

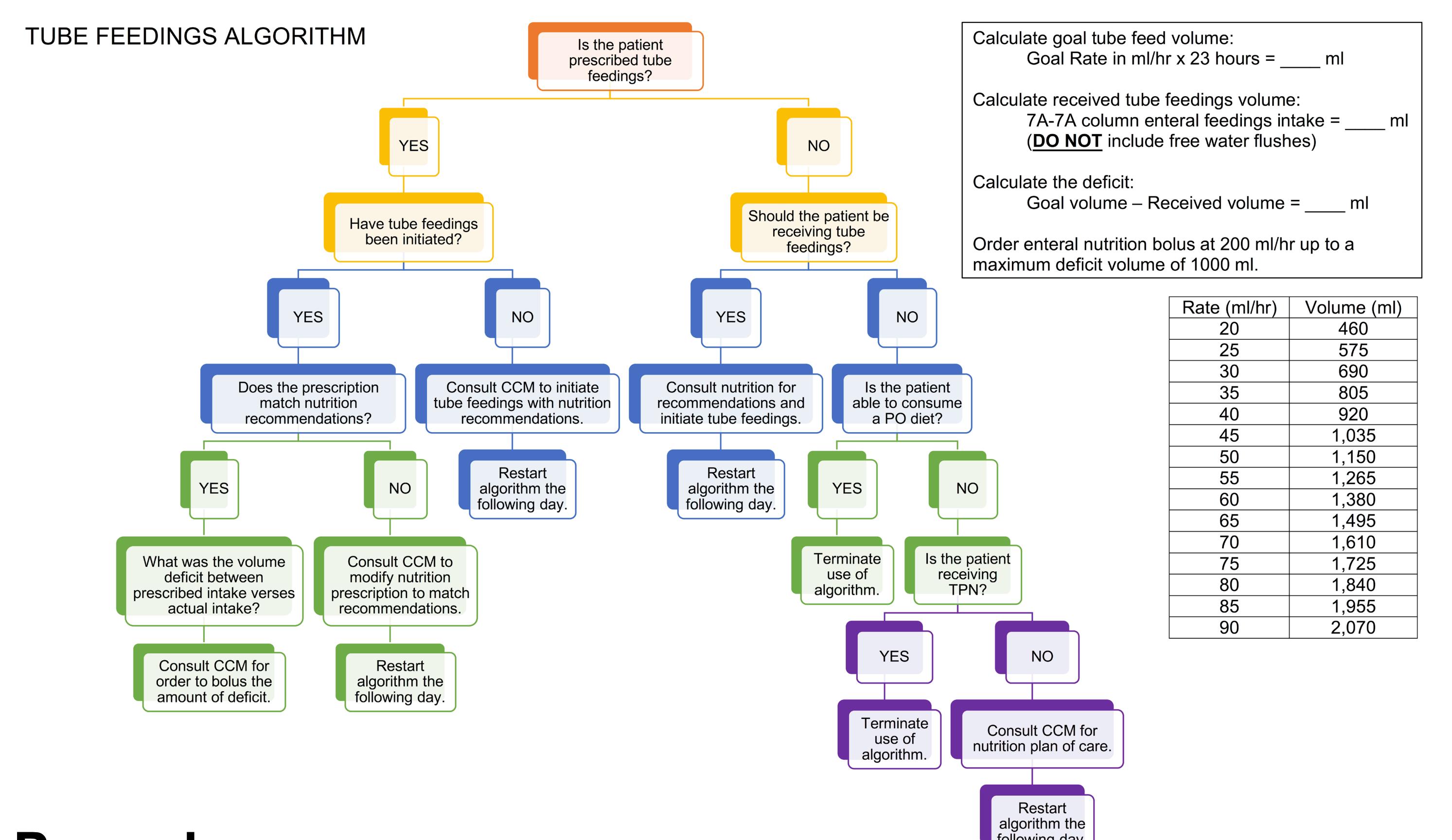
Preventing the Pause:

Putting the Continuous Back in Continuous Enteral Nutrition

Brady Bielewicz DNP, RN, CCRN, TCRN, CNRN, ACCNS-AG; Elisabeth George PhD, RN, CCRN-K; Scott Gunn MD, FCCM; Meredith Oroukin RD, LDN, CNSC; Dianxu Ren PhD, MD; Michael Beach DNP, ACNP-BC, PNP, FAAN; Patricia Tuite PhD, RN, CCNS
University of Pittsburgh Medical Center, Presbyterian Hospital Campus, Pittsburgh, PA

Background

- Practice variations in tube feeding initiation and maintenance for hospitalized patients can increase length of stay and negatively impact mortality and morbidity.
- Kim et al. (2012) identified the amounts of calories and protein received versus prescribed as 50-76% and 38-82%, respectively, with an average interruption time ranging from 2.3-7.0 hours.
- Factors that may contribute to this include: other body systems and injuries taking priority, lack of enteral access, and accessibility to tube feeding pumps and formulas (Cahill, Murch, Cook, & Heyland, 2012).
- Following a chart review for patients admitted to the surgical-trauma intensive care unit during the first five days of admission, an average of 49.8% of the tube feedings prescribed by the provider were received.



Procedure

- Comprehensive review of current policies, procedures, and policies related to enteral tube feedings.
- Baseline data collection, including a pre-intervention staff survey and retrospective chart reviews.
- A 1:1 educational in-service for each nurse, with the same survey at one week post-education to assess for knowledge retention.
- Development and implementation of an evidence-based algorithm
- Post-intervention data collection via concurrent chart reviews.

Purpose

- A quality improvement initiative using an evidence-based algorithm for early initiation and less-interrupted maintenance of tube feedings to target deficits and negative consequences to achieve the best outcome was developed.

Project Design

- Completed in a 22 bed the surgical-trauma intensive care unit at a Level I Regional Resource Trauma Center over a 9-month period.
- The staff sample included 41 registered nurses employed from the beginning of the educational process through the end of data collection.
- The patient sample consisted of 29 patients for the pre-intervention data collection period and 31 patients in the post-intervention data collection period.

| Nurse Education Survey: Question (Answer)* | % Δ |
|--|-------|
| When do you stop tube feedings? (Operative procedure for tracheostomy, GI surgery, or MD/DO/NP/PA placed NPO orders) | ↑ 32% |
| How soon after the OR do you restart tube feedings? (As soon as possible) | ↑ 20% |
| At what lactate level should tube feedings be held? (≥ 3 mmol/L) | ↑ 10% |
| At what vasopressor rate should tube feedings be held? (Norepinephrine ≥ 0.2 mcg/kg/min) | ↑ 22% |
| Do you ever bolus tube feeds to "catch up" for time that the patient was NPO? (No) | ↓ 73% |

*There was an improvement in the number of correct responses except for the last one, which was attributed to a poorly worded question.

Results

| Patient Data | | | |
|--------------------------|----|------------|------------|
| Age | N | Mean | P Value |
| Pre-Intervention | 29 | 54.5 y.o. | |
| Post-Intervention | 31 | 54.1 y.o. | (p = 0.09) |
| Sex | N | Percentage | P Value |
| Male Pre-Intervention | 21 | 72.4% | |
| Male Post-Intervention | 17 | 54.8% | |
| Female Pre-Intervention | 8 | 27.6% | |
| Female Post-Intervention | 14 | 45.2% | (p = 0.18) |
| Percentage Received | N | Mean | P Value |
| Pre-Intervention | 29 | 49.8% | |
| Post-Intervention | 31 | 60.4% | (p = 0.04) |

Percentage received is calculated to be the average of tube feeding volume received by each patient during the first 5 days of admission. Significance determined to be $p < 0.05$

Patients received 49.8 ± 21.6 percent of tube feedings prior to the intervention and 60.4 ± 18.5 percent of tube feedings after education and implementation of the algorithm ($p=0.04$).

Conclusions

- This collaboration between critical care medicine, nutrition, and nursing led to a statistically significant improvement in the amount of tube feedings received during the first five days of admission. reinforcing the positive impact the algorithm had on clinical practice.
- Incorporating this algorithm into morning bedside rounds also increased the probability that patients were prescribed the appropriate tube feedings based off nutrition's recommendations. This timing helped to increase the importance of nutrition for all patients in the ICU.
- As a result of its success, this project is currently being expanded to the neurological and neurosurgical intensive care units as a new standard of care.

References

- Cahill NE, Murch L, Cook D, & Heyland DK. Barriers to feeding critically ill patients: A multicenter survey of critical care nurses. *J Crit Care Nurs.* 2012; 27: 727-734.
- Kim H, Stotts NA, Froelicher ES, Engler MM, & Porter C. Why patients in critical care do not receive adequate enteral nutrition? A review of literature. *J Crit Care.* 2012; 27: 702-713.