sup>1</sup>. Our patient is unique in that no focal neurological or neuropsychological deficits have been found on six months follow up.

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**Poster No. 252 - Sub-Specialty and Special Interest Paediatrics**

**COELIAC SCREENING IN A HIGH RISK POPULATION; PAEDIATRIC TYPE 1 DIABETES. A REVIEW OF CURRENT GUIDELINES AND PRACTICE**

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<sup>2</sup>Surgery, Temple Street CUH, Dublin, Ireland

<sup>3</sup>Histopathology, Temple Street CUH, Dublin, Ireland

**AIMS:** Coeliac Disease (CD) is more common in those with Type 1 Diabetes Mellitus (T1DM)(1-3), and may be asymptomatic despite the presence of intestinal histological changes(3, 4). Optimal screening practise guidelines differ internationally. We undertook a retrospective audit to determine the efficacy of current screening practice for CD in T1DM in our centre.

**METHODS:** All children and adolescents < 16 years, diagnosed with T1DM in our service and continuing to attend the service in January 2017 were included. Data on CD screening was collected and compared to current NICE, NASPGHAN and ESPGHAN guidelines.

**RESULTS:** Of the 355 patients attending our service, 253 attended from T1DM diagnosis and all had CD screening performed in our centre. In 37 of 253 patients, IgA-TTG was positive, providing a cumulative prevalence of 14.6%. Of these, 31(83.8%) with an elevated TTG on screening had no recorded gastrointestinal symptoms or CD related clinical signs. Of the 35 TTG plus EMA positive patients, 22/35 (59.5%) had diagnostic endoscopic biopsy. Nineteen (83.4%) had CD confirmed, 1 (4.5%) had negative biopsy and 2 (9%) had equivocal, non-diagnostic changes.

Asymptomatic at screen positive	31(83.8%)
Positive TTG in first 24 months post T1DM diagnosis	26(70.7%)
Biopsy confirmed CD after positive TTG & EMA	19(83%)
Equivocal Biopsy after positive serology	2(9%)
Negative biopsy with positive serology	1(4.5%)

## CONCLUSIONS:

Timely diagnosis of CD can prevent chronic ill health in affected individuals and in patients with T1DM, CD is an independent risk factor for increased morbidity and mortality (5, 6). Given the high prevalence of atypical symptoms and silent CD in those with T1DM, in this and other studies(3, 4), and the benefits of detection and treatment of CD, screening is essential. Large scale data collection allowing for the development of evidence based guidelines is required.

1. Aktay AN, Lee PC, Kumar V, Parton E, Wyatt DT, Werlin SL. The prevalence and clinical characteristics of celiac disease in juvenile diabetes in Wisconsin. *Journal of pediatric gastroenterology and nutrition*. 2001;33(4):462-5. 2. Crone J, Rami B, Huber WD, Granditsch G, Schober E. Prevalence of celiac disease and follow-up of EMA in children and adolescents with type 1 diabetes mellitus. *Journal of pediatric gastroenterology and nutrition*. 2003;37(1):67-71. 3. Al-Hussaini A, Sulaiman N, Al-Zahrani M, Alenzi A, El Haj I. High prevalence of celiac disease among Saudi children with type 1 diabetes: a prospective cross-sectional study. *BMC gastroenterology*. 2012;12:180. 4. Bybrant MC, Orqvist E, Lantz S, Grahnquist L. High prevalence of celiac disease in Swedish children and adolescents with type 1 diabetes and the relation to the Swedish epidemic of celiac disease: a cohort study. *Scandinavian journal of gastroenterology*. 2014;49(1):52-8. 5. Weiss B, Pinhas-Hamiel O. Celiac Disease and Diabetes: When to Test and Treat. *Journal of pediatric gastroenterology and nutrition*. 2017;64(2):175-9. 6. Downey L, Houten R, Murch S, Longson D, Guideline Development G. Recognition, assessment, and management of coeliac disease: summary of updated NICE guidance. *Bmj*. 2015;351:h4513.

## Poster No. 253 - Sub-Specialty and Special Interest Paediatrics

### TIME TO LOSS OF AMBULATION IN IRISH DUCHENNE MUSCULAR DYSTROPHY BOYS

E Forman<sup>1,2</sup>, A Tobin<sup>1,3</sup>, G Nic Fhirleinn<sup>1</sup>, E Cuilligan<sup>1,3</sup>, S Moran<sup>1,3</sup>, D McDonald<sup>3</sup>, D O'Rourke<sup>1,2</sup>

<sup>1</sup>Neuromuscular Clinic, Central Remedial Clinic, Dublin 3, Ireland

<sup>2</sup>Dept. of Neurology, Children's University Hospital, Temple Street, Dublin 1, Ireland

<sup>3</sup>Neuromuscular Clinic, National Children's Hospital, AMNCH, Dublin 24, Ireland

**Introduction:** Duchenne Muscular Dystrophy (DMD) is the most common and most severe form of muscular dystrophy affecting 1 in 3500 boys. With disease progression, boys typically lose the ability to ambulate between the ages of 9-12 years of age.

**Aim:** The aim of this study was to examine the time period when boys with DMD attending the Dublin Neuromuscular service typically lose ambulation.

**Methods:** Patients were identified from the CRC NMD clinic database and DMD Irish registry database. Chart review was undertaken to establish the age at which DMD patient became non-ambulatory. Non-ambulatory was defined as an inability to walk greater than 20m unaided.

**Results:** 76 patients with DMD between 4-18 years were identified. Boys began to lose ambulation from the age of 8 years onwards. The mean age at which boys lost ambulation was 12.5 years. No boy over the age of 16 years was ambulatory. See figure 1.

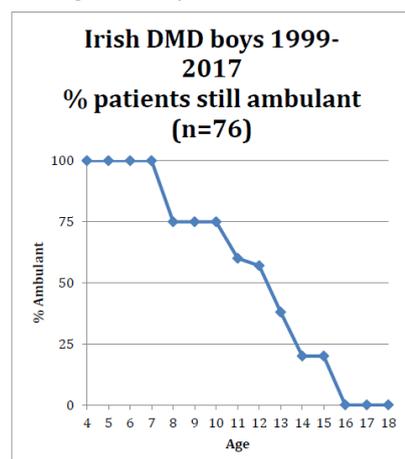


Figure 1: Percentage of DMD boys still ambulatory at a given age.

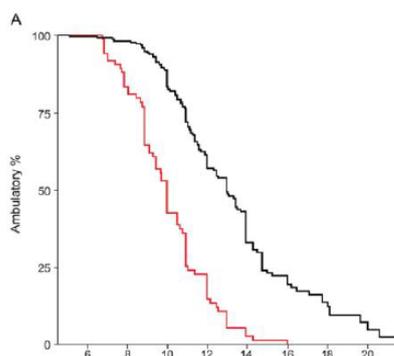


Figure 2. CINRG natural history data. Red: steroid naïve. Black: treated with steroids

## Discussion:

These findings are broadly in line with natural history studies in other cohorts of DMD patients (figure 2). It remains to be shown if the preferred steroid regime in our patient population results in an earlier time to loss of ambulation when compare to other steroid regimens.

Bello L et al. Prednisone/prednisolone and deflazacort regimens in the CINRG Duchenne Natural History Study. *Neurology*. 2015; 22:1048-55

## Poster No. 254 - Sub-Specialty and Special Interest Paediatrics

### STEROID USE IN THE TREATMENT OF IRISH BOYS WITH DUCHENNE MUSCULAR DYSTROPHY

E Forman<sup>1,2</sup>, A Tobin<sup>1,3</sup>, G Nic Fhirleinn<sup>1</sup>, E Cuilligan<sup>1,3</sup>, S Moran<sup>1,3</sup>, D McDonald<sup>3</sup>, D O'Rourke<sup>1,2</sup>

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## Introduction:

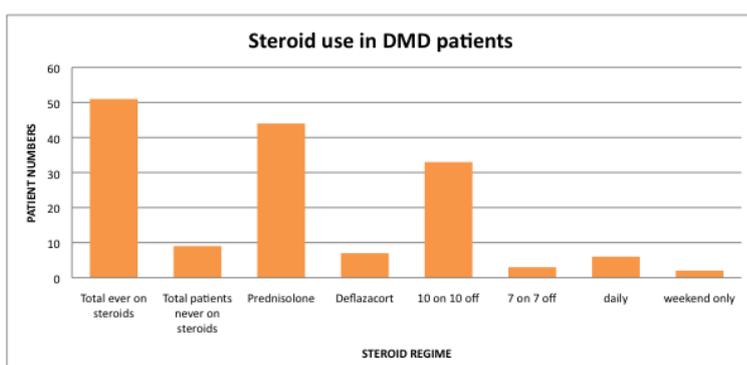
Corticosteroids are the cornerstone of medical treatment of DMD; delaying loss of ambulation, contracture and scoliosis formation, reducing rate of decline of heart and lung function and prolonging life expectancy. However, steroids are associated with well know side effects. Steroid treatment is recommended once patients beging to plateau and or decline in strength. Several different steroid regimes are approved for the treatment of DMD but there is no consensus on which regime is the most effective.

## Aim:

To audit the types of steroid regimes used in the CRC neuromuscular clinic.

## Methods:

Patients were identified from the CRC neuromuscular database. Chart review was undertaken to establish information regarding steroids.



## Results:

60 patients between the ages of 5 to 18 years were identified. 51 (85%) had been treated with steroids.

Prednisolone was the most common steroid used n=44 (86%) while Deflazacort was used less commonly n=7(14%). Seven steroid regimes were identified (10 days on 10 days off):n=33 (75%) (Pred or Defl), (7 days on 7 days off): n=3 (7%) (Pred or Defl), (daily): n=6

(14%) (Pred or Defl); (high dose weekend only): n=2 (4%) (Pred). Mean age steroids were started was 5.5 years. Steroids were discontinued in 16 patients (mean 10 years). Excess weight gain was the most common reason for discontinuation or switching regime: n=12, followed by adverse mood or behaviour: n=3, loss of ambulation: n=3 or bone fractures: n=1. Four had steroids restarted after they were discontinued (age range 14-15 years).

**Discussion:** Our findings show high prevalence and tolerance in the use of steroids for the treatment of DMD. The varied use in steroid regimes is similar to data from other studies which identified up to 14 different steroid regimes. Further data will be required to establish which steroid regime is most effective. High prevalence of steroid side effects highlights the need to find other effective DMD treatments.

Bello L et al. Prednisone/prednisolone and deflazacort regimens in the CINRG Duchenne Natural History Study. *Neurology*. 2015; 22:1048-55

**Poster No. 255 - Sub-Specialty and Special Interest Paediatrics**  
**OUTCOMES OF TRANSITIONAL CARE IN CYSTIC FIBROSIS PATIENTS.**  
**RETROSPECTIVE REVIEW COMPARING HEALTH OF CF PATIENTS BETWEEN PAEDIATRIC AND ADULT SERVICES.**

**S Golden, B Linnane**

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**Aim:** Are Cystic Fibrosis (CF) patients maintaining their health during transition in the Limerick CF Services ?

**Method:** CF patients that transitioned from paediatric to adult care in University Hospital Limerick (UHL) between 2008-2016.

Exclusion

- Non-compliance.
- Severe co-morbidities.
- Lung transplant recipient.

How

- Review of guidelines on CF transitional care.
- Review clinical records of all CF patients that have transitioned in UHL since 2008
- Record
  - Date of Birth, gender
  - Date of last Paediatric Annual Assessment ( PAA)
  - Date of first Adult Annual Assessment ( AAA)
  - FEV1, % FEV1, weight and height at these two times.

Key measurements:

- BMI
- FEV1/ %FEV1

**Research:** 29 clinical records were available. Of these 18 met selection criteria and had sufficient data.

**Results:** The mean %FEV1 of patients was 83.72% at their last PAA and 84.56% at their first AAA. The average percentage change was an increase in %FEV1 by 0.83%.

During transfer to the adult services 66.7 % of patients had an improved %FEV1 and 33.3 % of patients had a reduced FEV1.

The average BMI of these patients was 21.75 at their last PAA and 22.06 at their first AAA. On average patients BMI increased by 1.44%. During transfer to the adult services 72.2% of patients BMI increased and 27.8 % patients BMI decreased.

**Conclusion:** Transition in health care for young adults needs ...provision of high-quality, developmentally appropriate health care services *that continue uninterrupted* . (1)

This Audit supports this standard. For the majority of patients within the Limerick CF service there was either no deterioration in health during transfer or any loss was restored by time of their next assessment.

1. American Academy of Pediatrics, American Academy of Family Physicians, and American College of Physicians-American Society of Internal Medicine. "A consensus statement on health care transitions for young adults with special health care needs." *Pediatrics* 110.Supplement 3 (2002): 1304-1306. 2.Cystic Fibrosis Registry of Ireland, "Annual Report" ( 2015) 3.Zemanick, Edith T., et al. "Measuring and improving respiratory outcomes in cystic fibrosis lung disease: opportunities and challenges to therapy." *Journal of Cystic Fibrosis* 9.1 (2010): 1-16. 4.Borowitz, Drucy, Robert D. Baker, and Virginia Stallings. "Consensus report on nutrition for pediatric patients with cystic fibrosis." *Journal of pediatric gastroenterology and nutrition* 35.3 (2002): 246-259. 5.Tuchman, Lisa K., et al. "Cystic fibrosis and transition to adult medical care." *Pediatrics* 125.3 (2010): 566-573. 6.Liou, Theodore G., et al. "Year-to-year changes in lung function in individuals with cystic fibrosis." *Journal of Cystic Fibrosis* 9.4 (2010): 250-256.

## **Poster No. 256 - Sub-Specialty and Special Interest Paediatrics UNDERSTANDING TYPE 1 DIABETES – TO INCREASE AWARENESS, PROMPT EARLY DIAGNOSIS AND PREVENT DIABETIC KETOACIDOSIS**

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**Aim:** The diagnosis of Type 1 Diabetes (T1D) can be prolonged with delayed recognition of symptoms and delayed help seeking<sup>1</sup>. To explore parental knowledge of T1D before their child's diagnosis, the pathway to diagnosis and the most valuable sources of health information to parents to inform future health promotion campaigns.

**Methods:** Parents of young children diagnosed with T1D attending a national patient and family support organisation event, completed a questionnaire exploring diabetes knowledge, symptoms, pathway to diagnosis and information sources.

**Results:** Parents of twenty-five children participated. Median age at diagnosis was 5.0 (range 0.6-9.3) years. Median time since diagnosis was 1.8 (0.1-10.25) years. Parents reported the classic T1D symptoms and suspected T1D in 56% of cases. Pre-diagnosis 80% knew someone with T1D. Median duration of symptoms was 14 days (range 0-120) with median duration from symptom onset to medical advice was 3.5 days (range 0-28). Same-day diagnosis occurred in 84%. Nine patients (36%) and all with delayed diagnosis presented in Diabetic Ketoacidosis (DKA). Sixty percent had visited their GP at least once in the preceding year. Pre-diagnosis, Parents' main sources of healthcare advice were: their GP (44%); Friend/relatives (20%); Pharmacist (16%); Pharmacist and GP (8%); or relative and GP (8%) and 71% who replied (24/25) had not used the web for Health Information. Parents' reported the following sources as most likely to be influential prior to diagnosis: TV adverts; Facebook; Local Radio Adverts/GP posters; GP Videos/School Poster; GP Leaflets; Twitter; Adverts in National or Local Papers.

**Conclusions:** There is a wide range of symptom duration in T1D and time to seeking medical advice. The main sources of healthcare advice for parents are GPs, pharmacists and relatives. To promote early diagnosis of T1D wide community involvement is required using targeted health information sources to prompt early help seeking and DKA prevention.

References: 1 Usher-Smith JA, Thompson MJ, Walter FM. "Looking for the Needle in the Haystack": a qualitative study of the pathway to diagnosis of type 1 diabetes in children. *BMJ Open* 2013; 3:e004068. Acknowledgement We wish to acknowledge the support of Diabetes Ireland and particularly Dr Anna Clarke of Diabetes Ireland

**Poster No. 257 - Sub-Specialty and Special Interest Paediatrics****COULD FABRY'S DISEASE BE THE CAUSE OF A CYCLICAL VOMITING PHENOTYPE IN CHILDREN?**

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**Background**

Fabry is a rare X-linked disorder caused by deficient activity of the lysosomal enzyme alpha-galactosidase A. Progressive accumulation of the substrate globotriaosylceramide in cells throughout the body leads to organ failure and premature death.<sup>1</sup> The gastrointestinal symptoms can often be one of the presenting signs in childhood, but can be misdiagnosed by Paediatricians and Gastroenterologists for years due to their nonspecific nature. As the chief treatment for Fabry is enzyme-replacement therapy that has been shown to stabilize and possibly reverse disease course, recognition of these symptoms and early diagnosis in an attempt to prevent progression with treatment, is critical. Cyclical vomiting syndrome is a chronic disorder of unknown etiology characterised by recurrent stereotypical episodes of vomiting separated by symptom free periods.

**Aims**

Our aim was to investigate the possibility of Fabry being the cause of a cyclical vomiting phenotype in a cohort of patients presenting to a General Paediatric Practice  
In addition we wish to raise awareness of Fabry gastrointestinal manifestations, the initial symptoms of this rare disorder.

**Methods**

Our study was a prospective study carried out over the 6 month period (January 1<sup>st</sup> – July 1<sup>st</sup> 2017). Informed consent was obtained from parents for blood sampling to measure the activity of the alpha galactosidase enzyme and for full GAL A gene analysis on children with cyclical vomiting presenting during our study period.

**Results**

Only one patient with cyclical vomiting syndrome presented for review during our study period. Tests were negative in this 12 year old male.

**Conclusion**

The gastrointestinal symptoms of Fabry are the earliest feature but are often overlooked. While our study had negative findings due to the short study period and small sample size, we suggest that this rare disorder be considered as a differential for cyclical vomiting and other atypical gastrointestinal presentations in children, which remain unexplained.

**Poster No. 258 - Sub-Specialty and Special Interest Paediatrics****THE UTILITY OF KETONES AT TRIAGE**

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**AIMS:** The role of point-of-care (POC) ketones in relation to dehydration with ketosis has yet to be established. Previously published studies in this area have suggested that there may be a correlation between ketone level and degree of dehydration and need for admission but further research was recommended.

This study aimed to establish the relationship between triage POC ketones with clinical dehydration based on the validated Gorelick Score. Secondary outcomes were the relationship between patient disposition with POC ketones and the rate of change of ketones in response to treatment.

**METHODS:** A prospective cohort study from April 2016 to February 2017. Patients aged one month to 5 years, with vomiting and/or diarrhoea and/or decreased intake with signs of dehydration or clinician

concern for hypoglycaemia were eligible. Ethics approval and informed consent was attained. POC ketones were analysed at triage and 4-hours later or upon discharge if sooner.

**RESULTS:** 198 patients were recruited; Mean age: 2.1years (range 0.2-4.9years); 100(50.5%) female. Median modified Gorelick score was 2 (interquartile range(IQR) 2-3) consistent with moderate dehydration. The median triage ketones were 4.4 (IQR 2.8–5.6)mmol/L. No correlation existed between triage ketones and clinical dehydration score ( $p=0.098$ ).

Those admitted to hospital (31.8%), had median triage ketones of 5.2 (IQR 4-6) mmol/L compared to 4.2 (IQR 2.4-5.2) mmol/L in those discharged home ( $p=0.001$ ). Median ketones after treatment were 4.6 (IQR 3.3-5.7) mmol/L amongst patients admitted compared to 2.9 (IQR 1.6-4.2) mmol/L for those who were discharged ( $p<0.001$ ). There was a median reduction of 0.6mmol/L in ketones after rehydration.

**CONCLUSION:** This study reveals no correlation between triage ketones and level of clinical dehydration. A significant relationship was established between initial ketones and discharge disposition. This could be utilised to establish an immediate disposition at the point of triage. This study describes the potential utility of ketones to inform management of children with dehydration and ketosis at triage.

#### **Poster No. 259 - Sub-Specialty and Special Interest Paediatrics**

##### **A Review of 5 years of Colonoscopy in a Paediatric Gastroenterology Referral Unit.**

**A Kalim, S Quinn**

<sup>1</sup>National Children's Hospital Tallaght

**Introduction :** The child who presents with signs and symptoms of lower gastrointestinal disorder should undergo colonoscopy with biopsy to enable diagnosis, as well as to help determine appropriate therapy.

**Aims:** To determine the outcome and indications for paediatric colonoscopies performed over a five year

period from January 2011 to December 2015 in the Paediatric Gastroenterology unit at the National Childrens' Hospital (NCH) Tallaght.

**Methods:** This was a retrospective review of all the paediatric patients who had their colonoscopy performed over a five year period at NCH, Tallaght.

**Results:** 227 colonoscopies were performed on 219 patients in five years from January 11 to December 15.

128 (56%) patients were male and 99 (44%) were females. Their age ranged from 18 months to 18 years. 33 (14.5%) patients were younger than 5 years.

77 (34%) were between 5 to 10 years of age.

Majority of the patients 117 (51.5%) were older than 10 years of age.

The main referral indication was unexplained gastrointestinal bleeding in 93 (41 %) patients of which 41 (18%) patients had bright red blood per rectum and 52 (23%) had bloody diarrhoea.

Clinically significant diarrhoea with weight loss was an indication in 70 (30 %) patients, irritable bowel symptoms or abdominal pain was present in 57 (25%) patients.

5 (2.5%) patients had altered bowel habits and 2 (1.5%) patients had miscellaneous indications including perianal abscesses and mouth and anal ulcerations.

The most frequent pathology was Inflammatory Bowel Disease.

21 (9.5%) patients were diagnosed with Crohns' disease.

20 (8.6%) patients had Ulcerative colitis. 3 (1.3%) patients had indeterminate colitis.

14 (6%) had Polyp. 20 (8.6) had lymphonodular hyperplasia.

150 (66%) had a normal colonoscopy.

**Conclusion:** Unexplained gastrointestinal bleeding including bloody diarrhoea and bright red bleeding per rectum were the main indications for colonoscopy. The most common pathology was Inflammatory Bowel disease 42 (18%).

**Poster No. 260 - Sub-Specialty and Special Interest Paediatrics**

**“DOCTOR, DOES MY CHILD HAVE A COW’S MILK ALLERGY?”: AN AUDIT OF OUR UNDERSTANDING IN A TERTIARY CENTRE**

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**Objectives:** The objective of this audit is three-fold: 1) To identify the depth of knowledge (epidemiology, diagnosis and management) of cow’s milk protein allergy amongst NCHD’s 2) To identify the shortfalls in our approach and 3) To use this information to develop a standardised clinical guideline for best hospital practice.

**Method:** Data was collected via a questionnaire, distributed amongst non-consultant hospital doctors (NCHD’s) in the medical, surgical and emergency departments at OLCHC during one 6 month period. Results were kept anonymous.

**Results:** 41 NCHD’s completed the questionnaire: 28 Medical, 6 Surgical and 7 Emergency Department staff members. Over 80% (n=34) correctly answered that gastro-oesophageal reflux disease and cow’s milk protein allergy were difficult to distinguish by history. 88% correctly identified the complex symptom profile of CMPA. 33/40 recognised that history is the key diagnostic tool. 25% were unable to identify age of presentation. Only 8/40 appreciated the true prevalence of CMPA.

21/41 reported incorrectly that dairy elimination was a first line treatment for severe atopic dermatitis. 51% believed the first line treatment in CMPA was always an amino acid based formula. Only 3 contributors were able to correctly identify two extensively hydrolysed formulas. Over 70% reported not being familiar with an algorithm for CMPA management and/or UK MAP milk ladder. 23/41 testified not being confident that they understood the difference between IgE and non IgE mediated cow’s allergy. 80% of NCHD’s (n=32) stated that a clinical guideline would aid in their understanding of CMPA.

**Conclusion:** This survey demonstrates a lack of awareness of CMPA epidemiology and a lack of overall knowledge in the management of cow’s milk allergy. In contrast, diagnostic knowledge was satisfactory. These results reflect a need for a sustained educational focus on this topic and increased in-hospital profile for established management guidelines.

**Poster No. 261 - Sub-Specialty and Special Interest Paediatrics**

**GROUP-B STREPTOCOCCAL SEPTICAEMIA IN THE PAEDIATRIC INTENSIVE CARE UNIT**

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**Aims:** To assess the morbidity and mortality of Group-B Streptococcal (GBS) sepsis in PICU.

**Methods:** Retrospective chart review was conducted on neonates diagnosed with GBS sepsis within the 5-year period: 2012 - 2017, requiring treatment in PICU (N=15). Patients were identified through IntelliVue Clinical Information Portfolio (ICIP) and PICANet. Data including gestational age, birth weight, maternal GBS status, PICU and hospital length of stay, co-morbidities, ventilation days, inotrope use, neuroimaging, final disposition, and long-term morbidity were collected.

**Results:** 15 cases were identified over the 5-year period: 1 case is recurrent late-onset (LOS) GBS sepsis, 12 cases are LOS GBS sepsis, 5 cases are pre-term. Mean birth weight is 2.74kg. 3 mothers documented

with positive GBS status; intrapartum antibiotics use was not available, and all preterm deliveries receive prophylactic antibiotics. 4 cases have multiple co-morbidities. Average hospital length of stay is 17 days, including 6.13 days in the PICU and 5.25 ventilation days; 11 cases requiring inotropes, 6 of which requiring more than one; and 6 cases demonstrated abnormal neuroimaging. There is a morbidity of 13% (N=2); 1 patient hasn't reached dispensation. 5 have documented long-term morbidities; 5 patients still require their Bayley score, 2 patients are followed through local hospitals.

#### **Conclusion:**

The case burden in PICU was skewed towards LOS, as most early-onset is diagnosed and treated within maternity units. Previous epidemiological studies within the UK found overall GBS mortality of 9.7%; while our mortality is higher, case severity in PICU is expected to be higher than overall surveillance. While most patients were discharged from PICU within 2 days of extubation, inpatient length of stay was 3 times as long as PICU stay. As GBS screening is not mandatory and not always conducted in the third trimester, it is impossible to predict prevention of LOS GBS with prophylaxis.

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#### **Poster No. 262 - Sub-Specialty and Special Interest Paediatrics**

##### **THE SLEEP WALKER**

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**Aims:** Ornithine transcarbamylase deficiency is a rare X-linked disorder characterised by complete or partial lack of the enzyme ornithine transcarbamylase (OTC). OTC enzyme deficiency results in hyperammonemia which leads to vomiting, food refusal, lethargy and coma. It has been associated with headaches in older female carriers.

**Methods:** We report the case of a 12 year old girl who presented with a history of sleep walking, staring, headaches and protein refusal. Extensive metabolic workup revealed elevated urine orotic acid levels suggestive of OTC deficiency. We speculate that sleep walking may be associated with OTC carrier status.

**Results:** Our patient presented to paediatric services at 12 years of age with a history of frontal headaches since early childhood. She also reported disrupted sleep including intermittent sleep walking. In addition to this our patient became a self-selected vegetarian at the age of four, she had also been attending child and adolescent mental health services with a history of deliberate self-harm. Family history was significant for sleep walking and psychiatric illness in second degree relatives. Extensive investigation including MRI brain and EEG were normal. Metabolic workup revealed elevated urinary orotic acid levels.

**Conclusion:** Carrier status for OTC deficiency has been associated with neuropsychiatric presentations in older female children and adolescents. We suggest that abnormal sleep behaviour in this case may be associated with underlying OTC deficiency carrier status.

**Poster No. 263 - Sub-Specialty and Special Interest Paediatrics**

**VALIDITY OF AGES AND STAGES QUESTIONNAIRES SOCIAL EMOTIONAL-2 AT PREDICTING BAYLEY III SOCIAL EMOTIONAL AND ADAPTIVE BEHAVIOURAL RESULTS IN CHILDREN WITH CONENITAL DIAPHRAGMATIC HERNIAS**

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**Background:** Congenital diaphragmatic hernia (CDH) is a rare congenital malformation affecting 1/3000 live births. Neurodevelopmental delay in survivors ranges from 16% to 70%.

**Objective:** To examine the correlation between Ages and Stages Questionnaires Social Emotional - 2 (ASQ:SE-2) and Bayley Scales of Infant and Toddler Development III Social-Emotional and Adaptive Behaviour Questionnaire (BSID III SE/ABQ) results in a cohort of children with CDH.

**Methods:** This was a single centre prospective cohort study of neurodevelopmental outcomes of patients with CDH at 24-36 months corrected age. The primary outcome was correlation of social emotional and adaptive behavioural outcomes using two standardised assessments. Data was analysed using Microsoft Excel.

Standard scores greater than 2 standard deviations (SD) below mean on BSID III SE/ABQ were considered a "fail" and scores between 1 and 2 SD of the mean were considered "borderline".

A score indicating "refer" in the ASQ:SE-2 was considered a "fail" and a score indicating "monitor" was considered "borderline".

**Results:** 31 patients were identified as eligible for study inclusion. Of these, 8 had died at the time of the study, 23 were approached and 20 consented.

Sensitivity of ASQ:SE-2 for predicting results of BSID III SE/ABQ was 50% (PPV = 67%); with specificity 94% (NPV = 88%) using referral cut-offs.

When 65th percentile (monitoring zone) was used as cut off, sensitivity of ASQ:SE-2 for predicting results of BSID III SE/ABQ was 33.3% (PPV = 75%); with specificity 91% (NPV = 62.5%)

**Conclusions:** In this cohort, sensitivity and specificity of ASQ:SE-2 did not meet quoted levels of 78-88%. Sensitivity was less when cut off scores of 1 SD was used.

This indicates that ASQ:SE-2 does not have appropriate correlation with BSID III SE/ABQ to be used to predict outcomes in this cohort.

**Table 1: sensitivity/specificity of the AQ:SE-2 (>1.5 SIR from median) and Bayley III Social-Emotional and Adaptive Behaviour Questionnaire (>2SD from mean)**

ASQ SE-2	BSID III SE/ABQ		Totals
	Pass	Fail	
Pass	15	2	17
Fail	1	2	3
Totals	16	4	20

Sensitivity 50% (PPV = 67%); Specificity 94% (NPV = 88%)

**Table 2: sensitivity/specificity of the AQ:SE-2 (>65<sup>th</sup> percentile) and Bayleys III Social-Emotional and Adaptive Behaviour Questionnaire (>1 SD from mean)**

ASQ SE-2	BSID III SE/ABQ		Totals
	Pass	borderline/fail	
pass	10	6	16
borderline/fail	1	3	4
totals	11	9	20

Sensitivity 33.3% (PPV = 75%); Specificity 91% (NPV = 62.5%)

## Poster No. 264 - Sub-Specialty and Special Interest Paediatrics

### THE REQUIREMENT FOR TUBE FEEDING IN DOWN SYNDROMES PATIENTS LESS THAN 6 MONTHS OF AGE WHO REQUIRE INTERVENTION FOR A CARDIAC DEFECT

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<sup>1</sup>National Children's Heart Centre, Our Lady's Children's Hospital, Dublin, Ireland

#### Aims

- To investigate the requirement and timing of initiation of nasogastric tube (NGT) feeding in infants with Down Syndrome (DS) and congenital heart disease (CHD)
- To establish the effect of cardiac diagnosis, procedure type and comorbid conditions on growth trajectory and duration of NGT.

#### Methods

A retrospective analysis was completed over a 3 year period from 1<sup>st</sup> June 2013- 01<sup>st</sup> June 2016 of 175 infants with DS presenting with CHD within the first 6 months of life to Our Lady's Children's Hospital. Where patients had more than one procedure, the most clinically significant procedure was included.

#### Results

95 patients, 45 male and 50 female were included in the final analysis. The mean birth weight was 2.92kg. The mean age of tube placement was 84 days (11.92 weeks), with a further 20% (n=19) requiring tube feeding from day one of life. Primary diagnoses were as follows, 14.7% (n=14) ASD, 43.1% (N=41) AVSD, 20% (n=19) VSD, 3% (n=7) had a PDA, 7.3% (N=7) Tetralogy of Fallot, 1% (n=1) interrupted aortic arch, other diagnosis 6.3% (n=6).

95 children had a procedure, 80% (n=76) required nutritional support via tube feeding in advance of their intervention. 7.3% (n=7) continued to be NGT fed when last reviewed and 8.4% (n=8) had transitioned on to PEG feeding. When these patients were excluded the mean number of days that tube feeding was required was 151.7 (Median=85).

Complications including vocal cord palsy, chylothorax, the use of TPN or monogen feeds were poor predictors of the requirement for a tube and the length a NG tube would remain in place.

#### Conclusion

Infants with Down Syndrome and CHD are at significant risk of feeding difficulties and failure to thrive. In our series the majority of patients (80%) required pre-procedure nutritional supplementation with an NGT, the mean duration of NGT feeding was 151.7 days.

## Poster No. 265 - Sub-Specialty and Special Interest Paediatrics

### Hypertension in Infants

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**Aim:** True hypertension in infants and neonates is rare. Symptomatic hypertension in this age group will be secondary and can cause morbidity over a very short time frame. There is a need for early recognition and management of hypertensive crises to prevent subsequent morbidity and mortality.

**Methods:** We report a number of cases of early onset hypertension in neonates and infants up to 6 months of age. Three cases of hypertension secondary to embolism from umbilical artery catheters in pre-term infants, one case secondary to abdominal Teratoma, one case of hypertensive encephalopathy with residual neurological impairment, one hypertensive crisis due to an accessory renal vessel and three cases of hypertension as result of perinatal renal vein thrombosis.

**Discussion:** Recent studies suggest mild hypertension is more common in pre term infants and accounts for 75% of hypertensive cases in NICU. However the aetiology of severe hypertension includes vascular, renal and endocrine conditions which may be acute or chronic.

Mild to moderate hypertension can be managed within a non- HD setting with use of oral therapy. Severe hypertension requires initial management with carefully monitored intravenous therapy and this requires a period of invasive monitoring. We identify a need for awareness of signs and symptoms of hypertension and the difficulty in measuring accurate blood pressure in this age group.

### **Conclusion**

We discuss presentation and management of acute symptomatic hypertension in infants highlighting difficulties in diagnosis and potential for rapid progression to life threatening complications in this vulnerable group. Early diagnosis and appropriate intervention minimises morbidity and mortality.

### **Poster No. 266 - Sub-Specialty and Special Interest Paediatrics**

#### **Steven Johnson Syndrome Associated with Mycoplasma Pneumoniae**

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A previously well eight year old boy presented with fever, cough, lethargy and malaise. He received oral steroids for a diagnosis of viral upper respiratory tract infection. Soon after he developed lip swelling which within 12 hours had progressed with onset of conjunctivitis and mucocutaneous ulcers. Within 48 hours he had florid mucositis of mouth, eyes and urethra with scattered target lesions of his limbs.

A chest radiograph was normal. Laboratory tests demonstrated lymphopenia, transaminitis and elevated C-reactive protein. Blood cultures were negative. Mycoplasma IgM was positive. He was treated with IV Cefazolin, Ciprofloxacin, Acyclovir and chlormycetin eye drops. Fucibet, dermovate and paraffin dressing were required for his skin with opioid analgesia. He responded slowly to treatment and was fit for discharge one week later.

Steven Johnson Syndrome is a rare potentially life threatening immune mediated reaction characterised by a severe mucocutaneous ulceration following a prodromal illness. Adverse drug reactions are the most frequent association. However in the paediatric population infections caused by Mycoplasma Pneumoniae and Herpes Simplex virus are commonly implicated and are associated with less severe cutaneous manifestations and a more benign course.

### **Poster No. 267 - Sub-Specialty and Special Interest Paediatrics**

#### **"ON-CALL" TASKS IN THE PAEDIATRIC CARDIOLOGY UNIT - A QUALITY IMPROVEMENT PROJECT**

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**BACKGROUND:** The cardiology inpatient unit cares for some of the most complex and acutely unwell children in Our Lady's Children's Hospital, Crumlin. Such patients have frequent alterations in clinical state necessitating frequent review and often have complex care plans and early warning score amendments in place. Oftentimes medical input to these patients on-call cannot be anticipated, however it was hypothesised that much of the task burden for senior house officers could be dealt with during, and is more appropriate to, routine hours and familiar team input to achieve improved quality patient care. Reducing time spent on routine tasks on-call also increases time available for direct patient care.

**AIMS:** To examine the variation, content and quantity of tasks requested of the on-call SHOs on the cardiology unit and to seek to improve the number of tasks which would be better served, and could be anticipated by medical input during routine hours.

**METHODS:** The house officer on-call tasks were recorded on a specifically designed project sheet from a sample period in March and April 2017 and were analysed using Excel. The results were presented to the cardiology team in chart format and discussed as a continuous measure.

**RESULTS:** The most frequent tasks involved charting and altering medications, in particular analgesia and amending early warning scores. A smaller proportion of these tasks necessitated medical reviews. As the study period progressed the number of routine tasks declined as these areas were brought to the attention to the primary team. Medical reviews remained stable throughout the period.

**CONCLUSION:** Awareness of the on-call tasks by the responsible team lead to an improvement in the number of avoidable routine tasks passing forward to on-call doctors while unanticipated review remained appropriately stable. This has a favourable impact on time management and improving quality of patient care.

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**Poster No. 268 - Sub-Specialty and Special Interest Paediatrics**  
**An Audit of the Paediatric Cardiology Warfarin Clinic in a Tertiary Hospital**

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<sup>1</sup>Department of Paediatric Cardiology, Our Lady's Children's Hospital, Dublin

**Background:** The Cardiology department in Crumlin Hospital manages the most complex cardiac conditions leading to paediatric patients around Ireland requiring anticoagulation with Warfarin. Indicators have been developed for starting and maintaining anticoagulant therapy. Monitoring these indicators will help to identify risks and promote the appropriate action to minimise them.<sup>1</sup>

**Methods:** The computerized data collection of all warfarin patients were retrospectively reviewed over a three month period. Data recorded from the telephone clinic was audited under the heading of key safety indicators.

**Results:** 54 patients were included with a total of 495 INRs. 100% of patients had a documented target INR, clinical diagnosis and most recent doses recorded. No patient had a documented stop date. 69% of INR's were in target range. No patients had an adverse outcome. There was no process for identifying INRs lost to follow up.

**Intervention:** This audit prompted discussion at 'risky huddle' to discuss high risk practices. The plan to document all patients stop date was discussed. A secure computerised calendar was created to schedule and follow up patients.

**Results Re-Audit:** The re-audit included 53 patients over a three month period following the interventions. 100% of patients now had a documented stop date recorded. 75% of INR's were in target range. No patients were lost to follow up.

**Discussion:** This audit identified two key areas: the need to document the stop date which was achieved through education at the 'risky huddle' and adequate follow-up of patients. A secure online calendar was a simple intervention that allowed for an easy to use and efficient way of identifying patient who may be lost to follow up. The re-audit illustrated clear compliance with this standard.

**Conclusion** This audit identified two areas that did not meet evidence based standards. The re-audit demonstrated appropriate, sustainable intervention that improved patient care.

Baglin TP et al. Recommendations from the British Committee for standards in Haematology and the

National Patient Safety Agency. Safety indicators for inpatient and outpatient oral anticoagulant care. British Journal of Haematology. 2007; 136: 26-29.

**Poster No. 269 - Sub-Specialty and Special Interest Paediatrics**  
**ARE NON-AMBULANT CHILDREN WITH SPINA BIFIDA RECEIVING VITAMIN D?**

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**Background:** The national multi-disciplinary spina bifida clinic takes place in Temple Street. Temple Street provides care for all children with spina bifida born since 2008 when neurosurgical services relocated. Children who are non-ambulant are at higher risk of fractures. It is therefore important to promote bone health in this population by all means possible, including Vitamin D supplementation. Vitamin D guidelines for Irish Paediatric Population were created in 2015 and we know from previous studies non-ambulant children are at risk of osteoporosis.

**Aim:**

- 1) ascertain whether all non-ambulant children in the clinic are receiving vitamin D.
- 2) review the dose they are receiving and 3) review whether vitamin D levels are being appropriately monitored.

**Method:** I collected DOB, sex, level of the lesion, vitamin d level, vitamin d dose they were receiving, BMI and whether the patient had previous fracture. The data was collected from clinic a letter on the clinical portal for non-ambulant patients attending the spina bifida clinic and the blood results from ILAB. A sample size of 50 was decided on.

**Results:** 45/50 children included in the study were on vitamin D. 32/45 children who were on vitamin D had levels recorded that were > 50 nmol/L in the preceding 12months.8/45 children had inadequate vitamin D levels < 50nmol/L. 6 out of these 8 children were on vitamin which suggests they should have an increased dose of vitamin D.7 patients who were on vitamin D supplementation did not have a vitamin D level performed in the last year.

**Conclusion:**64% of patients included had adequate vitamin D levels which is not at the standard we would hope for. The data is limited by the amount of information recorded after each visit. It is poorly recorded the dose of vitamin D which is being taken by the children.

1) Mc Donnell C. Vitamin D guidelines for Irish Paediatric Population 2015 Children's University Hospital, Temple Street 2) Marreiros, H., Loff, C. and Calado, E., 2012. Osteoporosis in paediatric patients with spina bifida. The journal of spinal cord medicine, 35(1), pp.9-21. 3) Ozel, S., Switzer, L., Macintosh, A. and Fehlings, D., 2016. Informing evidence-based clinical practice guidelines for children with cerebral palsy at risk of osteoporosis: an update. Developmental Medicine & Child Neurology, 58(9), pp.918-923.

**Poster No. 270 - Sub-Specialty and Special Interest Paediatrics**  
**ADHERENCE TO GUIDELINES ON INITIATION OF HUMIDIFIED HIGH FLOW NASAL CANNULAL OXYGEN THERAPY IN CHILDREN ADMITTED TO TSCUH WITH BRONCHIOLITIS**

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**Aims:** This audit aimed to determine if the guidelines for initiation of Humidified High Flow Nasal Cannula (HHFNC) oxygen therapy in children with bronchiolitis were being adhered to. The study was performed over a three-month period from 1st October 2015 to 31st December 2015. Current TSCUH guidelines state that all children who are to be commenced on HHFNC must have a blood gas and chest radiograph performed, a nasogastric tube (NGT) inserted, and a consultant must be informed prior to commencing therapy. We also assessed outcome measures for children who were commenced on HHFNC including need for PICU admission and duration of hospital stay, and adverse outcomes from HHFNC.

**Methods:** Data was collected by compiling a list of all patients on each ward who were commenced on HHFNC oxygen therapy. Each chart was reviewed, and information collated using Microsoft Excel.

**Results:** Thirty-five patients were admitted with a clinical diagnosis of acute bronchiolitis and commenced on HHFNC over the period of the audit. Age ranged from 16 days to 22 months. Twenty-one were female and 14 were male. Thirty-two (91%) patients had a blood gas taken and thirty-one (89%) had a chest radiograph performed prior to commencing therapy. Thirty-two (91%) patients had an NGT inserted. All patients had a nasopharyngeal aspirate (NPA) performed; 29 (83%) patients were RSV positive. No patients developed a pneumothorax or skin breakdown. Eight (23%) patients were subsequently admitted to PICU.

**Conclusions:** Most aspects of the guidelines were found to be well adhered to however poor documentation was found when attempting to establish if a consultant was informed. There were no adverse outcomes from HHFNC. Further education on the guidelines to all health care professionals involved in the care of children starting on HHFNC would be recommended, and there is scope to re-audit after.

#### **Poster No. 271 - Sub-Specialty and Special Interest Paediatrics**

#### **REFRACTORY HYPERTENSION - THE IMPORTANCE OF ADDITIONAL INVESTIGATIONS AND ACCURATE DIAGNOSIS AS A KEY TO EFFECTIVE TREATMENT**

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<sup>2</sup>Paediatric Nephrology, Royal Belfast Hospital for Sick Children, Belfast, Northern Ireland

#### **Aims:**

To emphasize the importance of continuing to pursue a diagnosis in children with refractory, presumed essential hypertension as well as the role of reviewing and repeating previously normal results in establishing accurate diagnosis and effective treatment.

#### **Methods:**

Case review of 10-year-old twin brothers with refractory hypertension.

#### **Results:**

Investigations performed at initial presentation were normal including normal aldosterone levels in both patients. After a period of time, in view of hypertension refractory to treatment, investigations were repeated and elevated serum aldosterone levels identified in both patients. MRI scan confirmed normal adrenal glands. Subsequent genetic testing was positive for a missense mutation in the KCNJ5 gene confirming rare diagnosis of familial type 3 aldosteronism (FA3) which has autosomal dominant inheritance. Also patients father who already suffered from hypertension tested positive for the same mutation.

#### **Conclusions:**

Aldosteronism is already recognized as an important under-diagnosed cause of refractory hypertension in adults. We advise that primary hyperaldosteronism should also be considered in the differential diagnosis of children with difficult to treat hypertension where no cause has been identified. A single normal serum aldosterone result does not exclude the diagnosis if clinical suspicion persists in the face of challenging hypertension. Establishing accurate diagnosis allows for focused pharmacological therapy and optimisation of blood pressure control. Screening of family members is important due to increased risk of cardiovascular complications of the disease.

Viera, Anthony J (2012) Resistant Hypertension, 10.3122/jabfm.2012.04.110275J Am Board Fam Med July-August 2012 vol. 25 no. 4 487-495 Mulatero, P. et al. (2012) Role of KCNJ5 in familial and sporadic primary aldosteronism. Nat. Rev. Endocrinol. doi:10.1038/nrendo.2012.230

**Poster No. 273 - Sub-Specialty and Special Interest Paediatrics**

**A CLINICAL AUDIT OF HEALTH SURVEILLANCE IN CHILDREN WITH PRADER WILLI SYNDROME**

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<sup>1</sup>Department of Endocrinology, National Children's Hospital, Tallaght, Dublin 24, Ireland

<sup>2</sup>School of Medicine, Trinity College, Dublin, Ireland

**Aim:** Prader Willi syndrome(PWS) is a genetic disorder caused by alterations to the long arm of chromosome 15<sup>(1)</sup>. Clinical features of PWS include: early failure to thrive, hyperphagia in later childhood, hypotonia, developmental delay, behavioural issues and hypogonadism<sup>(2)</sup>. Children with PWS require frequent health surveillance with a multidisciplinary team approach<sup>(3)</sup>. A guideline for management of children with PWS was introduced in December 2016 at the National Children's Hospital(NCH), where the largest cohort of children in Ireland with PWS are managed. The aim of this audit is to assess adherence to this guideline<sup>(4)</sup>.

**Method:** A retrospective chart review of children (aged one to 19years) who have attended the dedicated PWS outpatient clinic since the guideline's introduction. The total population was subdivided in accordance with the age group specific recommendations outlined in the guideline: group A-one to five years, group B- six to 12 years, group C- 13 to 19 years.

**Results:** A total of 37 patients were included, 65%(n=24) female. Group A(n=12), 58%(n=7) female, mean age 3.5years and 67%(n=8) on growth hormone(GH). Full compliance with the guideline in the categories of auxology, audiology, ophthalmology, diet, sleep studies, bloods and early intervention services. Suboptimal documentation in the categories of developmental assessment, medication compliance, exercise and behavioural assessment was noted. Group B(n=14), 64%(n=9) female, mean age 9.3years and 79%(n=11) on GH. Auxology, scoliosis, bloods, diet and sleep studies were fully monitored. Suboptimal documentation was seen in the areas of schooling, developmental and pubertal assessments, pain tolerance and psychosexual issues. Group C(n=11), 73%(n=8) female, mean age 15.6years and 90%(n=10) on GH. Heart failure, scoliosis, diet, pubertal assessment and auxology were well assessed.

**Conclusion:** Overall guideline adherence was good but areas for improvement were identified in each age group. Service enhancement could be achieved with education surrounding the guideline and reassessed with re-audit.

1. Prader-Willi syndrome. Suzanne B Cassidy, Stuart Schwartz, Jennifer L Miller & Daniel J Driscoll. Genetics in Medicine (2012) 14, 10–26 2. Prader-Willi syndrome: clinical features and management. Nicholas P. Mann, Gary E. Butler Paediatrics and Child Health Journal. October 2009 Volume19, Issue 10, Pages 473–478 3. Recommendations for the Diagnosis and Management of Prader-Willi Syndrome A. P. Goldstone, A. J. Holland, B. P. Hauffa, A. C. Hokken-Koelega, and M. Tauber. J Clin Endocrinol Metab, November 2008, 93(11):4183– 4197. 4. Guidelines for management of children with Prader Willi Syndrome. N Metawally, E Roche, Paediatric Endocrinology Department, Tallaght Hospital, December 2016

**Poster No. 274 - Sub-Specialty and Special Interest Paediatrics**

**A REVIEW OF THYROID DISEASE IN A COHORT OF CHILDREN WITH PRADER WILLI SYNDROME**

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<sup>1</sup>Department of Endocrinology, National Children's Hospital, Tallaght, Dublin 24, Ireland

<sup>2</sup>School of Medicine, Trinity College, Dublin, Ireland

**Aim:** Prader Willi syndrome(PWS) is a multisystem genetic disorder characterised by neonatal hypotonia and poor feeding, followed by obesity and hyperphagia in later life <sup>(1)</sup>. Central hypothyroidism is widely described in children with PWS and is the result of hypothalamic dysfunction, which is characteristic of the disease <sup>(2)</sup>. While some international guidelines do not recommend routine thyroid function testing <sup>(3,4)</sup>, local policy at the National Children's Hospital advises annual testing <sup>(5)</sup>. The aim of this study is to review the thyroid disease and its management in the largest cohort of children with PWS in Ireland.

**Method:** A retrospective chart review of all children with PWS who attend the National Children's Hospital. Data on thyroid status, levothyroxine treatment and dosage, growth hormone (GH) treatment and thyrotropin releasing hormone (TRH) stimulation testing were recorded.

**Results:** Eleven of a total cohort of 54 children and adolescents with PWS were receiving treatment for hypothyroidism, giving a point prevalence of 20%. No cases of hyperthyroidism were identified in the study population. Females represented 55%(n=6) of those with hypothyroidism, with a mean age of 13.4years. The mean age of commencement of levothyroxine treatment was 10.5years (range 0.8-19.1years). All patients had thyroid peroxidase (TPO) antibody titres undertaken before commencement of therapy, with negative results in 100% of cases. Thyrotropin releasing hormone (TRH) testing was carried out in 36%(n=4) in order to confirm the diagnosis of central hypothyroidism, prior to treatment. All patients on treatment had their thyroid function testing on a minimum of a bi-annual basis. Ninety percent (n=10) of those with hypothyroidism, were also on GH treatment.

**Conclusion:** Central hypothyroidism is common among this population of children and adolescents with PWS, routine thyroid function testing for hypothyroidism is therefore a key feature in health surveillance in this population and offers a high yield of positive results.

1. Prader-Willi syndrome. Suzanne B Cassidy, Stuart Schwartz, Jennifer L Miller & Daniel J Driscoll. *Genetics in Medicine* (2012) 14, 10–26  
2. Endocrine manifestations and management of Prader-Willi syndrome. Jill E Emerick and Karen S Vogt. *International Journal of Pediatric Endocrinology* 2013, 2013:14.  
3. Clinical Report-Health Supervision for Children With Prader-Willi Syndrome SE McCandless et al. January 2011 Volume 127/ Issue 1.  
4. Recommendations for the Diagnosis and Management of Prader-Willi Syndrome A. P. Goldstone, A. J. Holland, B. P. Hauffa, A. C. Hokken-Koelega, and M. Tauber. *J Clin Endocrinol Metab*, November 2008, 93(11):4183– 4197.  
5. Guidelines for management of children with Prader Willi Syndrome. N Metawally, E Roche, Paediatric Endocrinology Department, Tallaght Hospital, December 2016

#### **Poster No. 275 - Sub-Specialty and Special Interest Paediatrics**

##### **“Major incidents involving children – to what extent are we prepared?”**

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<sup>2</sup>Consultant in Paediatric Emergency Medicine, University of Edinburgh, Edinburgh , Scotland

#### **Aims:**

To identify current deficiencies regarding paediatric major incident protocols.

This study examined the self reported preparedness of front-line staff to deal with a paediatric major incident and ascertained service providers' views on the education/ promotion of paediatric major incident protocols.

#### **Methods:**

A quantitative, cross-sectional study using an anonymised online questionnaire was performed over a 4 week period in two mixed (i.e both children and adults treated) emergency departments. Doctors and nurses working in emergency medicine, paediatrics, orthopaedics and anaesthesia were surveyed.

Outcome measures:

1. Major incident protocol awareness
2. Self –reported readiness to deal with a paediatric major incident
3. Education and training needs.

#### **Results:**

A total of 51 responses were recorded.

Demographics:

58.8% (n=30) of participants worked in emergency medicine. 19.6% (n=10) worked in paediatrics and 15.7% (n=8) worked in anaesthesia.

80.4% (n=41) reported working in a mixed adult and paediatric department.

#### *Protocol awareness:*

The majority of participants, 60.5% (n=26), reported that they had never read the major incident protocol.

86.3% (n=44) reported that they had never been involved in a paediatric major incident.

#### *Readiness to deal with a paediatric major incident:*

Qualitative data was collected. Personal concerns listed by participants included: lack of personal experience, lack of experienced staff, equipment, training, limited resources, overcrowded department and heightened emotions.

#### *Education and training:*

94.1% (n=48) reported that they would benefit from receiving training in paediatric major incidents. Participants felt they would benefit from increased training in the following areas: equipment -37% (n=19), triage -31% (n=16), communication -21% (n=11) and other -11% (n=5).

#### **Conclusions:**

This study demonstrates a need for increased awareness of major incident protocols overall and confirms deficiencies in the level of preparedness of staff regarding paediatric major incidents. Areas for future education and training have been identified.

1) Emergency planning in the NHS: health services arrangements for dealing with major incidents, HC (90) 25 HMSO 1990 2) Hodgetts T, Mackway-Jones K, Major incident medical management and support Advanced life support group London; BMJ publishing group 1995 3) The development of paediatric emergency medicine in Ireland Advisory committee on emergency medicine training in Ireland Oct 2010

#### **Poster No. 276 - Sub-Specialty and Special Interest Paediatrics**

##### **ADOLESCENT AUTONOMY: THE ETHICAL AND LEGAL ISSUES**

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#### **Aims**

Autonomy is considered a major principle in making decisions about an individual's health. Children and particularly adolescents have the capacity to partake in medical decision-making to some extent. In most cases, the parent-doctor-adolescent triangle sides are in agreement, but this is not always the reality, causing ethical and legal issues for physicians to consider. The overall aim is to evaluate the legal and ethical aspects of autonomy afforded to adolescents.

#### **Methods**

The databases perused for relevant papers were Pubmed and Westlaw. Based on their likelihood to produce hits, the Journal of Medical Ethics and Justis database were further examined.

#### **Results**

Autonomy is a basic human right, but not an absolute one. Contemporary challenges include arguments regarding the status of autonomy, often heralded by communitarian critiques versus individualist liberalists. Different legal decisions are defined by differing ages, which leads to confusion in terms of autonomy. Patients have a right to 'positive autonomy', i.e. to be facilitated in directing one's care, but they also have a right to 'negative autonomy'; i.e. the right to refuse treatment, and that is often more contentious, especially in adolescent medicine. In terms of the articulation of children's rights, the two most significant documents are the Constitution and the United Nations Convention on the Rights of the Child.

#### **Conclusion**

Assessing adolescents' rights to consent to or refuse medical treatment poses a special challenge to ethical and legal policy. We take guidance from International, European, Domestic and Case law. In

practice, the reality is that adolescents do not go through the same transitions at the same time. While one teenager may have capacity to engage in their own healthcare needs, others may not.

**Poster No. 277 - Sub-Specialty and Special Interest Paediatrics****INCREASED BODY MASS INDEX AND ITS MANAGEMENT IN PAEDIATRIC ONCOLOGY****O Power**<sup>1</sup>, C Ryan<sup>2</sup>, SM O'Connell<sup>3</sup><sup>1</sup>Department of Paediatrics & Child Health, University College Cork, Cork, Ireland<sup>2</sup>Department of Paediatric Haematology, Mercy University Hospital, Cork, Ireland<sup>3</sup>Department of Paediatrics & Child Health, Cork University Hospital, Cork, Ireland**Introduction**

Obesity, and its complications, is a well described late-effect of childhood cancer (CC) treatment. Prevalence of increased body mass index (BMI) from the time of diagnosis of CC has not been defined in any Irish paediatric oncology cohort, nor has the subsequent trajectory & management of this group. This is important in the context of appropriately timed and effective preventative measures and interventions, in order to minimise morbidity and optimise long-term health in these patients.

**Aim**

(1) Define BMI ranges and prevalence of overweight/obesity in CC patients, in a paediatric haematology-oncology cohort at the Mercy University Hospital (MUH). (2) Examine documentation & follow-up of BMI in survivors of CC at various time points. (3) Evaluate current approach to management of increased BMI in these patients.

**Methods**

A retrospective review of charts, including all MUH patients <18-years-old with haematological-oncological diagnoses 2005–2015. Data on height, weight, and BMI (using RCPCH growth charts) at diagnosis, end-of-treatment and annual follow-up over 5 years. Increased BMI defined as BMI  $\geq$ 91st centile; where identified, data was collected relating to action (or inaction) taken to address same. Age, diagnosis, and treatment protocol were documented.

**Results**

Of the 120 patients included, 35.8% had BMI  $\geq$ 91st-centile at presentation. Of these, only 41.86% were formally documented. 85% of patients had completed treatment; BMI  $\geq$ 91st-centile in 39.3% at end-of-treatment, and 39.7% at 1-year-follow-up. Of only 25 patients with data at 5-year follow-up, 36% had BMI  $\geq$ 91st-centile. Approaches to management were variable and inconsistent.

**Conclusion**

Increased BMI is a significant issue, but appears to be inadequately recognised in paediatric oncology. Evidence suggests a need to further expand the continuum of care for these patients, to promote life-long well-being, with a specialised co-ordinated, integrated service dedicated to addressing the specific challenges faced by childhood cancer survivors including risk of obesity.

**Poster No. 278 - Sub-Specialty and Special Interest Paediatrics****DEVELOPING AN MDT MODEL IN NEUROFIBROMATOSIS TYPE 1 (NF1) AS A PARADIGM FOR ENTRY INTO A EUROPEAN REFERENCE NETWORK (ERN).****C Purcell**<sup>1</sup>, P Hynes<sup>1</sup>, A Ward<sup>2</sup>, A Greene<sup>2</sup>, SA Lynch<sup>2</sup>, D Coghlan<sup>1</sup><sup>1</sup>General Paediatrics Dept, NCH, Tallaght Hospital, Dublin 24<sup>2</sup>Genetics Dept, OLCHC, Dublin 12**Introduction:**

Neurofibromatosis (NF1) affects 1/2500 people throughout the world. Children with NF1 require a multidisciplinary service ideally, delivered on a single site. NF1 is a very variable condition with children requiring the expertise of genetics, paediatricians, ophthalmologists, dermatologists, neurologists and other specialities as required. Building such a service concentrates expertise, facilitates coordination of care and fosters ideal opportunities for research.

**Aims:**

- To develop a service ensuring children had access to a multidisciplinary clinic on an annual basis.
- To create a registry of patients which captures the incidence and prevalence of NF1 in Ireland.
- To offer best possible care for the children attending the service by following international consensus guidelines.
- To liaise with NF1 Association, families and research authorities.
- Hold monthly clinics offering ophthalmology, medical, developmental and dermatology follow up.

**Methods:**

- Appointment of a CNS/CNM2 in Neurofibromatosis as funded by the NCH Foundation.
- Visit to the complex NF1 Clinic in Manchester's Children's Hospital and learn from their service, MDT and guidelines.
- Establish links with genetics, oncology, radiology and orthopaedic depts. in OLCHC.
- Create a referral pathway for HCPs to ensure children with NF1 are referred to most appropriate service in a timely fashion.
- To register the service on Orphanet and gain entry into an ERN as a multi-site service in conjunction with OLCHC.

**Results/Conclusion:**

To date, the service has been running for 12 months. The CNM2 provides telephone service and coordinates clinics. The Clinic has been registered in Orphanet and the process has begun to create a patient registry and enter the service in the ERN.

**Poster No. 279 - Sub-Specialty and Special Interest Paediatrics****Continuous subcutaneous insulin infusion (CSII) or insulin pump therapy in a District General Hospital.****Is it feasible?**

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<sup>2</sup>Principal teaching fellow diabetes, Warwick University, Coventry, United Kingdom

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**Aim:**

This qualitative study aims to give an insight into staff opinions on the feasibility of an insulin pump therapy (IPT) service to children and adolescents affected by Type 1 Diabetes Mellitus (T1DM), in a district general hospital.

**Methods:**

This study was approved by the ethical committee of Warwick University as well as the local hospital ethical committee prior to conducting the study.

Semi structured qualitative interviews were conducted with existing members of the multidisciplinary team (MDT). A total of sixteen health care professionals were interviewed, which included, but not limited to, a consultant general paediatrician with an interest in diabetes, consultant general paediatrician, consultant emergency medicine, consultant child and adolescents mental health, general practitioner, diabetes nurse specialist, diabetes dietician and paediatric staff nurse. Interviews took place in the paediatric department of a district general hospital. The interviews were recorded by audio-tape and transcribed. A thematic analysis was performed using descriptive and inferential statistics.

**Results:**

The majority of interviewees responded favourably to the provision of an IPT service as long as appropriate resources and staffing were made available. The main barriers identified were related to resourcing and financial constraints.

**Conclusion:**

This study demonstrates health care professional's ability to recognise the needs of the local population and be motivated to deliver the necessary services. IPT service was felt to be feasible in a district hospital pending the availability of adequate training and resources, most notably the presence of a consultant paediatric endocrinologist.

**Poster No. 280 - Sub-Specialty and Special Interest Paediatrics**

**THE GIP TEST (GLUTEN IMMUNOGENIC PEPTIDES) TO CHECK ADHERENCE TO GLUTEN FREE DIET IN COELIAC DISEASE**

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<sup>2</sup>Paediatrics, Grupo IHP, Sevilla, Spain

**Aim:** Evaluate in clinical setting an alternative tool to assess objectively gluten intake.

**Methods:** An ELISA test was used to check the presence of GIP (gluten immunogenic peptides) which triggers inflammation on Coeliac Disease (CD). The resistance of these 33-mer peptides to digestion has been confirmed. It is known that epitopes of this peptide are measurable by monoclonal antibodies (G12) in the feces of non-coeliac subjects. This technique can be applied as an objective assessment of diet compliance.

**Results:** In a series of cases GIP test rendered a diagnosis opposite to the classical approach.

- 1: 17 year old with Hashimoto thyroiditis. Serology was positive for tTG and GIP was negative.
- 2: 8 year old with gluten ataxia. Serology was negative and lab GIP test was positive
3. 12-year-old symptomatic patient. Serology was negative and GIP test was positive
4. 13 years old with IgA deficiency. Serology was negative and GIP was positive

**Discussion:** Currently the only effective treatment for CD is a long life exclusion of gluten in the diet. Follow up evaluation includes measurement of celiac serology and a thorough review of the patient's diet by a dietitian who is experienced in CD management. But in some clinical scenarios serology does not work, as in case of absolute IgA deficiency, the presence of autoimmune conditions, or low intake of gluten. Presence of GIP in feces proves ingestion. Patients on GFD with negative serology but positive GIP are said to have a contaminated diet. Patients who are on GFD with negative serology and negative GIP can be said to be compliant and other causes of symptoms should be investigated.

**Conclusion:** GIP test reveals the limitations of serology especially in CD patients with an underlying disease where CD's serology could be unreliable.

Monitoring of gluten-free diet compliance in celiac patients by assessment of gliadin 33-mer equivalent epitopes in feces. I Comino, A Real, S Vivas, M Síglez, A Caminero, E Nistal, J Casqueiro, A Rodríguez-Herrera, Á Cebolla, C Sousa. *Am J Clin Nutr* March 2012 *ajcn*.026708. The gluten free-diet: testing alternative cereals tolerated by celiac patients. Comino I, Moreno M de L, Real A, Rodríguez-Herrera A, Barro F, Sousa C. *Nutrients*. 5(10):4250-68, October 2013 Fecal Gluten Peptides Reveal Limitations of Serological Tests and Food Questionnaires for Monitoring Gluten-Free Diet in Celiac Disease Patients. *Am J Gastroenterol*. 2016 Oct;111(10):1456-1465.

**Poster No. 281 - Sub-Specialty and Special Interest Paediatrics**

**DESCRIPTION OF ACUTE-ONSET AUTOIMMUNE ENCEPHALITIS IN A THIRTEEN-YEAR-OLD GIRL.**

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<sup>2</sup>Paediatrics, Bons Secours Hospital Cork, Cork, Ireland

**AIMS:** To perform an analysis of a clinical case of autoimmune encephalitis with a literature review for possible aetiology and treatment and management recommendations.

**METHODS:** Consent for case review and report was obtained from the patient and her parents. I carried out a literature review to assess current recommendations.

**RESULTS:** The patient LR was admitted aged thirteen with severe anxiety and visual hallucinations in an otherwise well child. Her parents reported sudden onset of symptoms one week after meningitis C booster vaccination.

She described episodes of distress with associated suicidal thoughts, intermittent slurred speech and poor concentration. The visual hallucinations were frightening and threatening in nature. She developed episodes of collapse and a movement disorder affecting her face and upper limbs.

On investigation, there was left sided temporal slowing on her EEG, which became more pronounced over a period of months, but there were no serological or CSF inflammatory markers isolated. She was seen by Child Psychiatry, who felt that her presentation was due to an organic cause.

A trial of IV hydrocortisone was administered, resulting in symptomatic improvement. She was commenced on long-term monthly IV Ig infusions.

**CONCLUSION:** Autoimmune encephalitis “ranks high in the differential for encephalopathy”, according to current literature.<sup>1</sup> One study found that an “abnormal outcome occurred in 49%”, with cases of “unknown forms” experiencing the worst outcomes.<sup>2</sup> A significant proportion are clinically very similar to autoantibody-positive patients, but did not have an antibody isolated.<sup>3</sup> Treatment with immunotherapy is associated with a higher rate of complete recovery, including in those with autoantibody-negative results.<sup>3</sup>

While there is no confirmed link between the two, there are reports of autoimmune encephalitis occurring within one month of receiving a vaccination, with one study specifically mentioning the Men C booster in a small proportion of their cohort.<sup>3</sup>

1. McKeon A, et al. J Neurol Neurosurg Psychiatry July 2013 Vol 84 No 7. 2. Pillai SC et al. Infectious and Auto-antibody Associated Encephalitis: Clinical Features and Outcome. Pediatrics (American Association of Paediatrics) 2015 Vol 135 No 4. 3. Hacohen Y, et al. J Neurol Neurosurg Psychiatry 2013;84:748–755. doi:10.1136/jnnp-2012-303807

#### **Poster No. 282 - Sub-Specialty and Special Interest Paediatrics**

#### **GLP-1-SECRETING PROBIOTIC IMPROVES METABOLIC DYSFUNCTION IN HIGH-FAT DIET FED ADOLESCENT RODENTS**

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20

**AIMS** | Childhood obesity and type-2 diabetes rates are on a continually rising trajectory globally. As a result, we now urgently require novel and safe methods of preventing and managing pediatric-onset metabolic dysfunction. Glucagon-like peptide (GLP)-1 is a conserved mammalian gut hormone which impacts substantially upon the metabolic profile. This study aimed to assess the ability of a recombinant GLP-1-synthesizing probiotic to improve glucose and lipid metabolism in diet-induced obese rodents.

**METHODS** | In *experiment I*, twenty Long-Evans rats were maintained on a high-fat diet for 9 weeks and for the final 3 weeks exposed to  $10^9$  CFU/rat.d<sup>-1</sup> of either *Lactobacillus paracasei* NFBC 338 transformed to express a long-acting analogue of GLP-1 (GLP1; *n* = 10) or the isogenic control strain which solely harbored the pNZ44 vector (PNZ; *n* = 10). *Experiment II* involved an alternative diet-induced obesity model, in which C57BL/6 mice underwent 13 weeks of high-fat diet pre-feeding prior to 12-week intervention with either one of the aforementioned *Lactobacillus paracasei* NFBC 338 (*n* = 14).

**RESULTS** | Short-term GLP1 intervention in rats did not affect food intake, weight gain nor insulin resistance index in *experiment I*. However, GLP1 animal serum low-density lipoprotein cholesterol and triglyceride levels were reduced by ~20%. In addition, triglyceride-rich lipoprotein cholesterol was significantly reduced following GLP1 intervention. Moreover, in the extended model applied in *experiment II*, GLP1 intervention augmented glucose-dependent insulin secretion, as well as glucose and cholesterol metabolism, compared to HFC group. Interestingly, *Lactobacillus paracasei* NFBC 338 significantly attenuated the substantial adiposity associated with the diet-induced obesity model and altered the serum lipidome, independently of the ability to secrete GLP-1.

**CONCLUSIONS** | These data indicate that this recombinant GLP-1-expressing microbe may represent a novel method of managing cholesterol metabolism and diet-induced atherogenic dyslipidaemia, as well as insulin secretion/signaling in sufferers of metabolic dysfunction.

### Poster No. 283 - Sub-Specialty and Special Interest Paediatrics

#### A literature review on the cutaneous presentation of eating disorders in children and adolescents

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**Aims:** This literature review examines the cutaneous presentation of eating disorders in children and adolescents.

**Methods:** Searches were made on electronic databases: Medline, PubMed, Cochrane, Embase, Lenus and from reference lists of relevant articles.

**Results:** Children and adolescents show dermatologic findings similar to older patients, with no one isolated predictive sign. Paediatrics and adolescents present with cutaneous lesions which fall into categories originally proposed by Gupta *et al.*<sup>9</sup>: 1. *Malnutrition* 2. *Self-induced vomiting* 3. *Drug consumption* 4. *Concomitant psychiatric illness*. However, drug-induced lesions are less likely in this population<sup>6</sup>. They are more likely to display artefact from autoaggressive tendencies (30% of patients compared with 13% in adult populations), e.g. acne excoriorum<sup>7,8</sup>. One study found that patient dissatisfaction with their skin can lead to a distorted body image, leading to a finding that patients with acne are more likely to develop an eating disorder<sup>7</sup>. The most common features being xerosis, hypertrichosis (extensive lanugo hair) and artefact from autoaggressive tendencies<sup>6</sup>. These findings were present in a 13-year old patient with severe cutaneous signs of anorexia nervosa (AN), who was the stimulus for this review. Our 13-year old patient's signs of marked lanugo hair, severe chilblains and acrocyanosis are from the first category of signs caused by malnutrition and helped to confirm the diagnosis of AN. Our patient displayed no drug induced cutaneous signs. Other signs of eating disorders include finger callosities, subconjunctival haemorrhage, dental enamel erosion in category 2; and artefactual skin disorders like self inflicted skin trauma, trichotillomania and acne excoriorum displayed in category 4.

**Conclusions:** There are many cutaneous signs that can help identify an occult eating disorder<sup>4</sup>. Raising awareness of the cutaneous presentations associated with malnutrition, vomiting, drug usage and associated psychiatric comorbidities will lead to earlier detection of eating disorders and possibly better outcomes for these patients.

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## **Poster No. 284 - Sub-Specialty and Special Interest Paediatrics**

### **HERLYN-WERNER-WUNDERLICH SYNDROME A.K.A OBSTRUCTED HEMIVAGINA AND IPSILATERAL RENAL AGENESIS (OHVIRA) SYNDROME, A RARE DIFFERENTIAL FOR ABDOMINAL PAIN**

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#### **Background:**

Herlyn-Werner-Wunderlich syndrome or obstructed hemivagina and ipsilateral renal anomaly (OHVIRA), is a rare Mullerian duct anomaly that consists of uterus didelphys, unilateral obstructed hemivagina and ipsilateral renal agenesis.

Patients with this syndrome usually present after menarche with pelvic pain and/or a mass. The initial clinical diagnosis is often incorrect due to the rare incidence of this anomaly and misleading presenting signs and symptoms. Strong suspicion and knowledge of this anomaly are essential for a precise diagnosis.

#### **Case:**

A 15-year-old female presented with a 2 week history of worsening pelvic pain. On examination she had a tender RIF, guarding, Rosving's sign + and Goldflam's sign + giving the initial impression of appendicitis or UTI. Pelvic ultrasound showed a uterus didelphys with unilateral haematocolpus and she diagnosed as a case of OHVIRA syndrome. She had a EUA for drainage of the haematocolpus, a septal division and follow-up with a menstrual diary and MRI.

#### **Summary and Conclusion:**

OHVIRA syndrome should be considered as a differential diagnoses in young females with renal anomalies who present with pelvic pain shortly after menarche in association with a pelvic/vaginal mass and normal menstrual periods. Other presentations include abnormal vaginal discharge, infertility, vomiting, fever, acute urinary retention and as in this case acute abdominal pain

**Poster No. 285 - Sub-Specialty and Special Interest Paediatrics**

**CONGENITAL TALIPES EQUINOVARUS: THE RELIABILITY AND READABILITY OF ONLINE RESOURCES**

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**Aims/objectives:** Congenital talipes equinovarus (CTEV), also known as club foot or talipes is a common congenital disorder. Parents are increasingly utilizing the internet as a source of information about health care (1). The quality of medical information on the internet varies. This study examined material available to parents relating to CTEV using two separate instruments (HONcode and DISCERN tool) for judging the reliability of online resources.

**Methods:** The top 3 search engines in Ireland were studied. The phrases "Congenital talipes equinovarus" and "club foot" were entered separately into all 3 platforms. The websites were then evaluated using the HONcode and the DISCERN tool.

**Results:** 54 websites were found across the 3 search engines using the key word club foot while CTEV returned 55 matches. Four websites in total displayed the HON code (7.33%). Using the discern tool CTEV websites had a mean score of 60 with a standard deviation of 17 and club foot a mean score of 56.8 with a standard deviation of 13 (max score: 80).

**Conclusion:** There is a large volume of information available to laypeople online some of which can be ambiguous and misleading. Often parents find comfort in sharing experiences through online forums and feel empowered by learning about their children's illnesses (2). Practitioners should be aware of a number of key websites that parents can be directed towards in order to avoid unreliable and potentially damaging information.

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**Poster No. 286 - Sub-Specialty and Special Interest Paediatrics**

**LARYNGEAL MASK AIRWAY (LMA) PRIOR TO TRANSFER IS A RELIABLE ALTERNATIVE IN DIFFICULT ENDOTRACHEAL INTUBATIONS.**

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**Aims:** Present 2 cases of small children showing difficult airway access that got rescue ventilation through placement of LMA. Use of LMA in infants prior to transfer is still not a frequent practice in Ireland.

**Method:** The LMA forms a low pressure airtight seal against the glottis rather than plugging the pharynx, thus combining ease of insertion and adequate airway patency.

**Case Report and results:**

**Case 1:** Ex preterm baby that at 3months (2 weeks corrected age) presented in PAU with history of cessation of breathing and lethargy. Oxygen high flow therapy was unsuccessful. 3 attempts to intubate her were unsuccessful. Oedema around larynx was visible. We decided to secure her airways using LMA instead of ETT. Then she was ventilated and remained vitally stable with improvement in oxygenation as well as ventilation. A new attempt to intubate her assisted by video laryngoscope failed. An indirect intubation procedure was done, by inserting a guide through the nose and placing a smaller endotracheal tube.

**Case 2:** Infant born at 38+2/40 via SVD, with antenatal diagnosis of Gastroschisis that was repaired at first day of life. At 6 weeks age he presented in SLK PAU with history of Apnoea during feeding. He started having bradycardia and apnoeic episodes and intubation was decided. Unfortunately intubation

by both paediatric ,transport team and anaesthetic team failed. LMA was placed as rescue ventilation measure. As LMA was securely placed, the child was transferred on LMA.

**Conclusion:**

Whereas successful intubation may require more than one attempt, the LMA is easily inserted by non-anaesthetist personnel. Although this device cannot be considered a substitute for the tracheal tube, may be life saving in patients with malformations of the upper airway when tracheal intubation and mask ventilation fail.

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**Poster No. 287 - Sub-Specialty and Special Interest Paediatrics**  
**THE EFFECT OF CHILD PSYCHIATRY CONSULTATION PERFORMED IN ED ON ADMISSION RATES BETWEEN JANUARY-JUNE 2017 AT TALLAGHT CHILDRENS ED**

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**Aims:** To assess what effect Psychiatric consultation performed in the ED by the psychiatry team has on admission rates for patients presenting to the ED with psychiatric related conditions, as well as a comparison between this group and general child psychiatry admissions between January and June 2017.

**Methods:** An audit of all referrals to child psychiatry at Tallaght Hospital between Jan-June 2017 was performed and a comparison was made between those seen in ED by psychiatry, and those not seen by psychiatry, and how this affected admission rates. A comparison was also made between this group and the group not seen in ED in terms of time and day of presentation, new vs known cases, referral source, length of stay and presenting condition.

**Results:** A total of 15 cases were seen in ED directly by the psychiatry team. In this group all 15 cases were discharged, length of stay 0. Time of presentation all between 8am-5pm. Most common day of presentation was Monday/Tuesday. 8 were known and 7 were new cases to the psychiatry department. There were 4 GP referrals and 11 self-referrals. Of the 8 known cases, 6 were previously linked in with CAMHS and 0 with TUSLA, and 2 were linked in with both. The most common presenting condition/problem was self-harm/suicidal ideation.

A total of 121 cases were seen by psychiatry once admitted to the ward. 73 (65%) of these presented after 5pm, and most presented on Wednesday/Thursday. There were 10 GP referrals, 76 came from home, and 24 from other sources. Average length of stay was 2 days, with lowest 1 and highest 25. Most common presenting condition/problem was self-harm/suicidal ideation.

**Conclusion:** Psychiatric consultation performed in ED by the psychiatry team resulted in a 100% discharge rate from ED and a reduction in 15 admissions over a 6 month period. Most presentations occur from home, mid-week, and after 5pm with self-harm/suicidal ideation the most common features present.

**Poster No. 288 - Sub-Specialty and Special Interest Paediatrics**

**BURDEN OF DISEASE WITH TUBEROUS SCLEROSIS COMPLEX IN THE REPUBLIC OF IRELAND**

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**Introduction**

Tuberous sclerosis complex (TSC) is a multisystem genetic disorder affecting 1/6,000 live births caused by mutations in either TSC1 or TSC2 genes (1,2). Neuropathological and neuropsychiatric manifestations of the disease remain the largest cause of TSC associated morbidity and mortality. Treatment of epilepsy associated with TSC represents a major challenge (3). The aim of this study is to characterise the neurological phenotype and identify the current challenges faced in the treatment of TSC in the Republic of Ireland (RoI).

**Methods**

A medical record search was carried out for patients diagnosed with TSC in the National Centre for Medical Genetics, RoI. Records with insufficient clinical data were excluded. Characteristics examined included information on neuropsychiatric manifestations of TSC: epilepsy, infantile spasms, treatment for epilepsy, among other comorbidities associated with TSC.

**Results**

The database search yielded 224 records, of which 87 records were excluded, leaving 147 eligible patient records (53% female, median age 18 years). Of these 68% had neuropsychiatric diagnoses. 92 (62%) patients had diagnosis of epilepsy. Of these, 41 (27.8%) patients were diagnosed with infantile spasms. No significant genotype-phenotype relationship was found when comparing TSC1 and TSC2.

**Conclusion**

This study demonstrates that there is a significant burden of epilepsy and neuropsychiatric disease associated with mutations in TSC1 and TSC2. This is the first study characterising the phenotype of the TSC patient population in the Republic of Ireland. Formal needs assessment is required to ensure optimum care for this cohort.

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**Poster No. 289 - Sub-Specialty and Special Interest Paediatrics**

**AUDIT OF SERVICE PROVISION FOR NEWLY DIAGNOSED DIABETIC PATIENTS IN A SECONDARY CARE CENTRE IN THE REPUBLIC OF IRELAND**

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**Aims:** Type 1 diabetes (T1DM) is a complex chronic disease affecting approximately 2,750 children in Ireland. Management requires extensive education to both child and parents and acceptance of lifelong insulin therapy.

NICE guidelines (2016) prioritise education, dietary management, HbA1c targets, and diabetic kidney disease for managing diabetes in children and young people. The aim of our study is to audit compliance with these guidelines in patients newly diagnosed with T1DM in a secondary care centre in the Republic of Ireland.

**Methods:** Data was collected on patients followed up in Wexford General Hospital with T1DM regarding: consultant input within 24 hours of diagnosis, education during first admission, number of clinics attended during the first year, annual HbA1c checks, eye checks, blood pressure checks and annual screening for albuminuria.

**Results:** 59 patients were identified: 56% male; mean age at diagnosis 7.35 (0.9–15 years). 100% of patients received input from a consultant during their admission and received comprehensive diabetes education. 79.6% (n=47/59) patients attended more than 4 diabetic clinics in the same centre in the year following diagnosis, 15.2% (n=9/59) patients received care in different centres, 5% (3/59) were newly diagnosed within the last year. Lower levels of compliance were associated with retinopathy screening (74.6%), dietician review (23,7%). Blood pressure checks (37%), and annual screening for microalbuminuria (2%) were limited by patient compliance or medical professional awareness.

**Conclusion:** Our audit showed high in-hospital compliance with guidelines for patients newly diagnosed with T1DM.

Follow up did not meet all desired criteria due to limited services (e.g: no dedicated dietetic service), patient non-compliance and lack of medical awareness of the current guidelines. Streamlined care pathways across all hospitals and increased outpatient resources, particularly dietetics, will improve outcomes.

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#### **Poster No. 290 - Sub-Specialty and Special Interest Paediatrics**

#### **NEONATAL ENCEPHALOPATHY: DYSFUNCTIONAL INFLAMMATION AT SCHOOL AGE IS RESPONSIVE TO MELATONIN.**

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**Aim:** Inflammasome and hypoxia inducible factor-1 $\alpha$  (HIF1 $\alpha$ ) pathways are important mediators of inflammation and brain injury. We examined systemic expression of the genes for HIF1 $\alpha$  and NLRP3 inflammasome as well as monocyte and neutrophil activation in response to endotoxin (LPS) and melatonin in children with Neonatal Encephalopathy (NE) at school age compared to age-matched controls and children with severe cerebral palsy (CP).

**Methods:** Flow cytometry was used to measure the expression of neutrophil and monocyte markers of function CD11b (neutrophil activation) and Toll like receptor (TLR)-4 (endotoxin recognition) before and after treatment with Lipopolysaccharide (LPS) and Melatonin *in vitro*. Expression of HIF1 $\alpha$  and NLRP3 inflammasome mRNA in whole blood, before and after treatment with LPS (10ng/ml) and melatonin (42 $\mu$ M) was measured using RT-PCR.

**Results:** Neutrophil CD11b and TLR4 was significantly increased in children with NE (p=0.04) and CP after LPS versus controls and reduced with melatonin. HIF1 $\alpha$  was increased within the CP group compared with the controls upon treatment with LPS and was decreased by a melatonin. Expression of

NLRP3 gene was significantly increased in children with NE ( $p=0.04$ ) after LPS versus children in CP and controls and reduced by melatonin

**Conclusion:** Neutrophil activation, HIF1 $\alpha$  and NLRP3 inflammasome expression is elevated in schoolage children with CP and post-NE. Targeting specific immune pathways may be a therapeutic option in persistent inflammation in children with brain injury. This suggests that dysregulated inflammation seen in newborns with NE may persist into childhood and is amenable to immunomodulation with melatonin.

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