KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHECKLIST: NECROTISING ENTEROCOLITIS

Name:		**IP Number:**	

The purpose of this management checklist is to guide an appropriate and acceptable standard of management and care for newborns with necrotizing enterocolitis (NEC). It should be started immediately for any baby with clinical signs of NEC.
Use together with Neonatal infections Management Checklist
It is aimed at nurses and junior/inexperienced medical practitioners.
Individual critical clinical judgment should always be used. It does not replace individualised expert management.

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Date:	17 May 2022	**Review Date:**	1 July 2023

Clinical signs suggestive of NEC present: Presence of 2 or more systemic and 2 or more abdominal signs				✓
Systemic			**Abdominal**	
Temperature and / or glucose instability			Abnormal gastric aspirates	
Apnoea			Vomiting	
Bradycardia			Abdominal distension	
Desaturation			Decreased/absent bowel sounds	
Lethargy			Absent/abnormal stools	
Respiratory deterioration / failure			Visible bowel loops / palpable mass	
Irritability			Abdominal wall erythema / oedema	
Sign:		**Print:**		
Date:		**Time:**		

What investigations should be done?			
FBC with differential (anaemia, haemolysis …)		CRP (To help with monitoring disease progression)	
U&E (Possible hyponatraemia)		Coagulation profile (if active bleeding present)	
Blood gas: arterial or venous(Metabolic acidosis)		X-Ray: Supine and lateral shoot through	
Blood culture (Only positive in <1/3 of cases)			
Sign:		**Print:**	
Date:		**Time:**	

Confirm diagnosis: Based on systemic, intestinal and radiological findings:			✓
Suspected NEC All the below are present:			
Temperature instability		Occult blood in stool	
Apnoea or bradycardia		Abdominal distension	
Increased gastric aspirates		**X-ray:** Normal or slightly dilated bowel loops	
Definite NEC (Mildly/moderately ill). All the below are present:			
2 or more systemic signs		Metabolic acidosis	
Thrombocytopenia		Increased gastric aspirates, abdominal distension	
Absent bowel sounds, abdominal tenderness		Abdominal cellulitis/ Rt. lower quadrant mass	
X-Ray: Dilated bowel loops, pneumatosis intestinalis/portal vein gas and possible ascites			
Advanced NEC (Severely ill) All the below are present:			
2 or more systemic signs		Hypotension	
Respiratory and metabolic acidosis		Thrombocytopenia, DIC and neutropenia	
Increased gastric aspirates, absent bowel sounds, abdominal cellulitis & marked distension & tenderness & peritonitis			
X-Ray: Dilated bowel loops, pneumatosis intestinalis, portal vein gas, free air and definite ascites			
Sign:		**Print:**	
Date:		**Time:**	

General management:					
Consult referral centre			Commence 3 antibiotic regimen (See below)		
Monitor:	General condition		Assess circulatory status:	Blood pressure & capillary refill time	
	Intake & output			Urine output	
	Daily abdominal girth			Base excess	
Keep nil per os (NPO)			Inform parents of condition & minimize stress by open, honest & regular communication		
Insert 8FG Nasogastric (NG) tube on free drainage					
Limit IV fluid to 150ml/kg/day			[redacted]		
Sign:			**Print:**		
Date:			**Time:**		

What antibiotic (AB) therapy should be commenced?			
Level 1 hospital: Commence a three antibiotic regimen that includes antibiotics the baby has NOT recently received.			
Tazobactum / Pipercillin 100mg/kg/dose IVI **<1kg** ≤ 2 weeks: 12hrly > 2 weeks: 8hrly	**>1kg** ≤ 2 weeks: 12hrly > 2 weeks: 8hrly	**PLUS**	**Amikacin 15mg/kg/dose IV/IM** (Dilute & infuse over 30mins) <32 weeks: 36 hrly ≥ 32 weeks: 24hrly
Level 2 and 3 hospitals:			
Based on current nosocomial bacteria and sensitivities. Usually Meropenem /Tazocin and Vancomycin (These have good anaerobic cover so metronidazole is not required)			
Sign:		**Print:**	
Date:		**Time:**	

Manage according to severity:		✓
Suspected NEC		
Reassess abdomen after 24-48hrs:		
If signs and symptoms resolve:	Restart small volume (10ml/kg) breast milk feeds	
	Discontinue antibiotics at 72hrs.	
If signs and symptoms persist or worsen:	Repeat bloods and AXR	
	Consult referral centre again	
Definite NEC		
Refer to regional hospital		
Stabilise baby:	Continue 3 drug antibiotic regimen until condition improved & septic markers normal	
	Ventilate (not CPAP) if: ↑apnoea, ↑FiO_2, ↑acidosis	
	Remove umbilical catheter/s and insert peripherally inserted central catheter (PICC)	
	Insert urinary catheter	
	Correct hypoperfusion and metabolic acidosis: Give Ringer's lactate 10ml/kg over 30mins	
	If no response to fluid bolus. Start Dopamine 10µg/kg/min IVI infusion	
Protect the GIT:	Keep nil per mouth for 7days. (10 days if perforated)	
	Commence total parenteral nutrition (TPN)	
	Aspirate NG tube 3 hrly. Replace NG losses with Ringers IVI 3hrly	
Manage pain:	Commence 6 hrly pain assessment	
	Give Paracetamol IVI (Perfalgan) slowly over 15 minutes. Loading dose 20mg/kg	
	Maintenance Perfalgan: 10mg/kg/6hrly for term babies 10mg/kg/8hrly <36 weeks 7.5mg/kg/8hrly <33 weeks	
	If no Perfalgan available give Morphine (short term-no IPPV). 0.08-0.1mg/kg IV 4-6 hrly.	
	If pain persists (based on NPASS score) commence Morphine infusion 10-20µg/kg/hr Syringe pump: 1mg / kg in 50ml 5% Dextrose. Run at 0.5ml/hr =10µg/kg/hr Infusion pump: 1mg / kg in 100ml 5% Dextrose. Run at 1ml/hr =10µg/kg/hr	

Monitor for signs of bowel perforation:	Observe for abdominal wall discolouration or oedema	
	Measure abdominal girth hourly if distension severe	
	If clinical deterioration-Commence daily X-Rays to note progression & assess need for surgery	
Investigate:	Repeat blood tests daily and blood gases 12 hourly	
Advanced NEC:		
Refer to Tertiary hospital		Continue Definite NEC management
Manage disseminated intravascular coagulopathy (DIC):	Repeat FBC and clotting profile	
	Active bleeding & platelets ≤ 99 000: Give 15ml/kg platelets over 30mins (Use platelet giving set)	
	Active bleeding & abnormal clotting profile: Give 15ml/kg fresh frozen plasma (FFP) over 30mins (Use blood giving set)	
	Clinically significant anaemia: Give 20ml/kg packed cells over 4hrs	
	Do not give Furosemide with any of the above transfusions	
Refer for surgical consult in the presence of:	Abdominal wall cellulitis	
	Pneumoperitoneum	
	Necrotic bowel: Fixed dilated intestinal segment on X-Ray, worsening metabolic acidosis, DIC, shock	
	Tender abdominal mass	
	Clinical deterioration not responding to management: • Metabolic acidosis • ↑Third –space losses/hypovolemia/oliguria • Leukopenia / leukocytosis • Thrombocytopaenia • ↑ Respiratory support • Hyperkalemia	
Consider peritoneal drainage if: Baby is too unstable for surgery or if ventilation compromised due abdominal compression		

Sign:		**Print:**	
Date:		**Time:**	

Postoperative care:			
Monitor continuously. Record observations hourly.		Administer TPN	
Aspirate NGT 6hrly. Note colour, consistency, amount		Reintroduce feeds 5-7 days post-surgery if bowel sounds present and stoma functional.	
Maintain accurate input and output record			
Take FBC, U&E, group and crossmatch & blood gas		Continue antibiotics	
Maintain 6 hourly pain assessment scores		Administer pain relief as indicated by pain scores	
Assess wound using Wound assessment chart		Replace fluid losses IVI with 0.9% Saline (add 10 mmol potassium chloride to 500ml saline)	
Monitor for active bleeding			
Keep nil per os		Commence wound care plan	
Minimize parental stress: Keep informed of baby's condition & progress, give them the opportunity to speak with the surgeon/doctors &Explain all procedures and treatment.			

Sign:		**Print:**	
Date:		**Time:**	

Follow up:	✓
Educate parents on current and anticipated problems and the signs of bowel obstruction	
Book medical, surgical and developmental follow up appointments	

Sign:		**Print:**	
Date:		**Time:**	