Short Bowel Management Guidelines

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These guidelines are for Provider management of infants in the NICU with short bowel syndrome.

TPN Goal is to provide 95-110 kcal/kg/day. Will often need more.

- 3.5-4 gm/kg/d of Protein
- SMOF Lipid if anticipated NPO > 2 weeks
- Total fluids 150 -160 ml/kg/d.

If on TPN for > 14 days? **Start** Carnitine at 10 mg/kg/day

Electrolytes Ca:Phos Ratio = 1.7:1

- Ca – 3.8 meq/kg/day,
- Phos - 1.6-1.8 mMol /kg/day

Bilirubin

- Conjugated bili is ≥ 1 Begin SMOF Lipid
- Notify surgeons when Direct bili is ≥ 2

Cycling TPN – If patient meets the qualifications of 3 months AGA or at least 44 -48 wks CGA is on TPN and nearing discharge, begin cycling to ensure tolerance with normal glucoses.
Start at 22 hrs on and 2 hrs off. End with 20 hrs on and 4 hrs off
Notify surgeon when cycling is being started.

LAB

	Weekly:	Every 2 weeks:	Every 3 Months:
TPN:	Neo CMP/phos	CBC	Carnitine level
Vitamin levels:			Vit D 25 OH, B 12
Trace elements:			Serum zinc, copper, selenium. Whole blood manganese and chromium RBC

Ostomy (take down anticipated before discharge): If infant had NEC, keep NPO x 10 days minimum and until infant has ostomy output.
Begin feeds with breast milk/donor milk or Elecare at 10-20 ml/kg/day and advance based on ostomy output ~10 ml/kg/d daily as tolerated.
Intestinal failure (home on TPN): NPO until ostomy or stool output
Start breast milk/donor milk or Elecare 10-20 mg/kg/d. Advance ~10 ml/kg/d based on ostomy/stool output.

Monitor Output

Ostomy Output
If < 2 ml/kg/hr- advance by 10-20 ml/kg/day
If 2-3 ml/kg/hr – no change

Stool output (no ostomy):

- If < 10 ml/kg/day or < 10 stools/day – advance by 10-20 ml/kg/day
- If 10-20 ml/kg/day or 10-12 stools/day – no change

Do not routinely follow reducing substances in stool
Continuous feeds until infant is ready to begin oral feedings based on GA.

- Begin bolus feeds when the infant is ready to begin oral feeds and 34 weeks CGA, or if term, then has tolerated 5 days of continuous feeds.
- Offer one hour's volume of feed 1-3x a day
- If tolerates with good growth and no increase in ostomy output slowly increase PO volume to two hrs then 3 hrs worth of feed volume

Growth: If inadequate growth consider checking serum and urine Na to determine need for Na supplement

Fortify feedings when tolerating full volume feedings with acceptable ostomy output.

- If infant is on breast milk, fortify with HMF or Elecare powder to 22 cal/oz then 24 cal/oz as tolerated to achieve adequate growth of ~ 20 gm/kg/day.
- If infant is on Elecare, concentrate Elecare to 22 cal/oz then 24 cal/oz as tolerated to achieve adequate growth of ~ 20 gm/kg/day.
- Consider using Sim liquid protein supplement after discussion with surgery.

Notify surgeon when fortification is being started.

Gastroschisis patients NO fortification – full feeds Ø weight gain = stay at 150 ml/kg/day + TPN 30 ml/kg/day

>4 weeks post op on TPN - Discussion with surgeon regarding growth and home TPN.

Pharmacologic Management

Ursodiol: Conjugated BIli ≥ 1

Start Ursodiol 10 mg/kg/day divided BID when tolerating ≥ 50 ml/kg/day of feedings

↑ to 20 mg/kg/day divided BID when tolerating 80-100 ml/kg/day of feedings

Acid blockers

Start in the immediate post op period

H2 blocker in TPN - avoid PPI

Pediatric GI Consult for use of Cholestryamine 240 mg/kg/day divided TID

Short trial of ~ 3 days in infants with extensive resection of the terminal ileum

Ostomy Take Down Recommendations

2.0 kg: NO complication (severe lung disease or concomitant inguinal hernias) and 6 weeks from first GI surgery

Surgery to identify infants who will be required to stay on TPN until ostomy take down