Paediatric Clinical Leaders: Service Planning, Provision and Best Practice

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ROTA INNOVATION AND E-ROSTERING IMPROVING TRAINEE EXPERIENCE IN A GENERAL PAEDIATRIC DEPARTMENT

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Background Junior Doctor rotas have gone through a number of iterations over the years. Rigid, rolling rotas with fixed annual and study leave have been opposed by trainees and the BMA ¹. They leave junior doctors unhappy, burnt out and disengaged. This has a negative effect on patient care ³ and serious consequences for retention and recruitment in Paediatrics and Healthcare at large.

Objectives To introduce a new electronic rota management (HealthRota) system which will facilitate self-rostering, improve adherence to the BMA and RCPCH Trainee Charter ² recommendations and improve junior doctor wellbeing.

Methods Twelve Junior Doctors (and senior doctor equivalents) starting a General Paediatric Medicine post will complete a survey of fourteen questions about their experiences in their previous rota (Non-HealthRota). They will then be introduced to HealthRota and repeat the survey towards the end of their Paediatric post. The survey included questions on life: work balance, rota design, transparency, access, leave requesting, annual leave, study leave, clinics and flexibility.

Results Overall there was on average a 1.3 point improvement (on a 5 point Leichardt scale) across all questions, with the various Non-HealthRota experiences having a satisfaction score of 3.0, whilst e-HealthRota had a score of 4.3. There were no questions where HealthRota was inferior to other rotas. The biggest improvements were seen with 'Requesting Leave', 'Access the rota 24 hours a day' and 'Feeling of Ownership'. There were many positive comments in the open section including HealthRota was 'Much less Stressful', 'Absolutely fantastic' and 'A breath of fresh air'.

Conclusions Despite COVID-19 impacting on the junior doctor experience. HealthRota still proved to be a much more popular and efficient system across all important aspects of medical rotas.

Paediatric Critical Care Society

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THE WALES INFANTS' AND CHILDREN'S GENOME SERVICE' (WINGS): DIAGNOSTIC RAPID WHOLE GENOME SEQUENCING FOR UNWELL CHILDREN WITH A SUSPECTED RARE GENETIC DIAGNOSIS

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Background Caring for severely ill infants and children necessitates the use of tremendous NHS resources. As a significant proportion of unwell neonates and children have a rare underlying genetic diagnosis, it is well recognised that genetic testing can play an important role in their care. In recent years, rapid whole genome sequencing (rWGS) has been shown to have a positive impact on these patients. Specifically, previous research studies and projects that have adopted a rWGS approach have reported that it increased their diagnostic rate and reduced time to diagnosis. It also substantially reduced healthcare spending due to fewer days in hospital and avoided unnecessary surgeries and other invasive procedures.

In 2019, the All Wales Medical Genomics Service formed a multidisciplinary working group to set up a rWGS service for acutely unwell infants and children. The group consisted of intensive care clinicians, geneticists and laboratory staff. New diagnostic testing infrastructure was established and a bespoke diagnostic pipeline to identify causative genetic variants was validated. In April 2020, the 'Wales Infants' and children's Genome Service' (WINGS) was launched. Although rWGS is increasingly being adopted internationally, WINGS is the first commissioned NHS diagnostic rWGS service for acutely unwell children within the UK.

Patients are eligible for the service if a monogenic cause for their illness is suspected, a DNA sample from both biological parents is available, and a timely genetic diagnosis might alter clinical management. The service is available to paediatric and neonatal patients in intensive care units (ICUs) across Wales, and Welsh children in ICUs elsewhere in the UK.

Objectives To highlight the role of rWGS in the diagnosis and subsequent management of acutely unwell children and infants.

Methods Phenotypic information and test results were prospectively collected over an eleven month period from service launch.

Results Seventeen families have completed testing to date. Pathogenic or likely pathogenic variants have been identified in seven children. Additionally, a 'hot' variant of uncertain significance in a candidate gene was reported in another patient. Mean time to reporting was 10 calendar days (range 6–26 days).

These results have had significant health benefits for this patient group, including immediate clinical management changes. For example, one child was shown to have interleukin-2 receptor β deficiency. Her timely genetic diagnosis had a direct impact on her clinical care, and a decision was made to proceed with a bone marrow transplant.

Conclusions In summary, we have introduced the UK's first national diagnostic rWGS service for acutely unwell children. The project's success is based on the participation and collaboration of multidisciplinary teams. WINGS continues to have a positive impact on patient care. The current diagnostic yield of 41% is similar to previous research projects in the UK and other services internationally.

British Association of Perinatal Medicine and Neonatal Society

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PREVALENCE AND ASSOCIATIONS OF PNEUMOTHORACES IN A LEVEL 2 NEONATAL UNIT

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Background Pneumothoraces are common in the neonatal period, and can cause significant morbidity, at times requiring extended respiratory support, invasive interventions and prolonged neonatal unit (NNU) care. Established risk factors include prematurity, positive pressure ventilation (PPV) and meconium aspiration. Due to a perceived increase in the number of pneumothoraces seen at our NNU, investigating their prevalence and associations was important to identify any modifiable risk factors.

Objectives This service evaluation aimed to determine the prevalence, clinical presentation, outcomes, and risk factors for pneumothorax in a Level 2 NNU.

Methods A single-centre retrospective case note analysis was undertaken, evaluating the care of all neonates with radiologically confirmed pneumothorax, born over a one-year period from October 2019 and managed in a Level 2 NNU.

Results Thirty-two neonates were eligible for inclusion. The prevalence of pneumothorax was 6 per 1000 live births (0.64%), and 31 per 1000 NNU admissions (3.09%). Most neonates were male (23/32), born over 37 weeks gestation (29/32) and with a birthweight of more than 3000g (26/32). Of note, the majority of these neonates were born at ³ 40 weeks gestational age (17/32). Thick meconium was documented at the delivery of 7/32. Pneumothoraces were predominantly unilateral (27/32), with tension pneumothorax in 2/32, and bilateral pneumothorax in 3/32. Twenty-one neonates required respiratory support using PPV within the first ten minutes of life. Reviews of the maternity resuscitaires were conducted, and out of 19 resuscitaires checked, 6 showed inappropriate pressure settings. Prior to diagnosis, a total of 30/32 neonates showed signs of respiratory distress, and 24 of them required respiratory support, including low-flow oxygen, CPAP, BiPAP or mechanical ventilation. The remaining 6 improved without intervention. Five neonates required chest drain insertion, and the rest were managed conservatively. Eighteen cases were diagnosed within the first 24 hours of life, and two cases on day two of life. The remaining 12 were reported on the chest X-ray, but the diagnosis was not documented in the clinical notes or on the BadgerNet neonatal patient records. The single neonatal death (1/32) was not attributed to the pneumothorax, but to hypoxic ischaemic encephalopathy.

Conclusions Our analysis showed a higher prevalence of pneumothorax in this cohort compared to data from similar studies, especially considering the large proportion of term neonates. An association of pneumothorax with respiratory support at birth was observed, which is a known risk factor. However, the outcomes were generally good, with the majority of cases being managed conservatively and overall low mortality. Our findings highlight the importance of checking pressure settings on the resuscitaire prior to use, and the need for thorough interpretation of chest X-rays with documentation of all findings. We recommend introducing a formal check-list to record pressure settings when the resuscitaire is checked by maternity staff prior to each delivery. Documented consultant X-ray reviews should be formalised on the NNU, for instance by using log-sheets for each patient. In the future, the acute use of chest ultrasound for the diagnosis of pneumothorax should be considered, with appropriate training provided for neonatal doctors.

British Society of Paediatric Endocrinology and Diabetes

1168 NOT BEING IN DKA ON ADMISSION AND NORMALISING BLOOD GLUCOSE VALUES FROM ONSET ARE KEY TO EXCELLENT HbA1c VALUES ONE YEAR AFTER DIAGNOSIS OF TYPE 1 DIABETES

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Background NICE guidance recommends paediatric patients with Type 1 Diabetes Mellitus (T1DM) should achieve a HbA1c target level of 48mmol/mol (6.5%) or lower.

Objectives We therefore wanted to investigate potential factors that led to an optimal HbA1c one year after diagnosis in paediatric patients.

Methods We did a case review of paediatric patients newly diagnosed with T1DM from 01/01/17 to 31/12/20 who are managed by the paediatric diabetes team at Doncaster Royal Infirmary. Factors we looked at included initial presentation (DKA or no DKA), gender, index of multiple deprivation, family structure and average glucose control at week 1,2,3, and one month. We compared these factors with HbA1c at 1 one year to establish any patterns associated with better control, as dictated by HbA1c <48 mmol/mol (6.5%).

Results 49 newly diagnosed T1DM patient were identified. 37.5% (18 patients) presented with diabetic ketoacidosis (DKA) at diagnosis. 88.9% of children who presented with DKA at diagnosis had a HbA1C >48mmol/mol one year after diagnosis. There was also a positive correlation between lower average blood glucose values one week and two weeks after diagnosis with lower HbA1c values at one year. No associations with age at diagnosis, index of multiple deprivation decile, and two parent households were found.

Conclusions Evidence from this case review shows that identifying diabetes early (thereby preventing development of DKA) and achieving target bloods glucose values from the outset of diagnosis can lead to an optimal HbA1C (48mmol/mol or lower) one year after diagnosis. More awareness needs to be created among primary care and paediatric teams in recognising symptoms of diabetes and the importance of normalising blood glucose values early.

Quality Improvement and Patient Safety

1169 SATISFACTION IN TELEPHONE CONSULTATION IN THE HULL ROYAL INFIRMARY, PAEDIATRIC DEPARTMENT DURING COVID-19 LOCKDOWN; A SURVEY STUDY

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Background During the national lockdown due to COVID-19 pandemic, the majority of out-patient Paediatric face-to-face appointments in Hull Royal Infirmary had been cancelled. Telephone consultation was introduced as a replacement.