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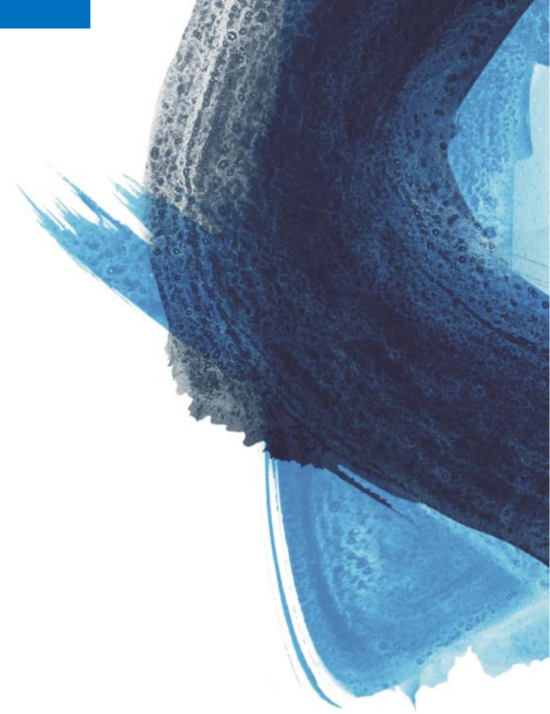

Parenteral Nutrition ICU Case Studies - Questions

Author: Áine Kelly, Senior ICU Dietitian, Tallaght Hospital

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Case Study: Access Issues

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 80 year old man. Polytrauma. Long ITU stay.
- Trachyostomy & NPO
- TF from ITU on NGF
- Ward based rehab for 3 months
- Recurrent silent aspiration
- Recent tube dislodgement. Bridled.
- Then 1 major incident of aspiration (feed suctioned from lung)
- Surgeons requesting PN until PEG could be sited

QUESTION:

Is PN appropriate?

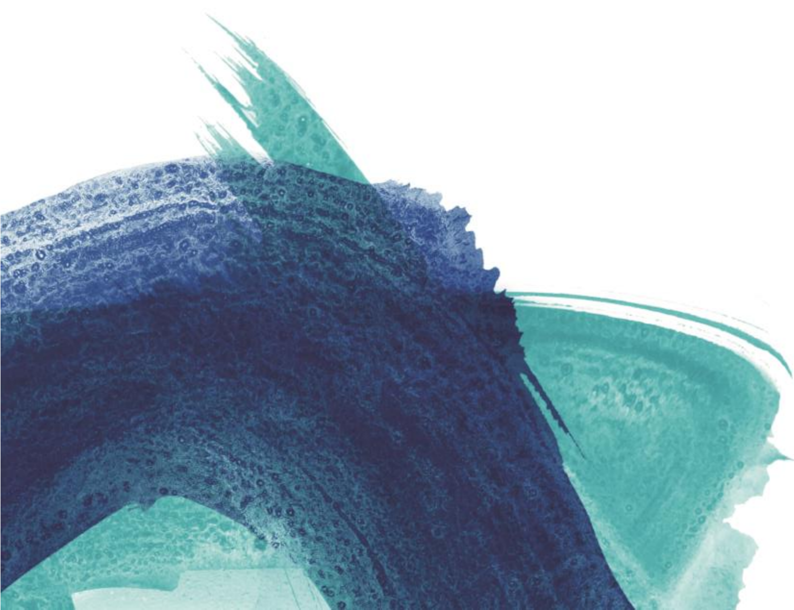
Case Study: Bowel Obstruction

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 85 year old female
- Admitted with pain and vomiting (several episodes), BNO x 5/7
- CT abdomen/pelvis – SBO? Due to adhesional changes
- NG sited, NPO, IVF
- Refered for TPN, PICC awaited. Very poor peripheral access
- Dietitian Ax:
    - Good nutritional status (no unintentional weight loss, BMI @ 75th centile)
    - NG output on day of admission – 720ml plus vomiting
    - NG output on day of assessment by dietitian – minimal

QUESTION:

Is PN appropriate?



Case Study: Malabsorption

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 24 year old male admitted under gastro
- Exacerbation of U.C – extensive colitis & ? Large bowel obstruction on CT
- PR bleed 5-7 bowel motions/d
- Severe acute weight loss (19.6% in 5/52)
- Commenced NGF. Received x X 4/7
- Persistent hypoalbuminaemia despite NGF and good PO intake (21g/L, CRP 83.3)
- SB surgeons. Want to operate in 3/7
- Requesting TPN

QUESTION:

Is PN appropriate?

Case Study: Tropic Enteral Feeding 1

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 56 year old female in ICU, day 22 in ICU with GCS. Intubated and ventilated.
- Day 22 on TPN due to pancolitis, oedematous bowel and mesenteric ischaemia
- Meeting full requirements on PN. Triglycerides are normal, BSL stable
- Abdomen is soft
- Passing mucous stool PR

QUESTIONS:

1. When would you start enterally feeding this patient?

2. What would your EN/PN regimens look like?

Case Study: Trophic Enteral Feeding 2

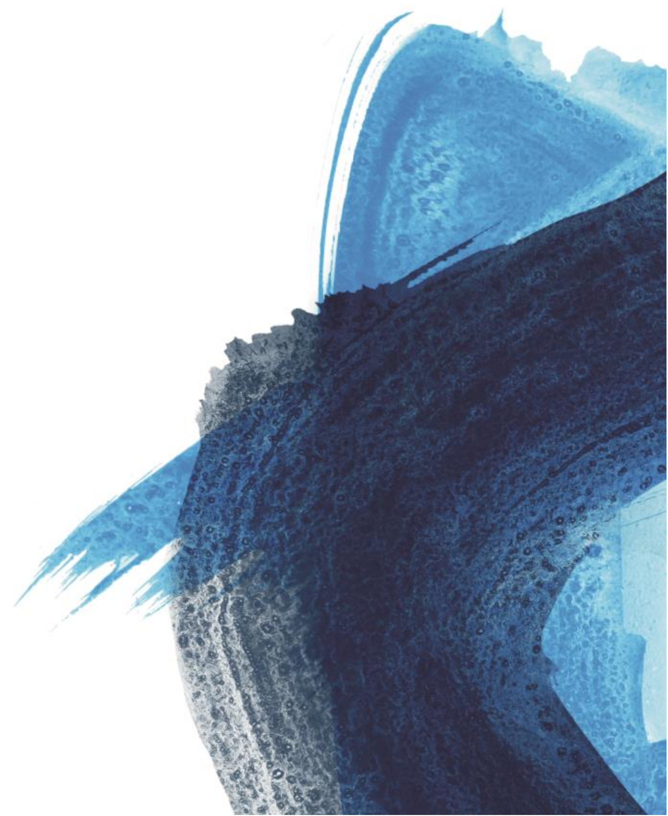
Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 45 year old male admitted to ICU post surgery for ischaemic bowel
- Laparotomy – small bowel resection, end jejenostomy and mid transverse colon oversewn
- 80cm small bowel remaining from DJ flexure
- Remains intubated and ventilated post op
- TPN commenced day 1 post op

QUESTIONS:

1. When would you start enterally feeding this patient?

2. Would you continue PN?



Case Study: Supplementary Parenteral Nutrition

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 79 year old male admitted to ICU with type 1 respiratory failure, DOB: 19.07.37
- Intubated and ventilated
- Weight 70kg, height 1.7m, BMI 24kg/m2
- Well nourished prior to admission. Commenced on enteral feeding within 48 hours
- By day 7 he is only meeting 50% of his requirements due to persistently high aspirates
- Mifflin St Jeor: 10 (weight) + 6.25 (height) – 5 (age) +5
- Penn State RMR: Mifflin St Jeor (0.96) + Tmax (167) + VE (31)-6212

QUESTIONS:

1. Calculate his nutritional requirements using Penn state (Tmax = 37.8, VE = 9.3)

2. What advice would you give the team to optimise gut function?

3. Would you consider starting PN? What would you prescribe initially?

Case Study: ICU Case Study

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

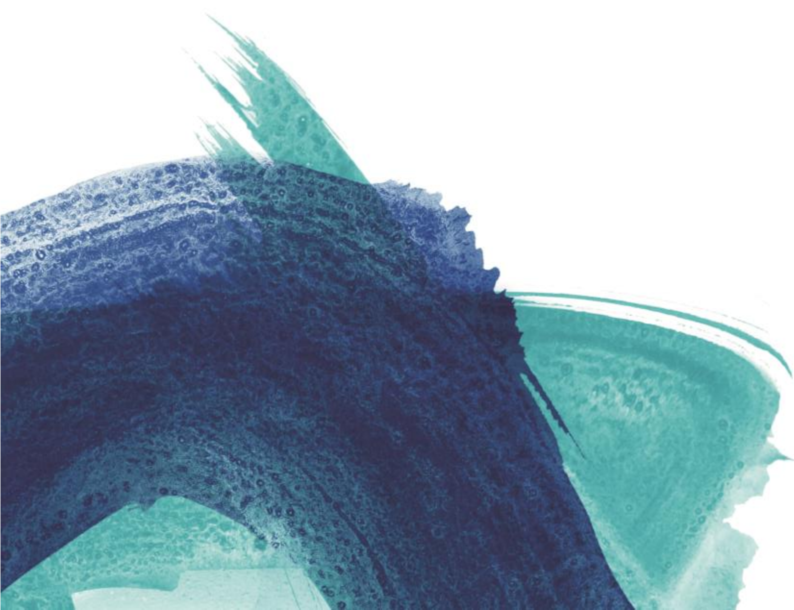
- 65 year old male admitted post trauma – hit by luas. Fractured spine T5-T7. CT thorax shows evidence of intraperitoneal haemorrhage, without convincing visceral injury. Focal area of fat stranding in the small bowel mesentery may reflect a mesenteric tear.
- NG free on draining – drained 180ml in 24 hour period.
- Continuous dialysis secondary to acute renal failure
- Ons assessment he is adequately resuscitated and haemodynamically stable
- High risk malnutrition: minimal PO >5 days, alcohol excess reported
- Weight 65kg, height 1.7m, BMI 22.5kg/m2

QUESTIONS:

1. Calculate your Day 1 calorie and protein goals (using kcal/kg and protein/kg)

2. Would you start TPN? What regimen would you prescribe?

3. Would you start enteral nutrition and when?



Case Study: ICU Case Study

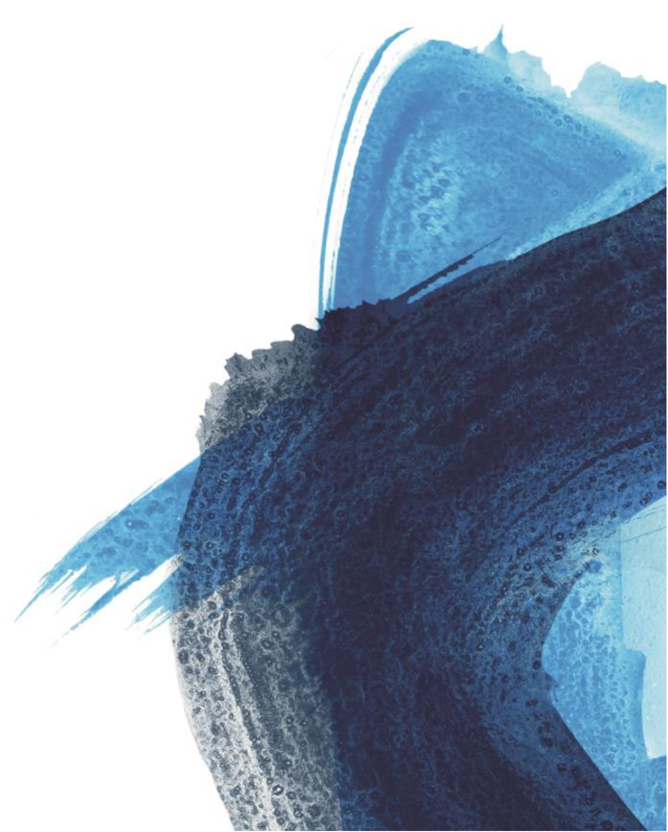
Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 70 year old female admitted to ICU post total gastrectomy for gastric CA
- Noradrenaline required post op. Stable on 2mcg/hour
- To remain NPO for 3 days as per surgical team. Referred for PN
- Requirements estimated: 1500kcal, 12g Nitrogen
- Weight 60kg, BMI 21kg/m2. Weight gain 5% pre op.

Regimen	Volume	Total Kcal	N (g)
80% of Kabi 13C	1200	1550	11.2
65% of Kabi 11C	1600	1536	12.5

QUESTIONS:

1. Which TPN regiment would you choose and why?



Case Study: ICU Case Study Short Bowel

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

- 45 year old male
- A&E Day 1: Urinary retention, abdominal pain
- Day 4. Theatre: Laparotomy and small bowel resection for ischemia due to occluded mesenteric artery, aorto-mesenteric bypass performed. Grafting of mesenteric artery from saphenous vein. Abdomen left open.
- Day 5. Theatre: relook laparotomy, SB resection and jejunostomy. Abdoment left open.
- Day 8. Theatre: SB resection, end jejunostomy and VAC dressing. Approx 80cm SB from DJ flexure. Mid-transverse colon oversewn.
- Day11. Theatre: Wound closure, relook laparotomy, primary fascial closure. Future surgery planned for 90 days.

Social Hx	PMHX/PShx	Anthropometrics	Meds
Smoker	CVS: IHD, PCI to LAD, dyslipidaemia	Current weight 80kg	Aspirin 75mg
Alcohol excess	Cardiac stent 2012, 2014	No weight loss reported	Rosurstatin 40mg
Independent ADL		Height 1.7m	Bisoprolol 2.5mg
Unemployed		BMI 27.6kg/m2	Ramipril 2.5mg
Dublin address			Pantoprazole 40mg
NOK: Mother			

QUESTIONS:

1. Is PN indicated? Would you enteral feed this patient?

2. Calculate his Na and K losses if his stoma output it 4.5 litres in 24 hours.

Case Study: ICU Case Study Short Bowel

Author: Áine Kelly. Senior ICU Dietitian, Tallaght Hospital.

	Ref range	Day 21	Day 22	Day 23	Day 24	Day 25
Na	135-150	134	131	129	134	136
K	3.5-5.0	3.6	3.8	5.2	5.1	4.9
Urinary sodium	>20	Not done	Not done	<10	Not done	>20

Your TPN regimen provides 2000ml, 19g Nitrogen, 2000kcal, 80mmol Na and 80mmol K+

QUESTIONS:

1. Explain why his sodium level may be dropping

2. Explain what his urinary sodium tells us

3. You are asked on day 22 for a low potassium TPN regimen. Do you change your TPN regimen?

4. What steps would you take to minimise development of liver disease?

5. What additional blood tests might you request for this patient once his CRP is normal?