Neonatal Sepsis

Neonatal sepsis is a clinical syndrome of bacteremia with systemic signs and symptoms of infection occurring in infants during the first 28 days of life. It poses a significant risk of morbidity and mortality globally.

Types of Neonatal Sepsis

Type	Onset	Common Pathogens	Sources
Early-Onset Sepsis (EOS)	Within 72 hours of birth	*GBS, E. coli, Listeria monocytogenes*	Vertical transmission (mother to child)
Late-Onset Sepsis (LOS)	After 72 hours to 28 days	*S. aureus, Coagulase-negative staph, Klebsiella, Pseudomonas, Candida*	Horizontal transmission (hospital or community-acquired)

Etiology and Risk Factors

Maternal Risk Factors (Especially for EOS)

- Prolonged rupture of membranes (>18 hours)
- Maternal chorioamnionitis
- Preterm labor (<37 weeks)
- Maternal fever or urinary tract infection
- GBS colonization without prophylaxis

Neonatal Risk Factors (Especially for LOS)

- Prematurity
- Low birth weight (<1500g)
- NICU admission
- Invasive procedures (e.g., IV lines, intubation)
- Formula feeding instead of breastfeeding

Clinical Manifestations

Symptoms are often vague and non-specific in neonates.

- Temperature instability (fever or hypothermia)
- Poor feeding
- Lethargy or irritability
- Respiratory distress (apnea, grunting, retractions)
- Cyanosis
- Seizures
- Abdominal distension

- Jaundice
- Hypotension
- Bradycardia or tachycardia

Diagnostic Workup

- **Blood cultures** (before antibiotic initiation)
- **CBC with differential**: Leukocytosis, neutropenia, thrombocytopenia
- **CRP / Procalcitonin**: Inflammatory markers
- **Lumbar puncture**: Rule out meningitis
- **Urine culture**
- **Chest X-ray**: If respiratory symptoms are present

Medical Management

Empiric Antibiotics:

- **EOS:** Ampicillin + Gentamicin
- **LOS:** Vancomycin + Cefotaxime or Gentamicin

  Tailor therapy based on local antibiogram and culture results.

Supportive Care:

- IV fluids and electrolyte management
- Respiratory support (oxygen, CPAP, or ventilation)
- Thermoregulation
- Monitoring for DIC, hypoglycemia, or metabolic acidosis

Nursing Management and Interventions

1. Monitor Vital Signs Closely

- Assess for **temperature instability**, respiratory rate, HR, BP, and oxygen saturation.
- Report any signs of **clinical deterioration**.

2. Maintain Thermoregulation

- Use **radiant warmers** or incubators.
- Avoid exposure and monitor for **hypothermia**, a subtle early sign of sepsis.

3. Administer Medications as Ordered

- Follow **strict timing for antibiotic administration**.
- Ensure proper dosing based on **weight and renal function**.

4. Monitor for Signs of Complications

- Watch for signs of **meningitis**, **DIC**, or **shock**.
- Report abnormal neurological findings (e.g., irritability, seizures).

5. Ensure Adequate Nutrition and Fluids

- Administer **IV fluids** or encourage **breastfeeding** if stable.
- Monitor **I&O, daily weight**, and signs of fluid overload or dehydration.

6. Infection Control Measures

- Practice **strict hand hygiene** and use **aseptic techniques**.
- Limit **invasive procedures** and handle lines with care.

7. Educate and Support Parents

- Offer **emotional support** and explain the treatment plan.
- Encourage involvement in care (e.g., skin-to-skin, kangaroo care if possible).

High-Yield NCLEX/USMLE Pearls

Focus Area	Key Fact
GBS Prevention	Maternal screening at 35–37 weeks and **intrapartum antibiotics** if positive
Common Organisms (EOS)	*GBS, E. coli, Listeria*
Common Organisms (LOS)	*S. aureus, Coagulase-negative Staph, Candida*
Signs in Preterms	Often present with **apnea, lethargy, and poor feeding**
First-line Antibiotics (EOS)	Ampicillin + Gentamicin
Sepsis + Meningitis	Add **Cefotaxime**, avoid Ceftriaxone due to **biliary sludging**
CSF Evaluation	Mandatory if neurologic symptoms are present
Nursing Priority	Monitor for **thermoregulation, respiratory changes, perfusion status**
Procalcitonin vs CRP	Procalcitonin rises earlier and is more specific in neonates

Prognosis

- Better outcomes with **early detection** and **appropriate therapy**.
- Risk of **neurological deficits** increases with **delayed diagnosis** or **meningitis**.
- Preterm neonates are at higher risk of **mortality and complications**.

Prevention Strategies

- Routine **GBS screening** and prophylaxis in mothers
- **Aseptic handling** of neonates and equipment in NICUs
- Promotion of **exclusive breastfeeding**
- Reduce **unnecessary invasive procedures**