Indications

Gut not functional/accessible = complete bowl rest

Cannot meet needs orally

PN duration longer than 5 days

E.g. *bowel obstruction, gut ischemia, ileus/GI stasis, fistula, radiation damage, intractable vomiting, persistent severe diarrhoea, short-bowl, Crohn's, trauma, critically ill, malnourished, SBS, burns*

Routes

Central - TPN	Into superior vena cava, hypertonic solution. Larger vein.
Peripheral line – PPN	~Short-term. Into arm//l-egs/hands. Lower osmolarity. Only when central line is not available.

Formulas

NO micronuts & trace elements - Come in separate vials (Soluvit, Vitalipid, Cernevit) – added to bag when administered or an injection

SCHU: Administered with 100mL saline over 24 hours.

CHO (as dextrose)	max total: 2g/kg. Max rate: 4-5mg/min/kg
P (as free AA & electr-olytes)	**1g N = 6.25g protein.** N usually in name - "SuperPH 24" = 24 g N.
	Standard solutions = 1.0-1.2-g/kg. Standard bag (3-in-1): 10-15%. Standard bag (2-in-1): 15-25%.
F (as lipid emulsion)	Minimum 0.5 mg LCT/kg/d to prevent EFA deficiency. Standard bag (3-in-1): 30-45%, Standard bag (2-in-1): 0%.
Energy	0.6-1.2 kcal/mL

Regimes

Continuous	40-150 ml/hour for 24 hours. Don't need to start lower rate (unless risk of refeeding or if hyperglycaemic). Refeeding = 50% of reqs, ↑ when biochem stable.
	SCUH policy: start rate = ½ goal for the first 12 hours.
Intermitt-ent/cyclic	100-300ml/hour. Eg. only at night or on specific days of the week
Dual Feeding	PN & EN – helps maintain gut function – gut integrity & gut microbiome

Guidelines & References

DA Parenteral feeding manual and guidelines

ASPEN refeeding consensus recommend-ations (2020)

ESPEN guideline on home parenteral nutrition

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Nut Reqs

Simple ratio – same as EN

Consider any fluid restrictions – **NO FLUSHING IN PN**

All additional fluids = IV

Bag volume = fluid (not like EN)

GI Losses: ↑ reqs zinc, copper & selenium

Long-term PN: Gradual depletion of stores: trace elements & fat-sol vits. Greater risk of micronutrient deficiencies

Transitional feeding – PN to EN

Step 1: Start EN 30-40mL to establish GI tolerance.

Step 2: PN rate can be slowly reduced to keep nutrient levels at the same prescribed amount

Step 3: Continue increasing EN rate and decreasing PN rate until full requirements are met by EN

Transitional feeding – PN to oral

Pts w/ unstable BG or ↓ glycogen: Taper infusion to 50% for an hour, review insulin dosage & cease insulin infusion, OR replace PN with 10% dextrose at same rate as PN for an hour

Monitoring

Concerns: ↓ gut microbiome biodiversity, ↑ inflammation

Strategies to ↑ oral intake – ONS/EN/oral intake

Biochem – refeeding, hypo/hyperglycaemic

If reqs aren't met (due to fluid restrictions): consult w/ med team. Reduce IV?

Weight = daily-weekly

Fluid balance = hourly. Totalled daily

BGL: every 6 hours-daily

Troubleshooting

Nausea or vomiting	anti-nausea meds, swap to cyclic, reduce rate & run continuously, 2-in-1 instead (no fat)

Troubleshooting (cont)

Too hungry	Swap to cyclic & ↑ rate.
Too full	slow rate & run continuous.
Constipation	Medication. Ensure adequate fluid.
Overfeeding	↑ BGL, serum triglycerides, AST & ALT. Glucose: higher than 5mg/min/kg is unlikely to be tolerate.
Hyperglycaemia	Swap to a higher lipid, lower glucose formula
Dehydration	supplemented with IV fluids. ↑ rate ≠ ↑ hydration
Fluid overload	Consider other fluid sources – IV, medications, line flushing. Change to a more concentrated formula.