Sepsis in Neonates


1All India Institute Of Medical Science, New Delhi; 2Postgraduate Institute of Medical Education and Research, Chandigarh; 3Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 4All India Institute Of Medical Education, New Delhi; 5Maulana Azad Medical College (MAMC), New Delhi; 6ANCC, Ahmedabad; 7Nil Ratan Sircar Medical College and Hospital, Kolkata; 8Govt Hospital Nalgonda.Mother And Child Health Center, Nalgonda; 9Government Medical College & Hospital, Chandigarh; 10Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak; 11CH, Gurgaon; 12Stanley Medical College, Chennai; 13NITI Ayog, New Delhi; 14All India Institute Of Medical Science, New Delhi; 15Madras Medical College, Chennai; 16SH, Mumbai; 17Sir Ganga Ram Hospital, New Delhi; 18All India Institute Of Medical Science, Jodhpur; 19Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 20Gandhi Medical College, Bhopal; 21All India Institute Of Medical Education, New Delhi; 22NCH, Aurangabad; 23KEM, Mumbai; 24Chettinad Hospital And Research Institute, Chennai; 25KEM Hospital, Pune; 26Tata Institute of Social Sciences, Mumbai; 27Postgraduate Institute of Medical Education and Research, Chandigarh; 28Maulana Azad Medical College (MAMC), New Delhi; 29Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 30Christian Medical College, Vellore; 31PCH, Hyderabad; 32Sri Ramakrishna Hospital, Coimbatore; 33Government Medical College & Hospital, Chandigarh; 34St John’s Medical College Hospital, Bengaluru; 35Lady Hardinge Medical College, New Delhi; 36All India Institute of Medical Sciences, Bhubaneswar; 37Postgraduate Institute of Medical Education and Research, Chandigarh

CORRESPONDING AUTHOR
Dr. Ashok K Deorari, Department of Neonatology, All India Institute of Medical Science, New Delhi
Email: ashokdeorari_56@hotmail.com

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Deorari AK, et al.: Sepsis in Neonates

**Standard Treatment Workflow (STW)**

**SEPSIS IN NEONATES**

**ICD-10-P36**

**RED FLAG SIGNS**
- Shock
- Bleeding from multiple sites
- Respiratory distress onset more than 6 hrs after birth
- Seizures
- Refusal to feed
- MEV persisting for one hour despite normal temperature
- Respiratory distress
- Diffusion

**YELLOW FLAG SIGNS**
- Lethargy
- Feed intolerance
- New or increased apnea episodes
- Fever or hypothermia not due to an identifiable cause
- Diarrhea
- Urinary tract infection
- Rash
- Seizures

Any of the maternal risk factors: If age of baby is less than 7 days and mother has

**HIGH PROBABILITY OF SEPSIS**
- Any RED flag sign is present
- Two YELLOW flag signs maternal risk factors are present
- One YELLOW sign or maternal risk factor is present AND baby’s gestation at birth is >32 weeks

- Admit in the NICU/SNCU
- Obtain blood sample for culture and sensitivity
- Start empirical antibiotics as per local/unit policy pending reports
- Provide supportive care and do appropriate laboratory investigations as indicated clinically (Chest X-ray, CBC, platelet count, RBS, serum electrolytes, renal functions)
- Perform lumbar puncture (LP) for CSF analysis when baby is hemodynamically stable

**AT-RISK/SUSPECT SEPSIS**
- One YELLOW sign or maternal risk factor is present AND Baby’s gestation at birth is >32 weeks

- Keep baby under close observation for 48-72 hrs
- Start antibiotics if another yellow/red sign appears during observation
- Obtain sample for blood culture and sensitivity before starting antibiotics
- Perform LP for CSF analysis if starting antibiotics or if the blood culture is positive

**REVIEW AT 48 HRS**
- Signs of sepsis disappeared and CRP <12 mg/L
  - Stop antibiotics
  - Keep under observation till blood culture is reported as sterile after 48 hrs of incubation
- Signs of sepsis improving but still present
  - Continue antibiotics
  - Antibiotic duration based on blood culture and LP report
- Signs of sepsis worsened, or a red sign appeared after starting treatment
  - Upgrade antibiotics as per antibiotic local/unit policy
  - Antibiotic duration based on blood culture and LP report

If antibiotics are continued, review again at 5 days: If baby is well from last 48 hrs, blood culture is sterile and CSF is normal: Stop antibiotics

If blood culture was not done, a negative CRP or Prolactin at 24-48 hrs after starting antibiotics, can help in early stopping of antibiotics

**DURATION OF ANTIBIOTICS**

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>5-7 DAYS</td>
</tr>
<tr>
<td>Severe CRP &lt;12 mg/L, AND sterile blood culture AND normal CSF analysis</td>
<td>5-7 DAYS</td>
</tr>
<tr>
<td>Blood culture positive</td>
<td>10-14 DAYS</td>
</tr>
<tr>
<td>CSF suggestive of meningitis</td>
<td>21 DAYS</td>
</tr>
</tbody>
</table>

**REMEMBER**
- Do not start antibiotics without a positive blood culture. Clinical features in neonates are non-specific. Looking for alternative reasons for sickness and careful serial observations are important ways to avoid unnecessary use of antibiotics.
- Believe a negative blood culture report and stop antibiotics if baby has recovered.
- Maintain utility of both CRP and procalcitonin is to rule out sepsis. A positive test may also be due to several non-infective conditions. Therefore, a positive CRP or procalcitonin should be interpreted carefully giving due weightage to clinical course of the baby.

**ABBREVIATIONS**
- CBC: Complete blood count
- CRP: C reactive protein
- CSF: Cerebrospinal fluid
- LP: Lumbar puncture
- NICU: Neonatal intensive care unit
- pRROM: Preterm premature rupture of membranes
- RBS: Random blood sugar
- SNCU: Special newborn care unit

**REFERENCES**

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**PREVENT SEPSIS BY USING HAND HYGIENE, ASEPSIS DURING PROCEDURES AND DELIGENT HOUSEKEEPING**

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare facilities in the country. These broad guidelines are advisory, and are based on expert consensus and available scientific evidence. There may be variations in the management of an individual patient based on higher level of care, as decided by the treating physician. There will be cases of clinical signs of sepsis in newborns. In the case of suspected sepsis, the baby should be referred to a higher level of care. This STW includes updated scientific data and guidelines that may be used by all practitioners. For more information, visit the website at www.sti.com.au.