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

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

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- 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	

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

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