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

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, cared for at KEMH and covers early-onset sepsis (EOS) risk with any bacteria.
- 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.
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- Maternal intrapartum antibiotics.
  Classification of maternal intravenous antibiotics:
  - 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

<table>
<thead>
<tr>
<th>Clinical Parameters Assessed</th>
<th>Equivocal Signs</th>
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</thead>
<tbody>
<tr>
<td>- Heart rate &gt; 160/min</td>
<td>2 clinical parameters abnormal for &gt;2hrs or</td>
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<tr>
<td>- Respiratory rate &gt; 60/min</td>
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<tr>
<td>- Temperature &gt; 38.0°C or &lt;36.4°C</td>
<td>1 clinical parameter abnormal for 4hrs</td>
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<tr>
<td>- Respiratory distress (grunting, nasal flaring or costal recessions)</td>
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</tbody>
</table>

- 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.
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- 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).
- 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.

<table>
<thead>
<tr>
<th>Related CAHS internal policies, procedures and guidelines</th>
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<tr>
<td>Neonatal Early-Onset Sepsis Calculator</td>
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</table>
### References and related external legislation, policies, and guidelines


5. NICE clinical guideline. Neonatal sepsis

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This document can be made available in alternative formats on request for a person with a disability.