Review Total Parenteral Nutrition (TPN) prescription practices including route, duration and indication in University Hospital Waterford (UHW)

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Introduction

Total Parenteral Nutrition (TPN) is a life-sustaining nutritional therapy used when oral and enteral feeding is contraindicated e.g. in cases of intestinal failure. Intestinal failure is defined as reduction of gut function below the minimum necessary for the absorption of macronutrients and/or water and electrolytes, such that intravenous supplementation (IVS) is required to maintain health and/or growth"[1]. Current clinical guidelines recommend that TPN should only be initiated when there is clear indication, and should be commenced when surgical patients are nil per oral (NPO) for >5 days or expected to be NPO for >7 days[2], or within 3-7 days in critical care[3].
UHW is currently using both central and peripheral compounded TPN, and a peripheral out-of-hours pathway.
Hypothesis – Identify current TPN practice in UHW - if TPN is used appropriately with confirmed intestinal failure. Identify if TPN is commenced prematurely resulting in short duration?

Aim & Objectives

1. Was the gut accessible when TPN commenced.
2. Could TPN have been avoided.
3. Identify if patient is routinely NPO prior to TPN initiation.
4. Identify duration of TPN per patient and compare of best practice guidelines.
5. Identify predominate access route for TPN utilised in UHW.

Methods

All adult patients who received TPN between October 2024-October 2025 were included. 8 dietitians involved in retrospective data collection.

A standard audit tool was created to identify:
1. Wards with most usage of TPN.
2. Consultant group requesting TPN most often (e.g. colorectal surgery, general surgery, oncology etc).
3. Lines used for TPN and percentage who receive only peripheral TPN – i.e. no central line inserted while on TPN.
4. Length of time from initiation of TPN for central line (PICC/ CVC) to be placed.
5. Was the patient NPO prior to commencing TPN.
6. 5. How many days were patients NPO on average before TPN commenced.
7. Was the out-of-hours policy commenced.
8. Reason for commencing TPN and if in line with standardised indications.
9. Average duration on TPN.

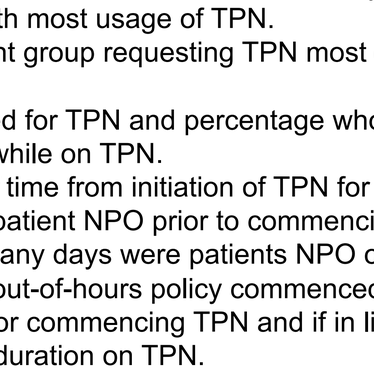
Results

Total of 152 patients collected, 134 included (duplicates, not started on TPN, not within audit timeframe).

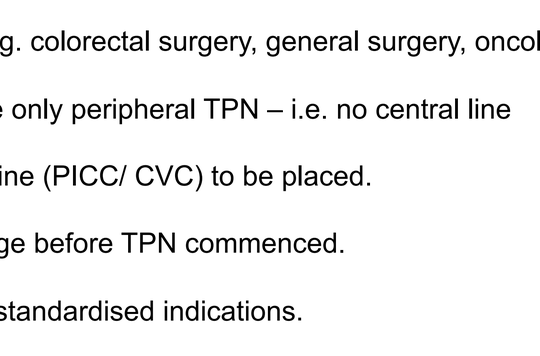
Q1) Wards: 88% on 7 wards in UHW – Cherry, Cedar, Ardkeen, Gynae, ICU, HDU, Med 4. Ward specialities are surgical and oncology.

Outliers across 11 other wards.

Q2) Distribution of Consultants



Q3) Lines used for TPN infusion

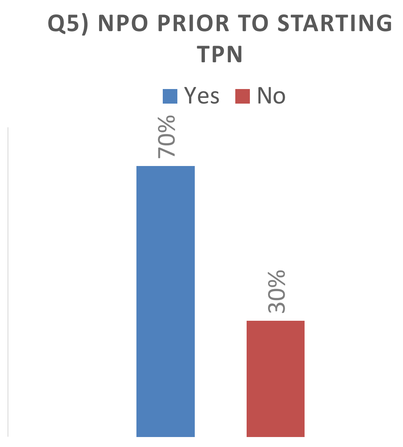


Results

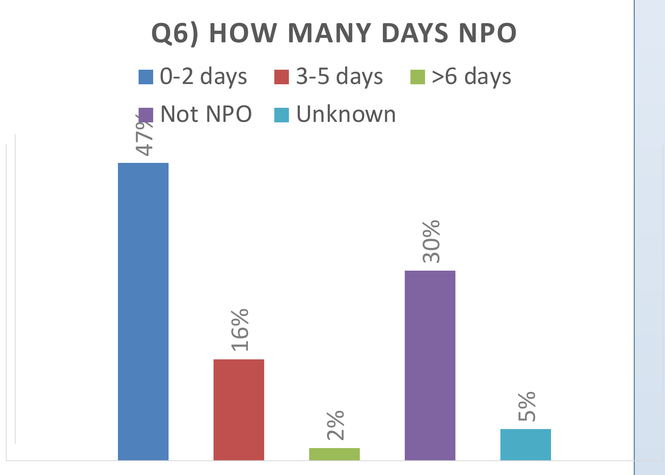
Q4) Days on peripheral TPN before central line inserted:

Mean = 3.3 days Median = 3 (between 1-8 days total waiting).

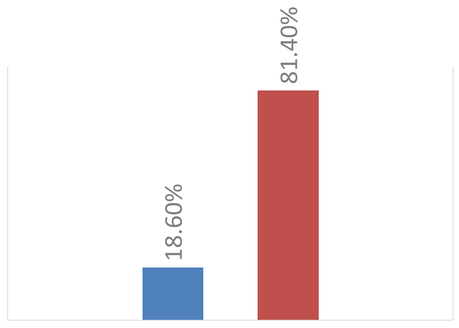
Q5) NPO PRIOR TO STARTING TPN



Q6) HOW MANY DAYS NPO



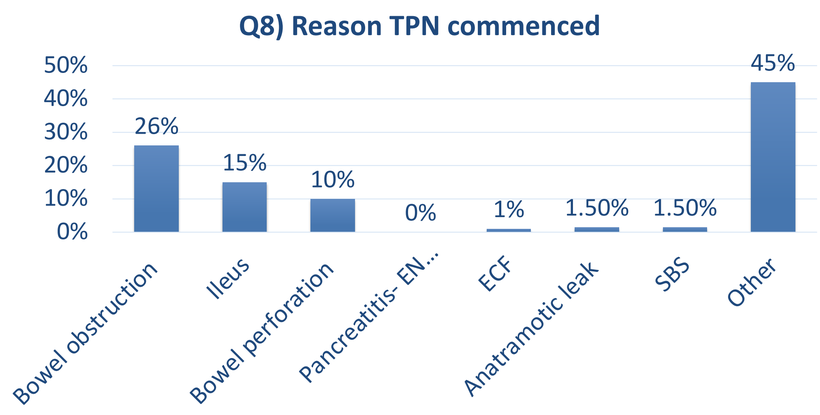
Q7) OUT OF HOURS POLICY COMMENCED



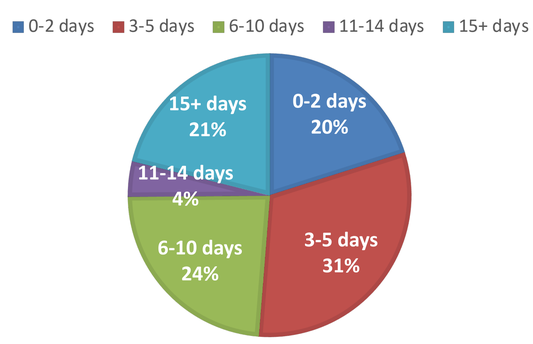
Mean days NPO when OOH commenced – 1.5 days.

Mean days TPN discontinued if OOH commenced: 8.7 days
Std Deviation – 7.01

Q8) Reason TPN commenced



Q9) TPN DISCONTINUED - NO. OF DAYS



Conclusion

TPN in UHW is often being commenced prematurely with 47% patients only NPO for 0-2 days prior to TPN being commenced. This may correlate with high rates of early discontinuation, with >50% of patients ceasing TPN within 5 days of commencement.

TPN was commenced due to non-standard indications in 47% of patients, such reasons included pancreatitis, surgeon request, post GI surgery, refused NG.

Ongoing education and engagement with medical and surgical teams is required to ensure TPN is only given when oral or enteral feeding is contraindicated.

References

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3. Singer, P., Blaser, A.R., Berger, M.M., et al. (2023) 'ESPEN practical and partially revised guideline: Clinical nutrition in the intensive care unit', Clinical Nutrition, 42(9), pp. 1671-1689. doi: 10.1016/j.clnu.2023.07.011

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