



Nutrition Research Review ANHI | February 2024

Feeding Tube Awareness Week 4-10 February 2024

In observance of Feeding Tube Awareness Week, ANHI has curated five recent articles highlighting the latest research on tube feeding and enteral nutrition.

Refeeding Syndrome in Pediatric Age, An Unknown Disease: A Narrative Review

Publication: Journal of Pediatric Gastroenterology and Nutrition

Publish Date: 1 December 2023

Authors: Corsello A; Trovato CM; Dipasquale V; Bolasco G; Labriola F; Gottrand F; Verduci E; Diamanti A; Romano C

ABSTRACT

Refeeding syndrome (RS) is characterized by electrolyte imbalances that can occur in

malnourished and abruptly refeed patients. Typical features of RS are hypophosphatemia, hypokalemia, hypomagnesemia, and thiamine deficiency. It is a potentially life-threatening condition that can affect both adults and children, although there is scarce evidence in the pediatric literature. The sudden increase in food intake causes a shift in the body's metabolism and electrolyte balance, leading to symptoms such as weakness, seizures, and even heart failure. A proper management with progressive increase in nutrients is essential to prevent the onset of this condition and ensure the best possible outcomes. Moreover, an estimated incidence of up to 7.4% has been observed in pediatric intensive care unit patients receiving nutritional support, alone or as an adjunct. To prevent RS, it is important to carefully monitor feeding resumption, particularly in severely malnourished individuals. A proper strategy should start with small amounts of low-calorie fluids and gradually increasing the calorie content and amount of food over several days. Close monitoring of electrolyte levels is critical and prophylactic use of dietary supplements such as thiamine may be required to correct any imbalances that may occur. In this narrative review, we aim to provide a comprehensive understanding of RS in pediatric clinical practice and provide a possible management algorithm.

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Timing of Enteral Nutrition and Parenteral Nutrition in the PICU

Publication: Nutrition in Clinical Practice

Publish Date: October 2023

Authors: Fell DM; Bitetto EA; Skillman HE

ABSTRACT

The timing of nutrition support initiation has the potential to positively impact nutrition and clinical outcomes in infants and children with critical illness. Early enteral nutrition within 24-48 h and attainment of both a 60% energy and protein goal by the end of the first week of pediatric intensive care unit admission are reported to be significantly associated with improved survival in large observational studies. The results of one randomized controlled trial demonstrated increased morbidity in infants and children with critical illness assigned to early vs delayed supplemental parenteral nutrition. Observational studies in this population also suggest increased mortality with exclusive parenteral nutrition and worse nutrition outcomes when parenteral nutrition is delayed. Subsequently, current nutrition support guidelines recommend early enteral nutrition

and avoidance of early parenteral nutrition, although the available evidence used to create the guidelines was inadequate to inform bedside nutrition support practice to improve outcomes. These guidelines are limited by the included studies with small numbers and heterogeneity of patients and research design that confound study outcomes and interpretation. This article provides a narrative review of the timing of nutrition support on outcomes in infants and children with critical illness, strategies to optimize timing and adequacy of nutrition support, and literature gaps, including the timing of parenteral nutrition initiation for children with malnutrition and those with contraindications to enteral nutrition and accurate measurement of energy requirements.

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Characteristics and Health Service Utilization of Children Most at Risk for Prolonged Temporary Tube Feeding

Publication: Nutrition in Clinical Practice

Publish Date: October 2023

Authors: Syrmiss M; Reilly C; Frederiksen N; Bell KL

ABSTRACT

This study aimed to describe children at risk of prolonged temporary tube feeding and evaluate associations between tube feeding duration and child and health service variables.

A prospective medical hospital records audit was conducted and children at risk of prolonged temporary tube feeding were identified as having a tube feeding duration of >5 days. Information was collected on patient characteristics (eg, age) and service delivery provision (eg, tube exit plans). Data were collected from the pretube decision-making phase until tube removal (if applicable) or until 4 months after tube insertion.

Descriptively, 211 at-risk children (median, 3.7 years; interquartile range [IQR], 0.4–7.7) differed from 283 not-at-risk children (median age, 0.9 years; IQR, 0.4–1.8) in terms of age, geographical location of residence, and tube exit planning. Medical diagnoses of neoplasms, congenital abnormalities, perinatal problems, and digestive system diseases in the at-risk group were individually associated with longer than average tube feeding duration, as were the primary reasons for tube feeding of nonorganic growth faltering and inadequate oral intake related to neoplasms. Yet, variables independently associated with greater odds of lengthier tube feeding durations were consultations

with a dietitian, speech pathologist, or interdisciplinary feeding team.

Children at risk of prolonged temporary tube feeding access interdisciplinary management because of their complexity. Identified descriptive differences between at-risk and not-at-risk children may be useful when selecting patients for tube exit planning and developing tube feeding management education programs for health professionals.

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Factors Affecting Target Caloric Achievement and Calorie Intake Improvement: the Nutrition Support Team's Role

Publication: Frontiers in Nutrition

Publish Date: January 2024

Authors: Jeong Bin Bong, So-Yeong Kim, Han Uk Ryu, Hyun Goo Kang

ABSTRACT

The nutrition support team (NST) works to improve malnutrition in hospitalized patients, and its role is expanding as more hospitals adopt NST. This study aimed to identify the clinical characteristics of NST-referred patients admitted to a tertiary hospital. The study focused on two groups: those who achieved the target calories, approximately 75% or more of their caloric needs relative to their body weight regardless of the period after the first NST referral, and those who improved their calorie intake 1 week after NST therapy. This study also analyzed the important factors affecting the achievement of target calorie intake and improvement in calorie intake to discover the focus of future NST therapy. **Methods:** This study examined 1,171 adult patients (aged ≥ 18 years) who were referred to the NST from all the departments within a tertiary hospital at least twice, with a minimum one-week interval between referrals, between January 1, 2019, and December 31, 2020. The study participants consisted of patients receiving $< 75\%$ of their required caloric intake at the time of their first NST referral. Patients were categorized and compared according to whether they achieved their target calorie intake regardless of the period after the first NST referral and whether they improved their calorie intake 1 week after the NST therapy. We then identified factors affecting target caloric achievement and improvement in calorie intake. **Results:** The group that achieved the target calorie intake had a lower proportion of neuro department patients (31.3%), a higher proportion of patients receiving intensive care unit (ICU) care (31.9%), and a longer ICU stay ($p < 0.001$) than the group that did not achieve the target calorie intake. Neuro department admission

negatively affected target caloric achievement [adjusted odds ratio (aOR) = 0.305, 95% confidence interval (CI) = 0.150-0.617], whereas the length of ICU stay positively affected target caloric achievement (aOR = 1.025, 95% CI = 1.007-1.043). The proportion of neuro department patients was also low (42.5%) in the group with improved calorie intake 1 week after NST therapy. Neuro department admission was a negative factor (aOR = 0.376, 95% CI = 0.264-0.537) affecting the improvement in calorie intake. Conclusions: NST therapy significantly improved clinical outcomes for inpatients at nutritional risk. Because achieving target calories and improving calorie intake in neuro department patients is difficult, it is necessary to actively refer them to NST to achieve the target calories and improve calorie intake. Furthermore, because a longer ICU stay positively affects target calorie achievement, the system for ICU nutrition therapy should be expanded and implemented for general-ward patients, including neurological patients.

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Understanding Nursing Perspective Towards Barriers to the Optimal Delivery of Enteral Nutrition in Intensive Care Settings

Publication: BMC Nursing

Publish Date: January 2024

Authors: Zaher S, Sumairi FA, Ajabnoor SM

ABSTRACT

The management process of Enteral Nutrition (EN) typically involves the interaction between a team of health care practitioners. Nurses being the closest to the patients, have crucial responsibilities and play a major role in feeding delivery along with other medical treatments. This study was conducted to investigate the perception of the nurses working in adult and paediatric intensive care Units (ICUs) regarding the EN barriers and identify the factors that influenced their perception. Methods: The data in this cross-sectional study was collected via online survey between 15 October 2021 and January 2022. All nurses working in adult or paediatric ICUs across Saudi Arabia were eligible to participate. The tool used for the data collection was adapted from Cahill et al. (2016) and then reviewed and modified by the researchers. The survey collected information about the demographics of the nurses, and it included 24 potential EN barriers where the participants were asked to rate their importance on a scale from 1 to 5. Descriptive statistics were performed to describe the variables, univariate analysis

were performed to compare the perceptions of the nurses regarding the EN barriers based on their characteristics followed by stepwise linear regression analysis. Results: A total of 136 nurses working in adult and paediatric ICUs were included in this study. The results showed that the most important barriers as perceived by the nurses was "Frequent displacement of feeding tube, requiring reinsertion" [3.29 ± 1.28], "Delays in initiating motility agents in patients not tolerating enteral nutrition" [3.27 ± 1.24] and "Enteral formula not available on the unit". [3.27 ± 1.24]. Our results showed that the responses of the participants statistically varied based on their work settings, gender, region, and educational level for some items in the survey (P-value ≤ 0.05). In the regression analysis, gender was the only variable statistically influenced the total Likert rating scores of the participants (r = -0.213, p-value = 0.013). Conclusion: This study identified several barriers that exist in the nursing practice of EN in critical care settings. There are distinct differences in the perception of the nurses to these barriers based on their characteristics. Understanding such differences is important for implementing future strategies for units that needed the most help in prioritizing EN delivery.

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