



Necrotizing Enterocolitis (NEC): Quick Reference Guide



Part 1: Risk Factors & Protective Strategies



Risk Factors for NEC

- Prematurity (especially <32 weeks)
- Very low birth weight (VLBW)
- Formula feeding
- Abnormal gut colonization (dysbiosis)
- Hypoxic-ischemic injury or low birth Apgar
- Intrauterine growth restriction (IUGR)
- Abnormal placental blood flow/hypoxic risk



Protective Factors

- Human breast milk (maternal or donor)
- Exclusive enteral feeding protocols
- Probiotics (unit-specific protocol)
- Antenatal steroids
- Delayed cord clamping

Observed Risk Factors in Clinical Practice



These factors are commonly considered in bedside care, though not all are proven:

- Patent ductus arteriosus (PDA) – Diastolic steal may reduce gut perfusion.
- Umbilical arterial/venous catheters – Potential for vascular compromise.
- Pain/stress – Elevated cortisol linked to reduced GI perfusion.
- Hypothermia – Can impair mesenteric blood flow.
- Non-standardized feeding protocols – Inconsistencies may increase risk.



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Part 2: NEC Signs and Symptoms of NEC – Table for NICU Nurses

Category	What to Look For	Critical Thinking / Why It Matters
Abdominal Assessment	<ul style="list-style-type: none"> - Firmness or tenderness - Discoloration - Visible loops or separation of abdominal wall 	Indicates bowel inflammation, ischemia, or gas trapping—classic early signs of NEC
Output	<ul style="list-style-type: none"> - Large-volume green (bilious) emesis - Bloody stool 	Suggests bowel injury or obstruction; blood = mucosal injury; bile = possible obstruction or slowed motility
Vital Signs	<ul style="list-style-type: none"> - Prolonged capillary refill (>3 seconds) - Tachycardia from pain or dehydration - Low blood pressure - Change in temperature 	Reflects poor perfusion, systemic response to infection, or dehydration; servo detects thermal instability before we do
Respiratory/Metabolic	<ul style="list-style-type: none"> - Increase in A/B/D events - Respiratory acidosis - Metabolic acidosis - Glucose rising then dropping 	Increasing metabolic demand and poor perfusion impact gas exchange and glucose control—classic signs of systemic stress
Neurobehavioral	<ul style="list-style-type: none"> - Lethargy - Decreased tone - Poor feeding - Pain cues (cry, facial expression) 	“Not acting right” should never be ignored—neuro changes often accompany early systemic decline
Other Labs/Imaging	<ul style="list-style-type: none"> - Worsening blood gases - Abdominal X-ray: pneumatosis, portal venous gas, free air - Sudden increase in inflammatory markers (CRP, WBC) 	NEC diagnosis confirmed by imaging; labs support systemic infection or inflammation
Communication (SBAR)	<ul style="list-style-type: none"> - Use objective signs: “Abdomen is firm and dusky, cap refill is 4 sec, baby had bilious emesis” 	Builds clinical credibility and ensures clear, effective escalation to the team
Orders to Anticipate	<ul style="list-style-type: none"> - Abdominal X-ray - Blood cultures, CBC, CRP - Replogle to intermittent suction - NPO + IV fluids - Broad antibiotics 	Be ready to assist and advocate—your awareness of next steps prepares the team and improves outcomes



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Part 3: Diagnosis, Treatment & Long-Term Outcomes



Diagnosis

- **X-ray:** Pneumatosis intestinalis, portal venous gas, pneumoperitoneum
- **Ultrasound:** Free fluid, thickened bowel, absent perfusion
- **Labs:** Thrombocytopenia, metabolic acidosis, neutropenia, elevated CRP
- **Assessment:** Abdominal distension, bloody stools, increased residuals, lethargy



Modified Bell's Staging helps determine NEC severity and guide treatment:

Stage	Findings	Typical Management
IA	Mild distention, gastric residuals, apnea	NPO, close monitoring, possible antibiotics
IB	Same as IA + bloody stools	Same as IA
IIA	Abdominal tenderness, ileus, pneumatosis on X-ray	NPO, antibiotics, decompression, TPN
IIB	Same as IIA + metabolic acidosis , thrombocytopenia	More intensive monitoring, longer NPO
IIIA	Systemic instability, possible DIC, no perforation yet	ICU-level support, surgery consult
IIIB	Definite perforation , gas in portal system or abdomen	Surgery required



Medical NEC vs. Surgical NEC

Medical NEC	Surgical NEC
Managed with supportive care	Requires OR or bedside drainage
NPO 7–10 days	Laparotomy and resection possible
Antibiotics + Replogle + central line	Often results in ostomy creation
Serial X-rays every 6 hrs (24–48 hrs)	May begin with peritoneal drainage
Close monitoring & labs	More unstable infants, higher risk



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NICU Nursing Role in NEC Care

- Watch for early symptoms and advocate for X-rays/labs
 - Maintain NPO status, place/monitor Replogle
 - Administer antibiotics and fluids
 - Monitor perfusion, BP, and labs closely
 - Post-op care: pain control, fluid status, ostomy support
 - Parent education: feeding plans, ostomy care, long-term follow-up
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Long-Term Outcomes to Watch For

- Short bowel syndrome
- Malabsorption or feeding intolerance
- Developmental delays
- Strictures or re-hospitalization
- Emotional toll on families



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