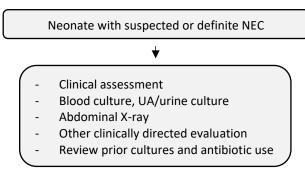


Necrotizing Enterocolitis (NEC) & Antibiotic Selection with Duration of Therapy



★

Modified Bell staging criteria for NEC				Management				
Stage	Classification	Systemic Signs	Abdominal Signs	Radiographic Signs	Antibiotic selection	Antibiotic duration & NPO days	Surgery Consult	ID consult
IA	Suspected NEC	Temperature instability, apnea, bradycardia, lethargy	Gastric retention, abdominal distention, emesis, heme-positive stool	Normal or intestinal dilation, mild ileus	Ampicillin + Gentamicin	2	No	No
IB	Suspected NEC	Same as above	Grossly bloody stool	Same as above		2	No	No
IIA	Definite NEC - Mildly ill	Same as above	Same as above + absent bowel sounds +/- abdominal tenderness	Intestinal dilation, ileus, pneumatosis intestinalis	Ampicillin +	7	Yes	No
IIB	Definite NEC - Moderately ill	Same as above + mild metabolic acidosis and thrombocytopenia	Same as above + absent bowel sounds, definite tenderness +/- abdominal cellulitis or RLQ mass	Same as IIA + portal venous gas +/- ascites	Gentamicin + Metronidazole	7	Yes	No
IIIA	Advanced NEC - Severely ill, intact bowel	Same as IIB + hypotension, severe apnea, combined respiratory and metabolic acidosis, DIC, neutropenia	Same as above + signs of peritonitis, marked tenderness and abdominal distention	Same as IIB + portal venous gas + definite ascites	Piperacillin - Tazobactam (Zosyn)	7-10	Yes	Yes
IIIB	Advanced NEC - Severely ill, perforated bowel	Same as IIIA	Same as IIIA	Same as IIIA + pneumoperitoneum		7-10	Yes	Yes

Created by	Department	Creation Date	Version Date
AAH NICU Standardization Committee	Pediatrics. NICU	January 2019	March 2023

https://www.advocatechildrenshospital.com/healthcare-professionals/peds-pathways



Duration of Bowel Rest:

- NPO for duration of antibiotic therapy
- Duration of bowel rest may be longer than antibiotic duration depending on clinical assessment of infant's feeding readiness, as evaluated by neonatology and surgical team

Spontaneous Intestinal Perforation:

- A distinct entity from necrotizing enterocolitis
- Antibiotic therapy include anaerobic coverage (ampicillin + gentamicin + metronidazole)
- Typical duration of 7 days; reassess as needed

Additional Notes:

- Start antibiotics immediately after cultures are drawn
- If renal impairment or oliguria, consider alternative therapy
- If history of MRSA, consider addition of vancomycin
- If cultures from blood or other sterile site(s) are positive, consider ID consult
- If significant antibiotic exposure or history of multidrug-resistant organism, consult ID and consider alternative antibiotic therapy
- Consider central access if suspected antibiotic and NPO duration is more than 48 hours
- After resolution of NEC restart feeds with breast milk (MBM or PDM). Once tolerating full feeds for 48-72 hours, may transition to formula per unit guidelines/parental preference if MBM is unavailable
- Consider starting OPT 48-72 hrs after the resolution of pneumatosis for clinically stable neonates

Antimicrobial	Age or Weight	Postnatal Age (days)	Dose (mg/kg)	Interval (hours)	
	GA ¹ ≤ 34 weeks	≤ 7	50	12	
Ampicillin	$GA^2 \leq 34$ weeks	8-28	75	12	
	GA ¹ > 34 weeks	≤ 28	50	8	
	< 1 hr	≤ 14	-	48	
	< 1 kg	> 14	5	36	
Gentamicin ²	1 21-	≤ 7		48	
Gentamicin-	1 – 2 kg	>7	- 5	36	
	> 2 kg	≤ 7	4	24	
		> 7	5	24	
	≤ 2 kg	≤ 28	7.5	12	
Metronidazole	. 21	≤ 7	7.5		
	> 2 kg	8-28	10	8	
Piperacillin-	PMA ³ ≤ 30 weeks	NI / A	100	8	
tazobactam	PMA ³ > 30 weeks	N/A	80	6	
Vancomycin	See AAH Neonatal and Pediatric Vancomycin Guidelines				

Intravenous (IV) Antibiotic Dosing

¹ Gestational Age

 ² See AAH Neonatal and Pediatric Aminoglycoside Guidelines for monitoring recommendations
³ Postmenstrual Age

References:

- 1. Bell MJ, Ternberg JL, Feigin RD, Keating JP, Marshall R, Barton L, et al. Neonatal necrotizing enterocolitis. Therapeutic decisions based upon clinical staging. Ann Surg. 1978;187:1–7.
- 2. Shah D, Sinn JK. Antibiotic regimens for the empirical treatment of newborn infants with necrotising enterocolitis. Cochrane Database Syst Rev 2012; :CD007448.
- 3. Smith MJ, Boutzoukas A, Autmizguine J, et al. Antibiotic Safety and Effectiveness in Premature Infants With Complicated Intraabdominal Infections. Pediatr Infect Dis J 2021; 40:550.
- 4. Coggins SA, Wynn JL, Weitkamp JH. Infectious causes of necrotizing enterocolitis. Clin Perinatol. 2015;42(1):133-ix. doi:10.1016/j.clp.2014.10.012
- 5. Murphy C, Nair J, Wrotniak B, Polischuk E, Islam S. Antibiotic Treatments and Patient Outcomes in Necrotizing Enterocolitis. *Am J Perinatol*. 2020;37(12):1250-1257. doi:10.1055/s-0039-1693429
- 6. Mazuski JE, Tessier JM, May AK, et al. The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infection. Surg Infect (Larchmt). 2017;18(1):1-76. doi:10.1089/sur.2016.261
- 7. Aurora M, Keyes ML, Acosta JG, et al. Standardizing the Evaluation and Management of Necrotizing Enterocolitis in a Level IV NICU. *Pediatrics*. 2022;150(4):e2022056616. doi:10.1542/peds.2022-056616

Created by	Department	Creation Date	Version Date
AAH NICU Standardization Committee	Pediatrics. NICU	January 2019	March 2023

https://www.advocatechildrenshospital.com/healthcare-professionals/peds-pathways