

Neonatal Early-Onset Sepsis Calculator



In 2007, a study funded by the National Institutes of Health assessed the use of predictive models to calculate the risk of early-onset sepsis (EOS) in neonatal patients, accounting for multiple variables.

The main objectives of the study were to assess the links between the risk factors and the infection outcomes; use patient data collected from electronic medical records; and, to generate a predictive model to accurately determine EOS likelihood without using the patient's diagnosis of chorioamnionitis as an indicator.

Researchers were able to develop models based on the risk factors determined at birth and also the patient's developing clinical condition with a clinical management algorithm. Both of these models were published. The management algorithm was developed in collaboration with clinicians who had worked in Kaiser-Permanente Northern California (KPNC). The algorithm assessed the estimated risk with the number-needed-to-treat (average number of patients that need to be treated to prevent one bad outcome).

The outcome of the study was the generation of a neonatal EOS calculator, a web-based tool to help clinicians with diagnosis and treatment of EOS. This was implemented in KPNC hospitals with reassessments throughout the programme.

Two validation studies, a large study conducted at KPNC birth hospitals and a smaller one in Philadelphia, were used to confirm the accuracy of the calculator. Despite the slight differences in the clinical management algorithms in the validation studies, both showed significant decreases in infant antibiotic use with no short-term safety issues identified. The low readmission incidences for EOS in newborns was also maintained in both cases.

The success of the neonatal EOS calculator has since been confirmed by other studies, showing that this approach has led to a decreased use of antibiotics whilst also able to successfully identify newborns with EOS.

Source: [JAMA Pediatrics](#)

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