Association of Paediatric Emergency Medicine

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A INTERNATIONAL MULTICENTRE OBSERVATIONAL STUDY TO VALIDATE CLINICAL PRACTICE GUIDELINES FOR MANAGEMENT OF FEBRILE INFANTS AGED ≤ 90 DAYS

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Background Fever is one of the most common reasons for infants to attend Paediatric Emergency Departments (PED) in the UK and Ireland.^{1,2} Identifying young infants with serious bacterial infection (SBI) from those with benign viral infections is extremely difficult.²⁻³ Between 8%-20.5% of febrile infants ≤ 90 days have SBI, of which UTI is most common.⁴⁻⁵ 1-2% of these infants have invasive bacterial infection associated with significant morbidity and mortality if unrecognised.³⁻⁴ Clinical decision tools have been shown to reduce practice variation and optimise outcome as well as cost.⁶ Neither of the two currently available national guidelines, National Institutes for Health and Care Clinical Excellence (NICE) Sepsis NG51 or Feverish illness NG143 have been validated in this cohort.

Objectives To validate existing Clinical Practice Guidelines (CPG) for the detection of SBI in infants < 90 days with fever in the UK and Ireland.

Methods The Febrile Infants Diagnostic Assessment and Outcome (FIDO) study was a retrospective multicentre (Belfast, Bristol, Dublin, Glasgow, Leicester, London) observational study involving infants ≤ 90 days, presenting to PED in the UK & Ireland with a fever $\geq 38^\circ\text{C}$ between 31/08/2018 to 01/09/19.

The aim was to report the performance of three CPGs; NICE Sepsis NG51, NICE Feverish Illness NG143 and the proposed British Society Antimicrobial Chemotherapy (BSAC) guideline. The performance of clinician practice was also compared to the CPGs (i.e. what clinicians actually did). The primary outcome measure was the diagnosis of SBI defined as bacterial meningitis, Urinary Tract infection (UTI) or bacteraemia. The study was performed on behalf of PERUKI and registered with ClinicalTrials.gov Identifier: NCT04196192.

Results 535 febrile infants aged ≤ 90 days were included from the six centres. Median age of participants was 54 days with an Inter-quartile range (IQR) 32–70, 314 boys (58.7%) and 221 girls (41.3%). The median length of stay (LOS) of infants without SBI was 48 hours (IQR 25 to 69) and with SBI was 72 hours (IQR 48 to 116) with significant difference of $p < 0.0001$.

Sepsis NG51 correctly identified all 70 infants with SBI with a sensitivity of 1.00 (95% CI 0.94 to 1.00). Clinician practice demonstrated the second highest sensitivity 0.97 (95% CI 0.9 to 1.00) identifying 68 out of 70 SBI, followed by Fever NG143 -sensitivity 0.90 (95% CI 0.80 to 0.96). NICE sepsis was the most sensitive CPG and significantly more sensitive (McNemar's Test) than NICE Feverish and BSAC ($p < 0.05$) but not significantly more sensitive than clinician directed practice. Clinician directed practice was the most

specific 0.29 (95%CI 0.25 to 0.33) and was significantly more specific than all CPGs (McNemar's Test) $p < 0.0001$.

Conclusions Clinician directed practice was the most specific for identifying SBI with the fewest infants requiring parenteral antibiotics. The Clinician directed practice demonstrated a similar sensitivity as the most cautious NICE guidance (NG51 – treat all febrile infants) and was significantly more sensitive than the NICE NG143 and proposed BSAC CPGs. Further prospective studies are required to refine CPGs for the assessment and management of febrile infants in the UK and Ireland.

British Association for Paediatric Nephrology

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RHABDOMYOLYSIS IN CHILDREN AND YOUNG PEOPLE: A TEN-YEAR RETROSPECTIVE REVIEW

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Background We describe a single centre's experience of paediatric rhabdomyolysis over 10 years. This is the largest dataset reported on in children with the condition.

Objectives To describe the aetiologies of paediatric rhabdomyolysis and explore the medium to long term renal consequences. Although AKI is now recognised to increase the risk for the latter development of CKD, hypertension and proteinuria, the specific risk associated with rhabdomyolysis is unknown.

Methods Retrospective, single-centre review of children presenting to a tertiary children's hospital with rhabdomyolysis as defined by a laboratory measured creatinine kinase (CK) of greater than 1000 IU/litre. Exclusion criteria applied for 179 cases (children post cardiac surgery/cardiac arrest or with a diagnosis of cardiomyopathy).

Results 232 children met inclusion criteria for the analysis. Age at presentation was 8.4 (± 5.5) years. Median follow-up was 6.3 months (interquartile range ± 43.1).

The commonest aetiology identified was infection (28% of cohort), of which viral myositis represented 75% of these (influenza = 13%, not tested = 65%). The commonest bacterial causes were Group A streptococcus (31%), and Meningococcus B (19%). The next most common aetiologies were trauma (18%), secondary to seizures (10%), and immune-mediated (8%). Of the immune-mediated, 68% had an autoimmune diagnosis, most commonly juvenile dermatomyositis. Drug-induced rhabdomyolysis represented 7% of cases; drugs of abuse (cocaine, LSD, ecstasy) being the commonest reported culprits.

There was no association between aetiology and severity of the condition. Acute kidney injury (AKI) was present in 32% of cases. Children with AKI tended to be younger with higher peak CK and active urinary sediment on urinalysis at presentation ($p = 0.001$ to < 0.0005). The 38% of cases defined biochemically as having 'severe' disease (CK > 5000 IU/litre) were no more likely to require admission to the Paediatric Intensive Care Unit (PICU) than the rest of the cohort. AKI and need for renal replacement therapy (RRT) were associated with a prolonged hospital stay ($p < 0.0005$). Over the period of the study, 9% of children died and 2% met criteria for a diagnosis of chronic kidney disease (CKD).

No statistically significant difference had been observed when considering patient characteristics on subgroups analysis: those presenting acutely, severe/non-severe rhabdomyolysis and those that were admitted to PICU.

Of acute presenting CYP, 33% received hydration therapy. Three CYP received alkalisation therapy. A total of 18 CYP required RRT, with a mean duration of 7.1 ± 4.3 days. Those that received RRT were more likely to have urinalysis abnormalities ($p < 0.0005$).

The patients that developed AKI had longer hospital stay ($p < 0.0005$), as did those who received RRT ($p = 0.005$), and those that were admitted to PICU ($p < 0.0005$).

Conclusions Although limited by its retrospective single-centre design, this large retrospective analysis of paediatric rhabdomyolysis provides new and unique insights into the condition. Results highlight the common aetiologies and provide evidence of good renal recovery overall, even in the most severely affected cases. Abnormalities of urinalysis appear to be important in predicting the development of AKI. This emphasizes the importance of urinalysis and accurate documentation as they may be important in risk stratifying.

Quality Improvement and Patient Safety

981 SORT OUT MY 1ST SEIZURE....QUICK!

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Background NICE guidelines state that children with their first seizure should be seen by a specialist within two weeks. The Epilepsy 12 Audit Round 3, Cohort 1 2018–19 showed that only 15.5% of children with epilepsy were seen by a specialist within 2 weeks of referral.

Our average waiting time from first seizure to seeing a specialist (January -August 2020) was 2 months. This led to a delay in seizure management and emotional anxiety to families and staff.

Objectives To decrease the time taken from referral to first clinic review, so as to decrease patient anxiety and improve seizure management, by March 2021

Methods Using diagnostics (process map and fishbone diagram), I identified the process and areas of possible intervention.

Two approaches were used 1. Retrospective analysis of data obtained from our IT department on patients referred to first seizure/new epilepsy clinic, January - August 2020 to get a baseline measurement

2. Prospective follow up of patients referred to the first seizure/new epilepsy clinic from referral to first clinic appointment. Ongoing since November 2020. This helped contribute to the baseline measurement as well as monitor the effect of PDSAs

Inclusions

- Patients referred and 0–16 years old

Exclusions

- Referrals rejected due to wrong postcode

I held discussions with the team to identify areas that could be contributing to long waiting times and what we could improve. I re-consulted after every stage of data analysis to

gain insights and perspectives from others regarding the nature and size of problems.

I shared the analysis with the team via email followed by face to face discussion and continued to share data as I developed a baseline measure and charted changes.

4 ideas were tested using series of PDSA cycles:

1. Introduction of a generic email address for all referrals (3 cycles)

2. Designing a standardised referral form to streamline referrals (6 cycles)

3. Discussion with the IT team possibility of integrating referral form onto hospital electronic system (4 cycles)

4. Uploading the referral form onto hospital intranet to make it accessible and creating awareness about new referral process (3 cycles)

Results The initial average waiting time was 83 days (median 63 days). Since the initiation of the PDSA series, the average waiting time has decreased to 47 days (median 54 days). It is however important to note that there have been fewer referrals due to the Covid pandemic since December (time of initiation of the 1st PDSA series) and thus the impact of changes made on waiting time has been difficult to accurately assess. The process of referral has however been streamlined.

As I continue collecting data in real time, I anticipate that I will be able to show a sustained decrease in waiting time.

Conclusions The system of triage and referral to the first seizure/new epilepsy clinic is influenced by several factors, each of which makes an impact on the waiting time. In order to make a sustainable difference to the waiting time, we will have to continue making small changes throughout the booking process and continuously monitor their effect.

Paediatric Mental Health Association

982 IMPACT OF COVID-19 IN THE MANAGEMENT OF UNDER-16S PRESENTING TO THE ACUTE HOSPITAL WITH SELF-HARM

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Background Suicide is the most common cause of death among children and young people over five years of age and the prevalence of all mental health conditions is increasing in the UK. Self-harm is an important indicator of distress and it requires appropriate intervention and management. Covid-19 has a high morbidity rate but a significant part of this morbidity is the impact on mental health.

Objectives The aim of this observational study was to look at the number of under 16s attending A&E with self-harm or suicidal ideation and compare the presentations before the first lockdown of Covid-19 with post lockdown in September 2020.

Methods Data was collected from East and North Hertfordshire A&E for September 2019 and September 2020. Self-harm was noted as a spectrum from occasional self-scratching to overdose with intent to die to completed suicide. Suicidal ideation was recorded separately from self-harm.

Results In response to the Covid-19 pandemic, the Children's Crisis Assessment and Treatment Team (C-CATT), the crisis team who assess patients presenting to the acute District