

Te Whatu Ora

Health New Zealand

Capital, Coast and Hutt Valley

I See You (ICU) Referring to the Dietitian?

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Abstract

I See You (ICU) - Referring to the Dietitian?

Context: International guidelines recommend that enteral feeding should be gradually progressed over a patient's first seven days of their Intensive Care Unit (ICU) stay. This is to avoid the adverse effects of overfeeding i.e. increased ICU length of stay, ventilation duration and infection rates. The Wellington Regional Hospital ICU feeding algorithm determines a standard goal rate for patients however this does not always account for other calorie sources i.e. Propofol (a sedation medication containing 1.1kcal/ml) and/or patients with a low BMI/body weight. It is therefore critical that patients are referred to the dietitian service as early as day 1 of enteral feeding as per the current feeding algorithm to ensure timely dietitian review within the critical stages of their illness. This will help to reduce the risk of overfeeding, optimise nutrition care and improve patient outcomes. The issue identified however, was that patients were referred post day 1 of commencing enteral feeding resulting in delayed dietitian review.

Process: A quality improvement project was scoped using the Institute of Health Care Improvement (IHI) Model for Improvement and associated improvement tools such as process mapping, focus groups with ICU staff and allied health professionals and driver diagrams resulted in determining three change ideas. Change ideas were implemented using Plan-Do-Study-Act (PDSA) cycles including feeding pump stickers, dietitian daily rounding and self-referrals, and education-based communications to ICU staff. Outcome, process and balance measures were identified and data was collected over a 3-month period.

Analysis: A 3-week snapshot of baseline data from January – February 2022 highlighted that only 29% of referrals to the dietitian were made on the day of commencement of feeding. On average, referrals to the dietitian were usually made 2 – 3 days after feeding had commenced. As a result, on average, dietitians were reviewing patients on day 5 of their ICU stay increasing the risk of overfeeding during the first 7 days of ICU admission. Furthermore, almost half (44%) of ICU enteral feed patients were identified as overfed prior to dietitian assessment, with a higher prevalence of overfeeding Māori patients compared non-Māori patients (50% vs 33 %, respectively). Of overfed patients, results indicated that Māori patients were provided with 146% excess calories compared to 113% for non-Māori patients. Thus highlighting a significant inequity of the current service.

Outcomes: Findings showed that the implementation of determined change ideas, increased the percentage of patients referred on day 1 of feeding from 29% to 66%. This resulted in earlier dietitian reviews as patients were reviewed on average, of day 2 of their ICU stay compared to day 5 (prior to this project implementation) thus reducing the risk of overfeeding in their first 7 days of ICU admission. The implementation of the change ideas have also improved our current dietetic practice as enterally fed patients identified as Māori within the ICU setting are prioritised within the dietitian caseload as this is a vulnerable patient group that may be susceptible to overfeeding.

References: Singer, P., Blaser, A. R., Berger, M. M., Alhazzani, W., Calder, P. C., Casaer, M. P., ... & Bischoff, S. C. (2019). ESPEN guideline on clinical nutrition in the intensive care unit. *Clinical nutrition*, 38(1), 48-79.

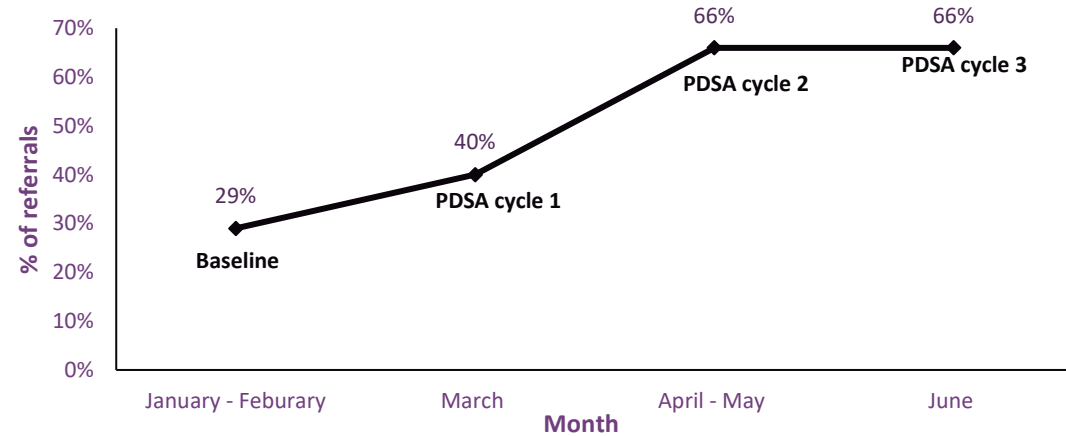
Outcomes

Change ideas were developed using IHI improvement tools and implemented using Plan-Do-Study-Act (PDSA) cycles and were implemented over March - April 2022.

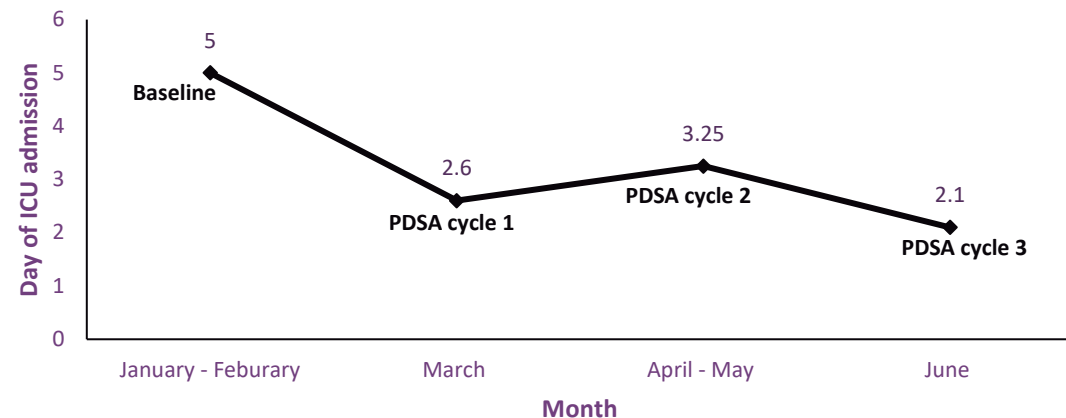
- **PDSA Cycle 1- Feeding Pump Stickers:** Placed a sticker on all feeding pumps stating to refer to the dietitian via the electronic whiteboard on day 1 of commencing enteral feeding.
 - Regular prompt for nursing staff of when and how to refer to the dietitian
 - Effective for high staff turnover in ICU
 - Potential issues: Nurses may become desensitised to sticker over time hence may not be effective long term
- **PDSA Cycle 2 - Dietitian daily walk around & self referrals:** Printing out an ICU ward list each morning and ICU dietitians taking turns at doing a daily walk around ICU and self-referring patients as necessary
 - Increases ICU dietitian presence and builds relationships with other ICU staff
 - Provides an opportunity to regularly remind nursing staff about referring patients on day 1 of feeding
- **PDSA Cycle 3 – Education based communications to ICU staff:** Education via a staff newsletter highlighting the importance of referring to the dietitian on day 1 of feeding to reduce the risk of overfeeding.

The implementation of three change ideas (PDSA cycles) has increased the % of patients referred on day 1 of commencing feeding from 29% to 66%. On average, patients are now referred to the dietitian on day 1-2 of feeding compared to day 2-3 of feeding prior to these PDSA cycle implementations. This has resulted in earlier dietitian reviews as patients were reviewed on average, of day 2 of their ICU stay compared to day 5 (prior to this project implementation) thus reducing the risk of overfeeding in their first 7 days of ICU admission.

% of patients referred on day 1 of commencing enteral feeding



Average day of ICU stay patient was reviewed by the dietitian



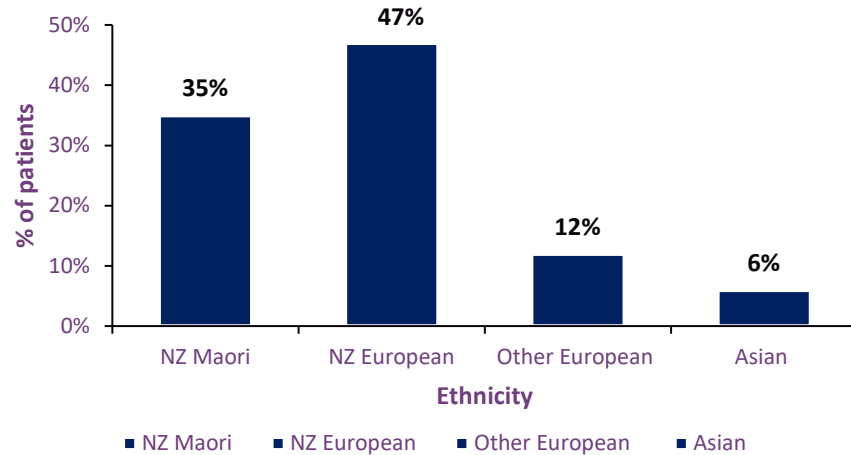
Addressing Health Inequities

A 3 week snapshot of baseline data from January – February 2022 revealed that 35% of enteral feeding patients within the Wellington ICU identified as NZ Māori.

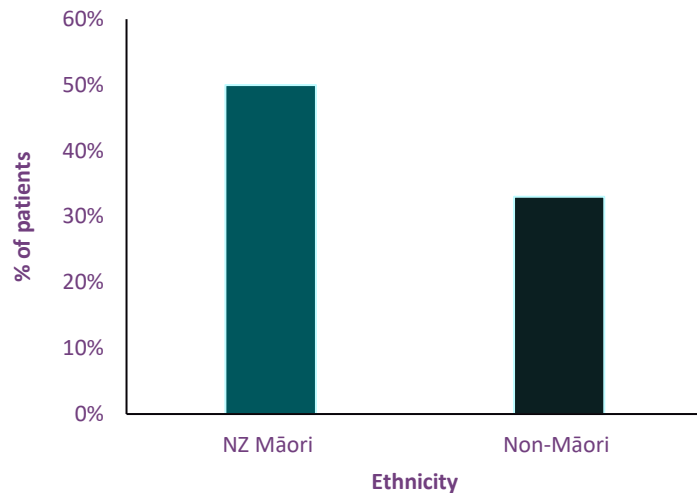
44% of ICU enteral feed patients were classified as overfed (provided >110% calories) prior to dietitian assessment. Half (50%) of Māori patients were overfed compared to 33% of non-Māori patients. Of overfed patients, results indicated that Māori patients were provided more calories (146% calories) compared to non-Māori patients (113% calories). Thus highlighting a significant inequity of the current service.

With improving the percentage of patients referred to the dietitian on day 1 of feeding allows for early dietitian intervention and reducing the risk of overfeeding. As overfeeding is associated with adverse health risks, early intervention will contribute to more equitable outcomes for this patient group within the ICU setting. Furthermore, as baseline data found that there was a higher prevalence of overfeeding in Maori patient, these patients are prioritised among the dietitian caseload to ensure timely review.

ICU ENTERAL FEED PATIENTS AT CCDHB REFERRED TO THE DIETITIAN BY ETHNICITY JAN – FEB 2022



% OF OVERFED ICU ENTERAL FEEDING PATIENTS BY ETHNICITY JAN – FEB 2022



Implementation / Translation to Practice

- Feeding pump stickers stating to refer to the dietitian on day 1 of feeding have now been laminated and have been permanently pasted to all feeding pumps in the Wellington ICU.
- The ICU dietitian service at Wellington Regional Hospital have now implemented a daily dietitian screening for ICU enteral feeding patients to ensure that patients are referred on day 1 of commencing of feeding.
- ICU enteral feeding patients that identify as NZ Māori are now prioritised among the dietitian caseload. Prioritising these patients will identify overfeeding earlier and prevent overfeeding within their first 7 days of ICU admission thus helping to improve patient outcomes and inequities within the current service and this patient group.

Next Steps:

The NUTRIENT study in 2021 showed that Wellington Hospital ICU patients were provided with higher calories from Propofol in a patients first 7 days of ICU stay compared to other ICU sites in Australia/NZ.

As I was the primary investigator for this study, I have informed ICU CNS's and SMO's regarding the findings of the NUTRIENT study: high use of Propofol and potential risk of overfeeding in our ICU. This highlights another avenue that could be improved/investigated to help reduce the risk of overfeeding.