Neonatal Necrotizing Enterocolitis (NEC) Care Guideline

Inclusion Criteria:
- Abdominal distension, bloody stool or significant feeding intolerance

Exclusion Criteria:
- Congenital GI anomalies
- Spontaneous Intestinal Perforation (SIP) – (see SIP guideline)

Assessment
- Vital signs
- Physical exam – especially abdominal exam and hemodynamic perfusion/status
- Feeding history

Interventions
- Hold enteral feedings
- OG or NG Tube for decompression – low intermittent suction. If patient has G/Jtube – gravity to drain
- Intravenous hydration
- Analgesia – (fentanyl or morphine) as needed.
- Labs: CBC, CRP, blood culture. Consider BMP, PT/fibrinogen, blood gas
- Radiological evaluation: complete abdominal series or KUB +/- decubitus or cross-table lateral views.
- Ultrasound

Antibiotics/Antifungals (refer to order sets for dosing)
- Piperacillin/Tazobactam
- If perforation suspected, add fluconazole
- Consider meropenem if positive blood culture & unable to perform lumbar puncture, or highly suspect meningitis.
- Consider Vancomycin for one dose or for 24 hours while waiting culture results in patients with indwelling lines or MRSA only.
- Consult ID if meropenem is used or patient has history of ESBL

Further Recommendations
- Monitor fluid and electrolyte status for possible third-spacing
- Discontinue vancomycin if no positive blood culture
- Repeat radiographic studies and lab tests as needed
- Surgical consult for all cases of NEC – Stages 1-3
- Consult ID if history of prolonged antibiotic exposure or abscess is present
- Prior to stopping antibiotics – Obtain CBC, CRP and Xray
- Prior to starting feedings – Consider contrast study in complex or severe cases or a second course of NEC in same patient

Considerations
- Risk factors for NEC include prematurity, <1500 grams birth weight, receiving enteral feedings, ischemia related conditions
- Initiate TPN if plan for ongoing enteral feed restriction.
- Consider empiric antifungal therapy for worsening clinical status (refer to Neonatal Fungal Sepsis Guideline)
- Duration of antibiotics should be 7-14 days based on clinical status

Approved Care Guidelines Committee
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Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

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Modified Bell's Staging Criteria for Necrotizing Enterococcus (NEC)

Stage	Systemic signs	Abdominal signs	Radiographic signs	Treatment
IA Suspected	Temperature instability, apnea, bradycardia, lethargy	Gastric retention, abdominal distention, emesis, heme-positive stool	Normal or intestinal dilation, mild ileus	NPO, antibiotics x 3 days
IB Suspected	Same as above	Grossly bloody stool	Same as above	Same as IA
IIA Definite, mildly ill	Same as above	Same as above, plus absent bowel sounds with or without abdominal tenderness	Intestinal dilation, ileus, pneumatosis intestinalis	NPO, antibiotics x 7 to 10 days
IIB Definite, moderately ill	Same as above, plus mild metabolic acidosis and thrombocytopenia	Same as above, plus absent bowel sounds, definite tenderness, with or without abdominal cellulitis or right lower quadrant mass	Same as IIA, plus ascites	NPO, antibiotics x 14 days
IIIA Advanced, severely ill, intact bowel	Same as IIB, plus hypotension, bradycardia, severe apnea, combined respiratory and metabolic acidosis, DIC, and neutropenia	Same as above, plus signs of peritonitis, marked tenderness, and abdominal distention	Same as IIA, plus ascites	NPO, antibiotics x 14 days, fluid resuscitation, inotropic support, ventilator therapy, paracentesis
IIIB Advanced, severely ill, perforated bowel	Same as IIIA	Same as IIIA	Same as above, plus pneumoperitoneum	Same as IIA, plus surgery

DIC: disseminated intravascular coagulation
NPO: "nil per os" or nothing by mouth

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Neonatal Necrotizing Enterocolitis

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