



CLINICAL GUIDELINE

Sepsis Calculator – Assessment of Early-Onset Sepsis in Infants > 35 weeks

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|-----------------------|------------------------------|
| Scope (Staff): | Nursing and Medical Staff |
| Scope (Area): | NICU KEMH, NICU PCH, NETS WA |

This document should be read in conjunction with this [DISCLAIMER](#)

Neonatal Sepsis Calculator

- [Neonatal Early-Onset Sepsis Calculator](#).
- Set incidence to the **KEMH rate of 0.4/1000 live births**.
- For indigenous infants, set the incidence to **1/1000 live births**.

Key Points

- This guideline applies to all infants born at ≥ 35 weeks.
- Three groups of infants require a blood culture and antibiotic treatment without delay:
 - Unwell appearing infants.
 - Infants whose sibling had EOS.
 - Infants whose mother currently has Group A Streptococcal infection.
- Contact the on-call paediatric staff for any queries or concerns about an infant.
- The EOS risk score should be documented on the neonatal history sheet by
 - Neonatal staff if baby admitted to neonatal unit
 - By the attending midwife if baby remains with mum
- The **EOS score** should be calculated as early as possible **after** delivery, when first set of neonatal observations are available.
- Document only the one EOS score applicable at the time of assessment.

Definitions and Parameters used for Assessment of Risk for Neonatal Sepsis

Information required for calculation of EOS score:

- Gestational age.
- Highest maternal **antepartum** temperature (ie between onset of labour to delivery). In case of precipitous delivery or BBA the first available temperature post delivery may be used.
- Duration of rupture of membranes.
- GBS status.
- Maternal intrapartum antibiotics.

Classification of maternal intravenous antibiotics:

- GBS IAP: Penicillin, Ampicillin, Amoxicillin, Clindamycin, Erythromycin, Cefazolin, Vancomycin.
- Broad-spectrum antibiotics: other Cephalosporins, Fluoroquinolone, Piperacillin/Tazobactam, Meropenem or any combination of antibiotics that includes an Aminoglycoside or Metronidazole.

Newborn Clinical Presentation:

The EOS risk score then incorporates the clinical presentation of the infant to determine the appropriate management plan. The newborn clinical presentation is assessed as:

- Well appearing.
- Equivocal signs.
- Clinical illness.

Definition of Equivocal Clinical Signs

| Clinical Parameters Assessed | Equivocal Signs |
|---|--|
| <ul style="list-style-type: none"> – Heart rate > 160/min – Respiratory rate > 60/min – Temperature > 38.0°C or <36.4°C – Respiratory distress (grunting, nasal flaring or costal recessions) | 2 clinical parameters abnormal for >2hrs or 1 clinical parameter abnormal for 4hrs |

- Any infant with abnormal clinical parameters requires urgent paediatric review.
- Any infant with equivocal signs requires observation in the neonatal unit.

Clinical Illness

- Unwell babies will be managed in the neonatal unit.

Interpretation of EOS Risk Score Results and Infant Management

Management Plan for **GREEN** Group:

- Routine care.
- Early discharge possible.

Management Plan for **YELLOW** Group:

- Require: **BLOOD CULTURE AND OBSERVATION.**
- Occasionally, with borderline elevated risk the EOS calculator may indicate 'Yellow – observation only'. Please follow those recommendations.
- No routine full blood count or CRP.
- Infants with **equivocal signs** require observation in the **neonatal unit**; when signs have normalised.
- Observations (3 hourly vital signs) may continue on the postnatal wards until blood culture result available.
- Infants with **medium risk, but normal exam** may be observed (3 hourly vital signs) on postnatal wards until blood culture result available.

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- If abnormal clinical parameters develop, the infant requires urgent paediatric review.
- If equivocal signs develop, infant requires transfer to neonatal unit.

Management Plan for **RED** Group:

- **TAKE BLOOD CULTURE AND TREAT WITH EMPIRIC ANTIBIOTICS.**
- For details, see sepsis treatment guideline and antibiotic monographs.
- With the blood culture, take full blood count and CRP.
- Repeat CRP next morning (usually no earlier than 8-12 hours after first CRP).
- Unwell infants and those with equivocal signs will be treated in the neonatal unit until stable and may then continue treatment and observation on the postnatal wards.
- Well infants requiring antibiotics may be treated on the postnatal wards and require 3 hourly vital signs until blood culture result available.

Documentation of EOS Risk and Clinical Assessment in Medical Notes

- **One** EOS score after clinical exam should be documented on the neonatal history form:
 - Date/time.
 - 'EOS risk score: **[insert calculated score]**'.
 - Management category, i.e. green, yellow or red.
- If the EOS risk score was not completed in the birth room/theatre, then this should be performed at the earliest opportunity and the result documented as above.
- Infant management plan, based on the EOS risk score and current clinical presentation needs to be documented in the medical notes.
- If baby's clinical presentation changes, the overall EOS risk score and the appropriate management plan may change and this needs to be documented in the medical notes.

Ceasing antibiotics for >35 weeks infants who are well with a normal CRP (x2)

- Antibiotics may be stopped and baby discharged at 36 hours if blood culture are negative so far (in daytime hours)⁵.
- After hours it is not possible to ensure a negative culture - so need to wait to confirm.
- If a blood culture becomes positive after 36 hours and the baby has been discharged appropriate review may occur in ED as necessary.

Related CAHS internal policies, procedures and guidelines

[Neonatal Early-Onset Sepsis Calculator](#)

References and related external legislation, policies, and guidelines

1. Escobar GJ, Puopolo KM, Wi S, Turk BJ, Kuzniewicz MW, Walsh EM, Newman TB, Zupancic J, Lieberman E, Draper D: Stratification of risk of early-onset sepsis in newborns ≥ 34 weeks' gestation. *Pediatrics* 2014; 133:30–36.
2. Kuzniewicz MW, Puopolo KM, Fischer A, Walsh EM, Li S, Newman TB, Kipnis P, Escobar GJ: A quantitative, risk-based approach to the management of neonatal early-onset sepsis. *JAMA Pediatr* 2017;171:365–371.
3. Puopolo KM, Draper D, Wi S, Newman TB, Zupancic J, Lieberman E, Smith M, Escobar GJ: Estimating the probability of neonatal early-onset infection on the basis of maternal risk factors. *Pediatrics* 2011;128:e1155– e1163.
4. Strunk T, Buchiboyina A, Sharp M, Nathan E, Doherty D, Patole S. Implementation of the Neonatal Sepsis Calculator in an Australian Tertiary Perinatal Centre. *Neonatology*. 2018;113(4):379-382. doi: 10.1159/000487298.
5. NICE clinical guideline. Neonatal sepsis

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Appendix 1: Title *(if required)*

Insert page break for each individual numbered Appendix.