



## CLINICAL PRACTICE GUIDELINE

Guideline coverage includes NICU KEMH, NICU PCH and NETS WA

# Sepsis Calculator - Assessment of Early-Onset Sepsis in Infants > 35 Weeks

This document should be read in conjunction with the [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  $\geq 35$  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"> <li>– Heart rate &gt; 160/min</li> <li>– Respiratory rate &gt; 60/min</li> <li>– Temperature &gt; 38.0°C or &lt;36.4°C</li> <li>– Respiratory distress (grunting, nasal flaring or costal recessions)</li> </ul> | 2 clinical parameters abnormal for >2hrs<br><br>or<br><br>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.

- 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)<sup>5</sup>.
- 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.

## References

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  $\geq 34$  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

## Related WNHS policies, procedures and guidelines

[Neonatal Early-Onset Sepsis Calculator](#)

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