Critical care dietetic outcomes during the first wave of the COVID-19 pandemic

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Introduction

The COVID-19 pandemic led to a surge in patients being admitted to the Intensive Care Unit (ICU) and subsequently increased dietetic input was required for their daily nutritional management.

Whilst the underlying principles of dietetic management remain unchanged, information from national and international centres affected by COVID-19 highlighted aspects of the disease which had significant nutritional implications. Due to the novel nature of the disease, there was a paucity of evidence to inform dietetic management. A number of 'Expert Opinion' documents were produced by nutrition stakeholders such as the American Society of Parenteral and Enteral Nutrition (ASPEN), European Society for Clinical Nutrition and Metabolism (ESPEN) and British Dietetic Association (BDA) which were reviewed by the dietetic team and used to guide preliminary dietetic practice.

With the increase in patients admitted to ICU and concerns of exponential increase, it was agreed with the Head of Dietetics as per BDA recommendations to upskill non-ICU dietitians. Dietetic cover was increased to 5 band 6 dietitians and 1 band 7 dietitian overseen by the UHB nutrition support clinical lead during the peak of ICU admissions. The service also changed from a 5-day to a 7-day service to increase dietetic capacity, and ensure consistent and regular reviews due to the anticipated complex nature of the patients.

Aim & Objectives

Aim: To evaluate the ICU dietetic service during the first wave of the COVID-19 pandemic.

Objectives: To analyse changes in nutritional outcomes during the COVID-19 pandemic, and how changes to the dietetic service impacted upon dietetic outcomes. Outcomes included energy and protein provision, feed type used and prokinetic use.

Method

Data was collected for all ICU patients under dietetic care with a confirmed COVID-19 diagnosis for the period of 22/03/2020 to 04/06/2020 (75 days). Patients remaining on ICU after that period were excluded as their episode of care was ongoing. Patients were reviewed daily until the patient was discharged from ICU or the patient passed away. All data was then retrospectively analysed using descriptive statistics, and an independent t-test was used to compare COVID-19 feed delivery to previous feed delivery data. Ethical approval was not required for this service evaluation.

Results

Data was collected on a total of 66 patients. Of the 66 patients, 62 required enteral nutrition – 4 patients were eating and drinking and did not require enteral nutrition during their ICU admission. Feeding was commenced within 48 hours of ICU admission in 92% of patients.

Average percentage feed delivery was 82.4% for energy and protein. This total does not include additional protein supplementation; therefore, the overall protein delivery was higher. Additional protein supplements (1 to 2 per day, 20g per supplement) were prescribed for 36% of patients.

The majority of patients' initial feed was chosen for fluid restriction reasons with a total of 60% of patients starting on a fluid restricted feed – either due to requiring low volume feed for fluid balance or due to the patient being placed in the prone position. A total of 50% of patients continued with a fluid restricted feed, with 44% of patients receiving a standard protocol feed (1kcal/ml high-protein feed) and 6% receiving a peptide or renal feed (see table 1). A total of 110 feed changes were made following initial dietetic review during the data collection period for reasons including to manage tolerance, fluid volume, electrolyte imbalances and ensure nutritional adequacy.

Prokinetics were required in 35% of patients. A total of 3% of patients (n=2) required parenteral nutrition due to persistent high gastric residual volumes despite prokinetics and bowel management.

Of the 66 patients, 46 (70%) were discharged alive from ICU. Of these, 70% were receiving total or supplementary EN at the time of discharge from the ICU. Of those receiving enteral nutrition support, 78% were receiving full enteral feeding and 22% supplementary overnight feeding.

Table 1: Feed type throughout data collection period

	Feed type used (%)
Fluid restricted	50
Peptide	3
Renal	3
Standard	44

Table 2: Comparison of pre-COVID 2020 audit and COVID-19 1st wave audit

	Pre-COVID 2020 audit	COVID-19 first wave data collection
Total average feed delivery, %	85	82.4
Prescribed prokinetics, %	29	35
Placed in prone position for medical management, %	0	36

Discussion

A number of barriers to maintaining high standards of patient outcomes arose at the onset of the COVID-19 pandemic. These included disruptions to normal MDT working, challenges in undertaking face-to-face assessments and reviews, and an increased caseload and footfall - thereby increasing the demand for ICU trained dietitians.

Despite these barriers, this service evaluation demonstrates that percentage feed delivery remained relatively stable when compared to the pre-COVID 2020 audit (n = 35) - 82.4% vs. 85% respectively.

An independent t-test was conducted to compare feed delivery in pre-COVID and COVID-19 samples. There was no significant difference in the scores for pre-COVID (M = 85%, SD = 13.4) and COVID (M = 82.4%, SD = 16.8) samples; t(180) = -0.81, p = .42.

This is despite 36% of patients requiring proning during COVID vs. 0% pre-COVID, and increased gastrointestinal intolerance evidenced by 35% of patients requiring prokinetics during COVID vs. 29% pre-COVID. These factors eliminated the ability to utilise 'catch-up' feeding, which significantly improves feed delivery in normal circumstances. This suggests that changes in dietetic service provision, including delivering a 7-day service, thereby allowing more prompt management of nutritional issues and improved access to dietetic expertise, facilitated the maintenance of the pre-existing high standards of nutritional care.

Achieving this degree of feed delivery necessitated the use of a variety of different feeds as shown by the 110 changes made during the data collection period. This is indicative of the amount of input required to ensure appropriate feed provision, management of nutritional complications and advancing of feeding regimens to support the patient through their ICU journey. Adapting feeding regimens to best meet the patients need is a key role of the dietitian, and in the absence of dietetic input it is unlikely these feeding strategies would have been utilised. This approach was used rather than focusing on developing and distributing multiple protocols for different scenarios as it was felt that the latter approach would reduce access to nutritional expertise on the unit, eliminate patient-centred bespoke dietetic plans, place additional burden on already burdened medical and nursing staff and be very difficult to distribute and implement with the significant number of new and redeployed medical and nursing staff on the unit.

Conclusion

The COVID-19 pandemic presented new challenges and obstacles to every aspect of the healthcare sector; necessitating fast adaptations, novel methods of working and reinforcing the importance of multidisciplinary teams to guide patient care in the absence of evidence-based guidelines.

This service evaluation demonstrates that forward-planning and the expansion of services in alignment with demand can assure that patient care need not be compromised, despite the unprecedented challenges and barriers presented by the COVID-19 pandemic.

No conflicts of interest to declare