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BACKGROUND

Parenteral nutrition (PN) is the intravenous administration of nutrition, bypassing the gastrointestinal tract. PN is associated with several avoidable risks, which include infectious complications, catheter insertion complications and metabolic complications. International best practice guidelines^{1,2} emphasise that PN is appropriate when the gastrointestinal tract cannot be used and the patient is expected to need nutrition support for ≥ 5 days (or sooner if malnourished or critically ill).

AIM

To review PN usage patterns and assess adherence to best practice, identifying opportunities to reduce unnecessary risk.

METHODOLOGY

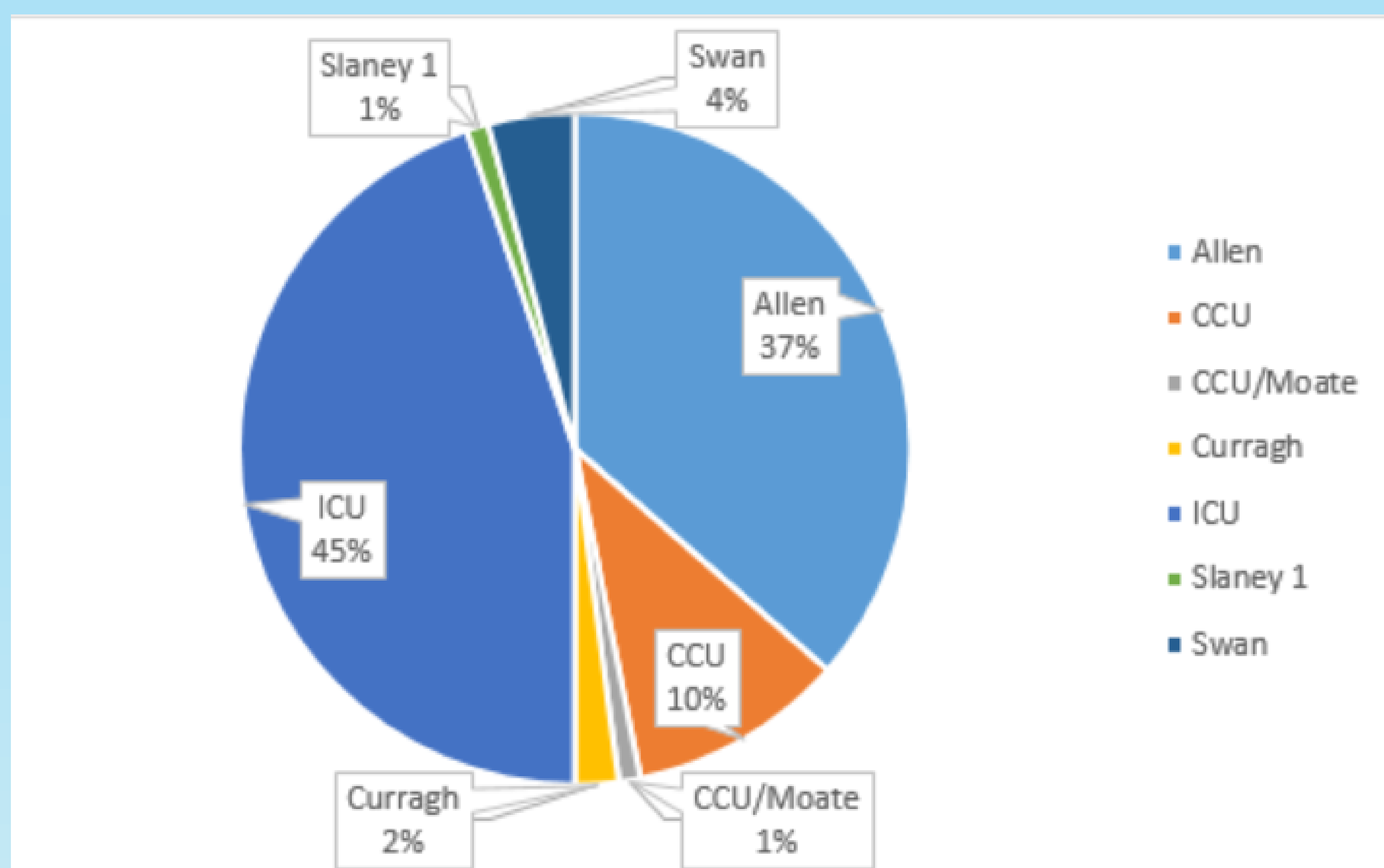
A 12-month prospective audit was conducted in a Model 3 teaching hospital from October 2024 to October 2025, including all adult inpatients receiving PN. Data collected by the Department of Nutrition and Dietetics included:

- Patient demographics (including ward/speciality)
- Indication for PN
- Type of vascular access (central vs. peripheral)
- Use of out-of-hours protocol at initiation
- Start and end dates of PN
- Reason for discontinuation

Descriptive statistics were used to summarise findings.

RESULTS

Over the 12-month audit period, a total of 96 PN episodes were initiated, representing 660 cumulative PN days. The average duration of PN per episode was 6.9 days (median 6 days; range 1 to 31 days). PN was prescribed across multiple wards, with 67% of episodes initiated under surgeons and 33% under medical physicians. The distribution of PN by ward is illustrated in Graph 1.



Graph 1 Distribution on PN by ward

REFERENCES

- 1 Boullata, J. I., Gilbert, K., Sacks, G., Labossiere, R. J., Crill, C., Goday, P., Kumpf, V. J., Mattox, T. W., Plogsted, S., Holcombe, B., & American Society for Parenteral and Enteral Nutrition. (2014). *ASPEN clinical guidelines: Parenteral nutrition ordering, order review, compounding, labeling, and dispensing*. Journal of Parenteral and Enteral Nutrition, 38(3), 334–377.
- 2 Weimann, A., Bezmarevic, M., Braga, M., Correia, M. I. T. D., Funk-Debleds, P., Gianotti, L., Gillis, C., Hübner, M., Inciong, J. F. B., Jahit, M. S., et al. (2025). *ESPEN guideline on clinical nutrition in surgery – Update 2025*. Clinical Nutrition, 44, 222–261.
- 3 State Claims Agency. (2024). *Patient Safety Notification: Risks associated with parenteral nutrition*. Retrieved from <https://stateclaims.ie/uploads/banner/TPN-Patient-Safety-Notification-WEB-VERSION-FINAL.pdf>

The most frequent indications for initiating PN were:

1. Post-operative nutritional support following bowel surgery (31%)
2. Bowel obstruction (20%)
3. Inaccessible gastrointestinal tract (14%)

Out-of-hours prescribing accounted for 39% of PN episodes, and of these, 57% required PN for < 5 days.

90% of PN episodes were delivered centrally and 10% were delivered via a peripheral intravenous cannula (PIVC). Where PIVC was used for PN, the majority of cases were for less than 72hr, with central access subsequently secured for ongoing PN delivery.

The primary reason for discontinuing PN was successful transition to oral diet. See Table 1.

Reason for discontinuing PN	%
Transitioned to oral diet	55%
Transitioned to enteral nutrition	23%
Transferred to another hospital	11%
RIP	6%
Discharged home on PN	1%
End of life comfort measures	4%

Table 1 Reasons for discontinuing PN

DISCUSSION

The majority of PN episodes were initiated for appropriate indications, such as post-operative bowel surgery, bowel obstruction, and inaccessible gastrointestinal tract. However, notable trends emerged: 39% of episodes were prescribed out-of-hours, and 57% of these were discontinued in <5 five days. Current evidence-based guidelines recommend that PN should only be considered when enteral nutrition is not feasible and the anticipated duration of PN support is ≥ 5 days. Initiating PN for shorter periods may offer limited clinical benefit while increasing risks such as catheter-related infections and metabolic complications. A recent Patient Safety Notification issued by The State Claims Agency³ identifies out-of-hours prescribing as a high-risk period for inappropriate initiation, reinforcing the need for structured protocols and dietitian involvement.

Central venous access was appropriately used in 90% of PN episodes, with peripheral access reserved for very short-term administration and typically serving as a bridge to central access-consistent with best practice recommendations.

CONCLUSION

PN use in NGH is substantial, with most episodes appropriately indicated and administered via a central line. The frequency of out-of-hours initiation and short duration episodes (<5 days) suggests an opportunity to improve prescribing practices. Strengthening out-of-hours protocols and promoting dietitian involvement in care planning may help reduce unnecessary risk and support best practice. Where clinically appropriate, considering commencement during normal hours following dietitian review could further improve patient care.