



CLINICAL GUIDELINE	
Necrotising Enterocolitis	
Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with this [DISCLAIMER](#)

Background

Necrotising Enterocolitis (NEC) is an inflammatory condition of the gut characterised by gastro-intestinal and systemic signs and symptoms including feed intolerance, abdominal distension and tenderness, occult or gross blood and mucus per rectum, lethargy, temperature instability, apnoea and poor peripheral perfusion.

Use of breast milk, pasteurized human donor milk, standardised feeding regimens and probiotic supplementation have been shown to minimise the risk of NEC in preterm infants. Observational studies have suggested that packed red cell transfusion may increase the risk of NEC.

The following clinical stages are recognised (Dominguez et al 2012):

Stage	Systemic Features	Abdominal Features	Radiological Features
1a: Suspected NEC	Temperature instability, apnoea, bradycardia	Increased gastric residuals, mild abdominal distension, occult blood in stool	Normal or intestinal dilatation, mild ileus
1b: Suspected NEC	Same as above	Grossly bloody stool	Same as above
2a: Definite NEC; Mildly III	Same as above	Same as stage 1 plus lack of bowel sounds, possible abdominal tenderness	Ileus, Pneumatosis intestinalis
2b: Definite NEC; Moderately III	Same as Stage 1 plus mild metabolic acidosis, mild thrombocytopenia	Same as above plus peritonitis, definite abdominal tenderness, possible cellulitis, right lower quadrant mass	Same as above plus possible portal venous gas
3a: Advanced NEC; Severely III, Intact Bowel	Same as Stage 2b plus hypotension, severe apnoea, combined respiratory and metabolic acidosis, disseminated intravascular coagulation, and neutropenia	Same as above with marked tenderness and abdominal distension	Same as above plus ascites

3b: Advanced NEC; Severely III, Perforated Bowel	Same as Stage 3a	Same as Stage 3a	Pneumoperitoneum
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Epidemiology

Predominantly a disease of prematurity, but can occur in full term infants also. NEC incidence: 6-10% in infants < 1.5 kg.

Physiology / Pathophysiology

Thought to result from a complex interaction of initially a mucosal injury (ischaemia, infections, intraluminal hyperosmolar solutions) and the host response to that injury (circulatory, immunologic, inflammatory). The commonest sites involved are the terminal ileum and ascending colon.

Clinical Presentation

Time of onset is usually in the first two weeks of life. Suspect NEC in any immature or acutely unwell infant with:

- Feed intolerance, abdominal distension, bile stained aspirates.
- Acidosis, thrombocytopenia.
- Abdominal tenderness, abdominal mass.
- Blood or mucus per rectum.

Investigations

- Abdominal X-ray supine and left lateral decubitus (Gas in bowel wall, peritoneal fluid, thickened bowel wall, intrahepatic gas, free intraperitoneal gas).
- Abdominal ultrasound including Doppler studies (discuss with radiologist).
- Septic screen, FBC, coagulation studies, U&Es, blood gas.

Management of Confirmed NEC

Prevent progression of the disease and treat symptoms.

- Stop feeds – nil orally to allow the GIT to rest.
- Surgical consult.
- Intra-gastric tube to free drainage - minimum size 6, may need an 8FG.
- Monitor vital signs, blood pressure, peripheral circulation and fluid balance (urine output).
- Antibiotics - cover gram positive, negative organisms and anaerobic organisms (usually Vancomycin, Gentamicin and Metronidazole).
- Consider removing umbilical catheters if in situ.
- Intubation and mechanical ventilation if the baby is haemodynamically unstable or having frequent apnoea/bradycardia or severe acidosis.
- Commence pain scoring.

- Morphine for pain relief if definite NEC.
- Parenteral nutrition - consider need for central line.
- Regular abdominal X-rays looking for pneumoperitoneum; frequency depends on severity.


Prognosis

NEC can lead to significant short term as well as long term morbidities. The short term morbidities are sepsis, prolonged TPN, stoma problems, intestinal strictures, fistula etc. Occasionally an infant can develop short bowel syndrome because of resection of extensive sections of the gut. NEC also carries a high risk of long term neurodevelopmental morbidity. Surgical NEC results in higher rate of mortality and long term neurodevelopmental morbidity.

Related CAHS internal policies, procedures and guidelines
Transfer of Preterm Infants with Intestinal Perforation/Necrotising Enterocolitis to Ward 3B PCH

References and related external legislation, policies, and guidelines
<ol style="list-style-type: none"> 1. Kathleen M. Dominguez, and R. Lawrence Moss. Necrotizing Enterocolitis. Clinics in Perinatology, 2012-06-01, Volume 39, Issue 2, Pages 387-401 2. Gayatri Athalye-Jape, Kiran More, Sanjay Patole. Progress in the field of necrotising enterocolitis--year 2012. J Matern Fetal Neonatal Med. 2013 May;26(7):625-32 3. Girish Deshpande, Shripada Rao, Sanjay Patole, Max Bulsara. Updated meta-analysis of probiotics for preventing necrotizing enterocolitis in preterm neonates. Pediatrics. 2010 May;125(5):921-30. 4. Kastenber ZJ, Sylvester KG. The surgical management of necrotizing enterocolitis. Clin Perinatol. 2013 Mar;40(1):135-48

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File Path:			
Document Owner:	Neonatology		
Reviewer / Team:	Neonatal Coordinating Group		
Date First Issued:	June 2006	Last Reviewed:	5 th September 2019
Amendment Dates:		Next Review Date:	5 th September 2022
Approved by:	Neonatal Coordinating Group	Date:	24 th September 2019
Endorsed by:	Neonatal Coordinating Group	Date:	24 th September 2019
Standards Applicable:	NSQHS Standards: 		
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