



Indirect Calorimetry – Dietetic time commitment from planning to implementation.



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Introduction

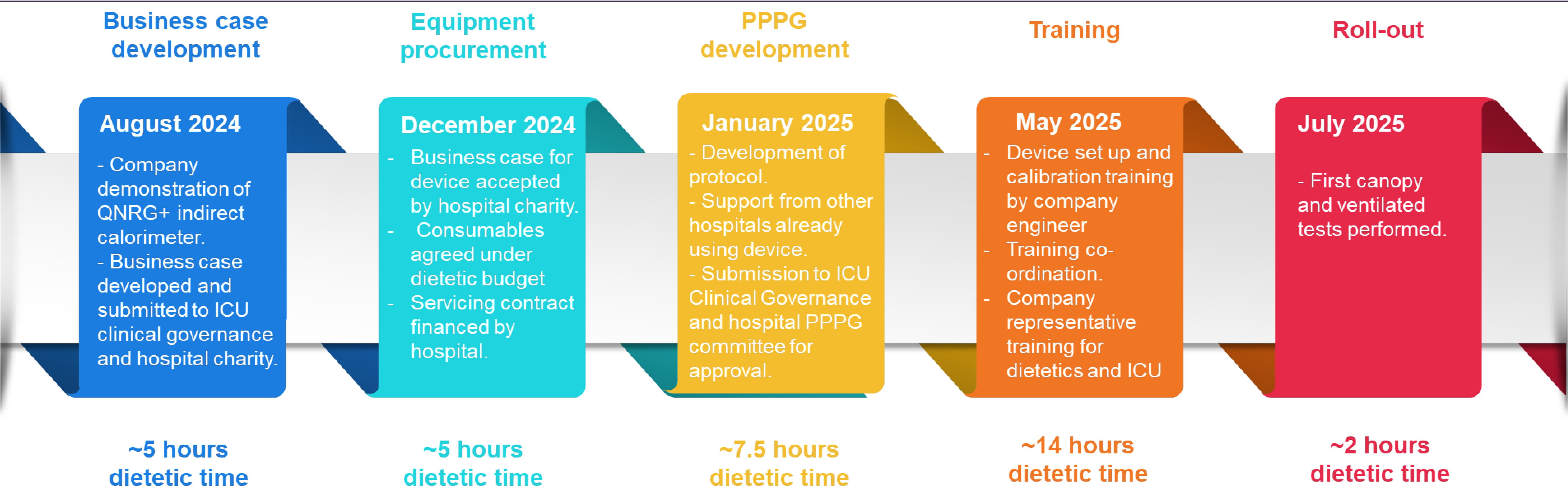
Research highlights that estimated energy requirements for critical care patients are reported to be only approximately 60% accurate, increasing the risk of both underfeeding and overfeeding ⁽¹⁾. International guidelines recommend personalised energy prescription guided by indirect calorimetry ^(1,2). However, procurement and implementation of indirect calorimetry technology within acute hospital settings can be complex and resource-intensive.

AIM: To outline the dietetic time commitment required to plan, procure and integrate indirect calorimetry into routine critical care dietetic practice and to identify key challenges and facilitators.

Methods

A service development project was undertaken. A process flowchart guided implementation: company engagement and quotation retrieval; development of a multi-source business case; agreement of funding streams; equipment delivery; installation and consumables procurement; staff training; development and governance approval of protocol and phased clinical roll-out. Time taken to complete each step of the process flow chart was prospectively captured to determine dietetic hours required to move from planning to implementation to finally embedding into dietetic practice. Challenges encountered during the process and decisions taken or changes made to overcome them were documented.

Results



Challenge	Solution
Funding	Funding was sourced from multiple areas. The device was funded by the hospital charity, consumables were covered by the dietetic budget, and the servicing contract was financed by the hospital. Dietetics are responsible for the storage, stock control, and ordering of consumables, as well as the co-ordination of annual servicing.
Equipment	Dietitians worked with company representatives to co-ordinate the equipment delivery, which involved multiple components arriving from different locations over a 10-week period. The department also collaborated with hospital stores to establish ordering codes, as consumables were not yet set up in the Dublin Midlands HSE stores. Unforeseen challenges, including national shortages of these consumables, delayed the project roll-out by several weeks.
Calibration	Monthly in-house calibration of the device is required. Hospital clinical engineering did not have capacity to take this on. Dietetics liaised with other departments using the device and established dietitians were trained to complete this. Dietetic manager and senior dietitians trained by company engineer once equipment delivered and device set up. Monthly checklist and standard operating procedure created for device calibration.
Training	Due to the limited availability of the UK-based company representative, training and roll-out of the indirect calorimetry device were delayed by a number of weeks. A brief face-to-face training session was eventually provided to both dietetic and critical care staff. Follow-up support was obtained from other Irish critical care dietitians already using the device in practice, which included attending a practical study day. This support network is still utilised for troubleshooting and ongoing advice.
Protocol development	The development of the hospital protocol was supported by information from the company representative and pre-existing guidelines used within Irish hospitals. The final protocol was agreed upon by the dietetic department, ICU clinical governance, and the hospital PPPG (Policies, Procedures, Protocols, and Guidelines) group.

Conclusion

- Impact:** Indirect calorimetry enhances personalised nutritional assessment in critical care, strengthens multidisciplinary collaboration, and expands dietetic scope of practice.
- Time Commitment:** An estimated **33.5 dietetic hours** are required to progress from initial project planning to full clinical implementation.
- Application:** Sharing these findings allows future dietitians to anticipate and plan for the specific operational challenges and time demands of introducing this technology into practice.

References

- Singer P. *et al.*, (2023) DOI: 10.1016/j.clnu.2023.07.011.
- Compher C. *et al.*, (2022) DOI: 10.1002/jpen.2267