

Comparison of a 24-hour rate-based protocol to a 20-hour volume-based protocol on enteral nutrition delivery in a private Intensive Care Unit

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Introduction

At Epworth HealthCare, enteral nutrition (EN) targets in have historically been based on continuous hourly rate-based protocols (RBP). The 2016 ASPEN/SCCM guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient support the use of a volume-based protocol (VBP) as they have been shown to empower nursing staff and increase the EN delivery.

The adequacy of EN delivery in Epworth Richmond (ER) Intensive Care Unit (ICU) patients, had not been accurately quantified until the 2018 ER-ICU enteral feeding audit. This audit identified ER-ICU enterally fed patients received on average 75% of EN target volume daily and had feeds ceased for an average of 3.6 hours per day (most frequently between 0600-1000).

Following the 2018 audit, practice was changed to deliver EN in ER-ICU via a 20-hour VBP. Audit data was used to develop a protocol tailored to the needs of ER-ICU, specifically the time of feeding cessation and the duration. The VBP provides EN from 1000-0600 hours, as 0600-1000 was identified as the priority time for fasting and extubation. It also includes a nursing driven “catch up rate” step to ensure the delivery of EN target volume each day.

Aims

Evaluate the impact of a 20-hour VBP on EN delivery at ER-ICU, identify barriers to EN delivery and assess the utilisation of the “catch up rate”.

Methodology

Data was collected by ICU dietitians on all non-COVID ICU patients receiving EN via the 20 hours VBP from June – November 2021 (n=14). These results were compared to the 2018 audit findings (n=30).

Results

The most frequent reason for EN provision was due to intubation (63%) followed by NBM status (14%). EN was most commonly commenced on day 1 ICU (43%) and continued for 2 days in the majority patients (36%). The barriers for EN delivery included unknown (11%), other (11%), extubation (6%) and tracheostomy (6%). Patients who experienced barriers relating to procedures or theatre (3%) received only 20% of their target volume of these occasions. This was similar for patients impacted by extubation (6%) who received only 42% of target volume.

The majority of patients did not require a catch-up rate (79%). 17.5% did not have this catch-up feeding implemented, whilst 3.5% did. In 2018, average EN delivery was 75% via RBP while the current VBP has resulted in the delivery of 96% of target volume.

Figure 1: Enteral Nutrition Target Volume Delivery (%)

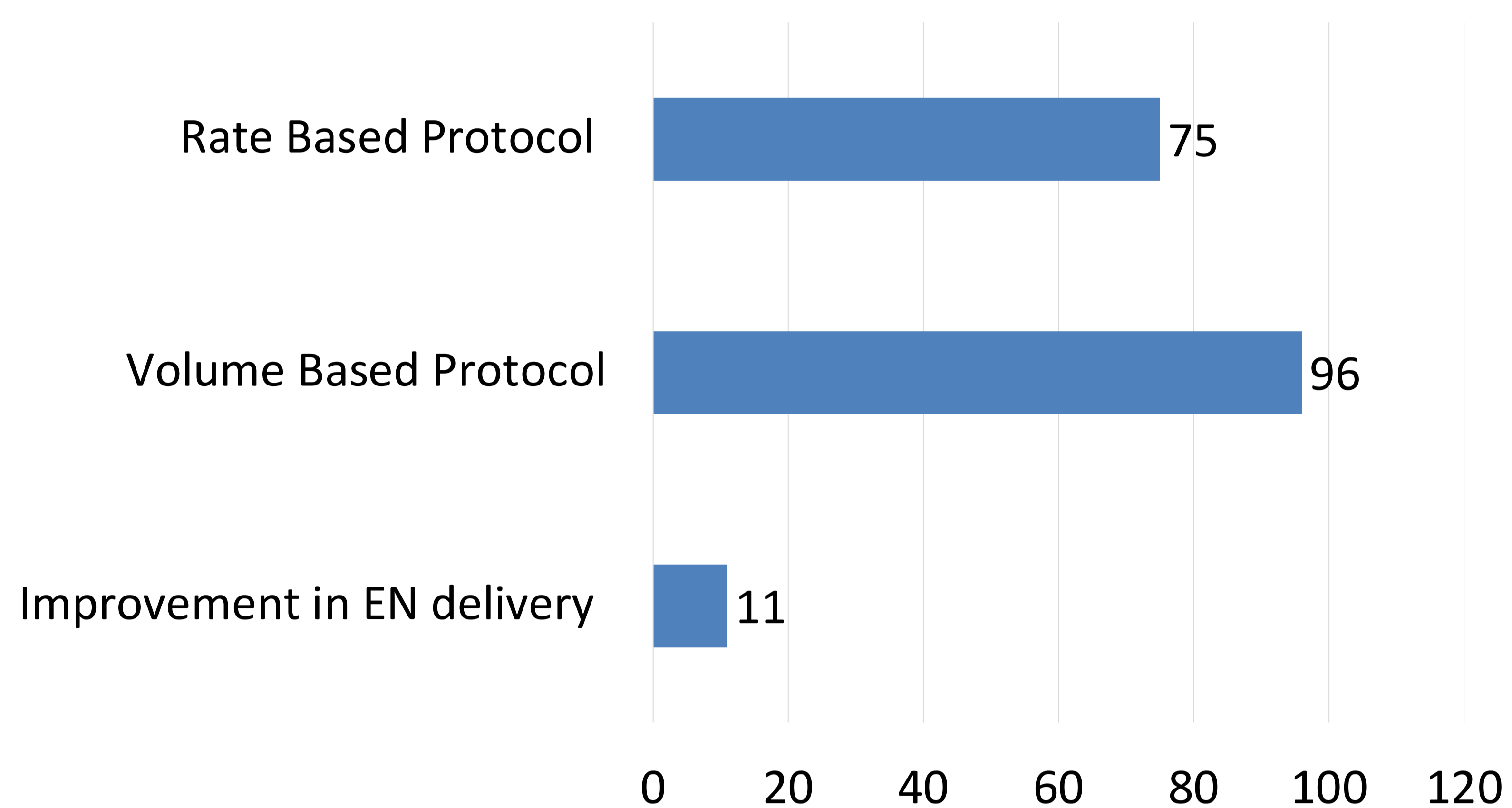
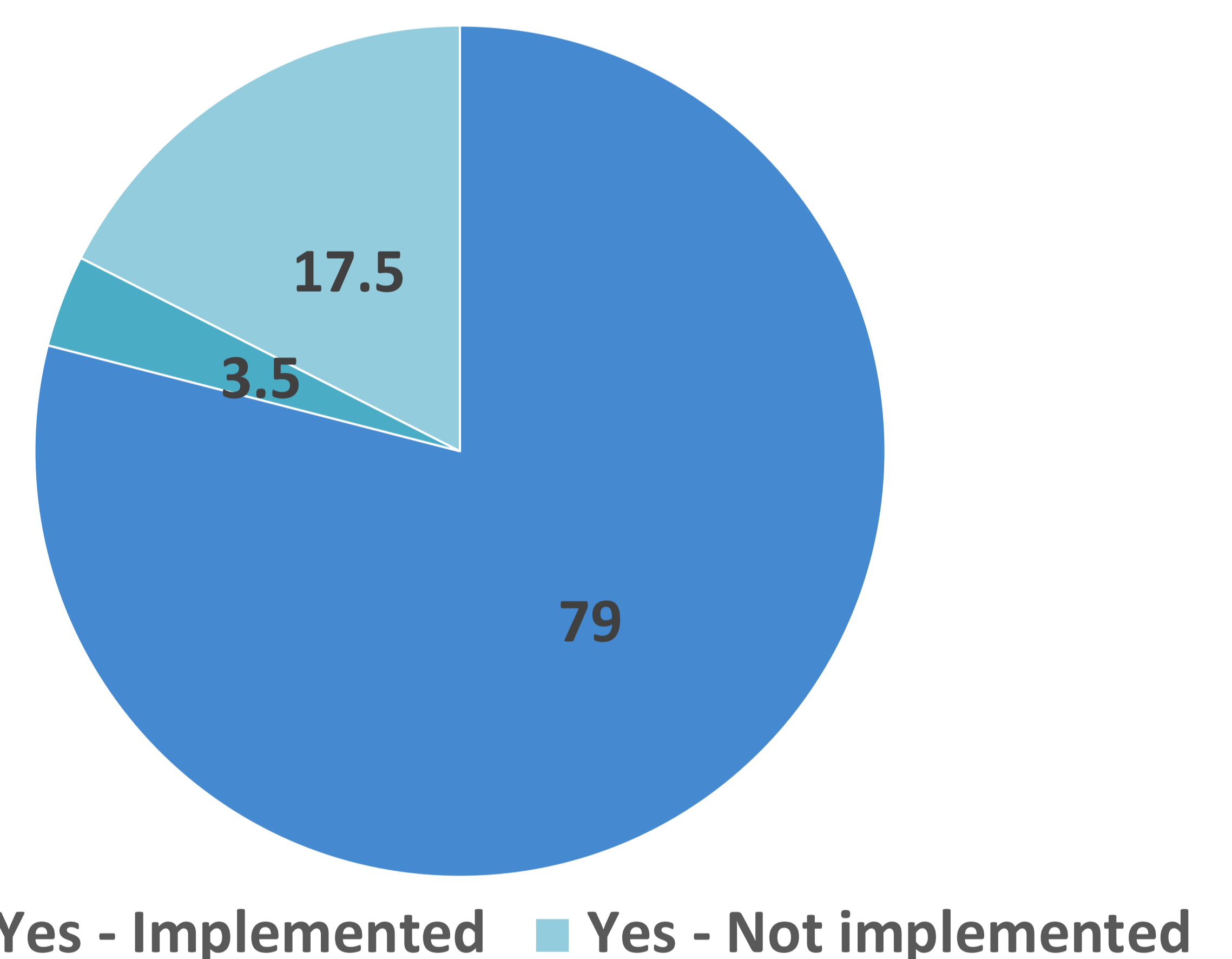


Figure 2: Catch-up Rate Implementation (%)



Conclusions

Overall EN delivery at ER-ICU has improved from 75% to 96% (11%), indicating advantages the 20-hour VBP compared to the RBP. The VBP has been successful in delivering higher volumes of EN while ensuring clinical priorities, especially extubation are facilitated, demonstrating integration of medical and nutrition care. Ongoing utilisation of the VBP is recommended. Further areas for improvement include the reinforcement of utilising catch up feeding and targeting the barriers most impactful (rather than necessarily most frequent) to the delivery of EN. An attempt to better identify unknown barriers to EN delivery and incorporation of medical and nursing feedback will be necessary to refine the use of the VBP.