EVALUATION OF THE KAISER PERMANENTE RISK CALCULATOR TO MANAGE NEWBORN BABIES AT RISK OF EARLY ONSET NEONATAL SEPSIS: A PROSPECTIVE COHORT STUDY

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Background Early onset neonatal sepsis (EONS) is rare but associated with significant mortality and morbidity. Most postnatal units assess risk and treat for suspected EONS using the NICE guideline (CG149) based on pregnancy and peri-partum risk factors. This sees many clinically well babies receive empirical antibiotics, before investigations rule out any evidence of infection. This process usually involves separating baby and mother and exposure to the risks associated with intravenous antibiotic therapy. As such, there is a clear mandate to validate a tool that can safely risk stratify and identify which babies should receive empirical antibiotics. The Kaiser Permanente Risk Calculator (KPRC) combines peri-partum risk factors with the clinical status of the neonate, resulting in a stratification to low, medium or high risk of EONS. Application of the KPRC in some centres has been shown to reduce antibiotic administration by 50–75% without missing any cases of culture positive sepsis.

Objectives To evaluate the performance of the KPRC in comparison to the NICE guideline in identifying babies at risk of developing EONS in a large UK maternity hospital.

Methods In this prospective single-centre cohort study, we identified all neonates born at 34 weeks gestation who were commenced on empirical antibiotics, as per the CG149 guideline. We prospectively collected data on these babies including peri-partum risk factors and the clinical status of the baby at the time the decision was made to treat. This data was inputted into the KPRC, a risk score was calculated and the suggested management plan recorded. Our primary outcome measure was to observe for any babies who became significantly unwell with infection (defined as unwell as per KPRC criteria, maximal CRP > 50mg/L, raised CSF white cell count or positive blood or CSF culture) that would not have been started on empirical antibiotics had the KPRC been used.

Results Over a 4-month period we identified 94 babies born at 34 weeks gestation receiving empirical antibiotics for suspected EONS as per CG149. One baby had a positive blood culture and one had a positive CSF culture. Of these 94 babies, only 19 (20.2%) would have been commenced on empirical antibiotics by the KPRC. Those 19 babies were more likely to have a CRP >20mg/L (p<0.05) and need a longer course of antibiotics (p<0.05). Interestingly, 27 out of the 94 babies (28.7%) were classed as significantly unwell (as defined above) and of these, only 15 (55.6%) would have been identified by the KPRC as needing antibiotics. 6 babies with a CRP >50 were not identified for antibiotics by the KPRC, including a baby with a CRP of 155.

Conclusions Application of the KPRC to this cohort would have significantly reduced antibiotic administration rates. The safety and appropriateness of the KPRC for our population needs further assessment though, as some babies with significant evidence of infection went undetected by the calculator. In particular, the role of the KPRC in identifying clinically well babies with a very high CRP needs further consideration.

British Association of Perinatal Medicine and Neonatal Society

Quality Improvement and Patient Safety

BARRIERS TO ACHIEVING QUALITY NEONATAL CARE IN LOW RESOURCE SETTINGS: PERSPECTIVES FROM A UNIQUE PANEL OF NEONATAL HEALTH EXPERTS

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Background In 2019 there were 2.4 million newborn deaths worldwide, accounting for nearly half of all child deaths under 5 years of age. Despite increasing rates of facility based deliveries, neonatal mortality rates remain persistently high in low resource settings (LRS). This has catalysed international focus on understanding and enabling quality newborn care in order to achieve global targets to end preventable newborn deaths by 2030. Digital interventions are a promising tool that may accelerate progress towards achieving quality improvement goals.

The WHO quality improvement standards for maternal and newborn care provide a blueprint for Quality of Care (QoC). Yet in many LRS, this agenda has yet to be operationalised and refined at the national and facility level to respond to country-driven priorities. We carried out a qualitative study to understand persistent barriers to QoC, and to identify quality improvement priorities from the perspective of a unique panel of neonatal experts with first-hand experience of delivering inpatient newborn care in LRS. We also sought expert views on the role of digital health as a vehicle to improve QoC.

Objectives The study aim was to identify barriers to quality inpatient neonatal care in LRS from the perspective of experts experiencing in delivering and overseeing frontline neonatal care in these contexts.

Methods This study was part of a larger DELPHI study, carried out in 2018 to refine clinical diagnostic algorithms for the NeoTree platform. The Neotree is a digital quality improvement system combining immediate data capture, education and clinical diagnostic and management support. Physicians and nurse practitioners from high income and low income countries with clinical and research expertise in neonatal health were invited to participate. Additional inclusion criteria included...