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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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10.1136/archdischild-2021-rcpch.315

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.

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

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10.1136/archdischild-2021-rcpch.316

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).