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## Objective

1. Describe the difference from volume based feeding compared to the hourly based tube feeding..
2. Identify one quality outcome resulting from the protocol implementation

## Introduction

The PEPuP (Protein-Energy Provision via Enteral Route in Critically Ill Patients) Protocol was developed by Dr. Daren Heyland to evaluate an enhanced volume base feeding strategy. This was an innovative approach and collaborative effort between nurses (RNs) and registered dietitians (RDs) to provide enteral nutrition to critically ill hospitalized patients based on total volume goals. This new protocol was studied to determine if this method of delivering enteral nutrition to our critically ill patients improved the percentage of total calories and protein our patients received. Studies have shown that critically ill patients consistently receive less than their prescribed nutritional needs.

Adequate nutrition provides fuel for cellular metabolism and has been shown:

- to prevent protein and muscle wasting,
- decrease ventilator time,
- help prevent infections,
- decrease ICU length of stay, promote wound healing, and
- reduce mortality.
- This nurse-driven, volume based tube feeding protocol is designed to increase calorie and protein provision in critically ill patients.

## Methods

This study was conducted in a 16 bed Medical-Surgical ICU as part of the International Nutrition Survey (INS). The ICU RNs were educated on the protocol, with champion RNs to assist with questions and implementation. Critical care physician oversight was also provided for all patients in the study. Collaboration with the unit based RD was also conducted daily on each patient to implement early feeding as well as calculate the adequate volume goal for each ICU patient. To optimize tolerance in early critical illness, a semi-elemental tube feeding (TF) formula was used instead of a standard polymeric solution. The study was conducted from February-March 2015. The gastric residual volume threshold was increased during the pilot to 500 ml per current guidelines.

## Purpose

The purpose of the PEPuP Protocol study was to evaluate if patients were able to meet calorie and protein goals during acute critical illness. The goal was to initiate feeding within 48 hours of admission to the ICU and to increase protein and energy provision in critically ill patients.

The hourly goal rate was derived from a 24 hour volume goal, which was calculated by the RD.

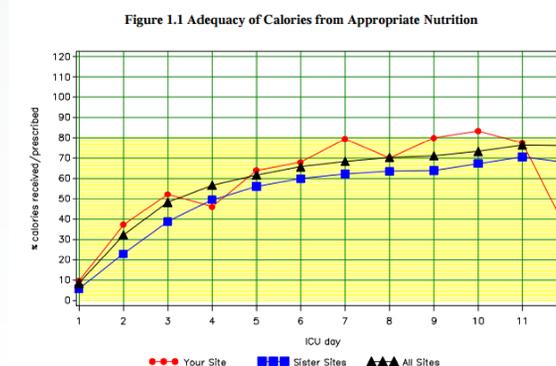
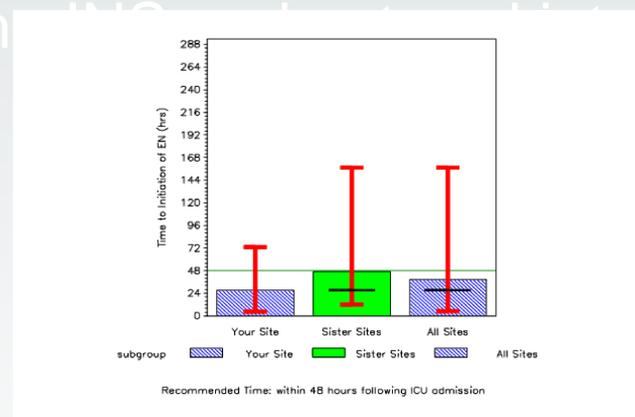
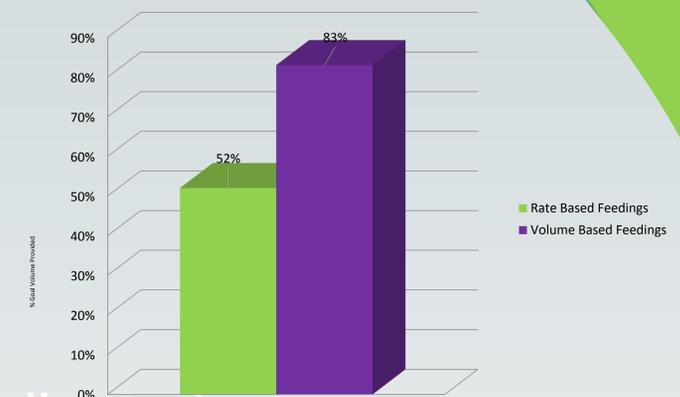
- Day 1: feedings were initiated at 25 ml/hr for the remainder of the day .
- Day 2: increased to goal rate on at 6 AM.
- The hourly rate was adjusted by the RN to account for interruptions in feeding to meet the total daily volume requirement.

After initiation of the PEPuP Protocol, percentage of volume provided as compared to the total volume prescribed was calculated for each patient.

Daily data, including total calories and protein received from all sources, was collected on the first 20 patients who met inclusion criteria for the INS and entered into an online database comparing our results to other ICUs across the world.

## Results

Patients received 83%, on average, of their daily recommended amount of calories and protein with the volume based protocol. Average time to initiation of TF was determined to be 25 hours.



## Conclusion

- The PEPuP Protocol has proven to better meet patients' nutritional needs than a standard TF protocol with a rate-based goal.
- Average time to initiation of TF was within the goal of 48 hours.
- The PEPuP Protocol was favorable for timely initiation of feedings and for better meeting our critically ill ICU patient's calorie and protein needs.

## References

Heyland DK, Dhaliwal R, Lemieux M, Wang M, Day AG. Implementing the PEPuP Protocol in Critical Care Units in Canada: Results of a Multicenter, Quality Improvement Study. 2014 *PubMed* ID: 24748597. *Critical Care Nutrition* (2015, July 8) *PEPuP*. Retrieved from the Critical Care Nutrition website <http://www.criticalcarenutrition.com>