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Introduction

Welcome to Fresenius Kabi's Quarterly Abstract Bulletin for enteral nutrition. We have reviewed the following journals over the past three months, and selected any nutrition support related articles:

- Age and Ageing
- American Journal of Clinical Nutrition
- Archives of diseases in Childhood
- BMJ
- British Journal of Community Nursing
- British Journal of Nursing
- Clinical Nutrition
- Complete Nutrition
- Critical Care Medicine
- Current Opinion in Clinical Nutrition and Metabolic Care
- European Journal of Clinical Nutrition
- Gastrointestinal Nursing
- GUT
- Intensive Care Medicine
- Intensive and Critical Care Nursing
- Journal of Community Nursing
- Journal of Human Nutrition and Dietetics
- Journal of Parenteral and Enteral Nutrition
- Journal of Woundcare
- Lancet
- Nutrition
- Nutrition in Clinical Practice
- Nursing and Residential Care
- Nursing Older People
- Nurse Prescribing
- Nursing Standard
- Nursing Times
- Paediatric Nursing

We do recommend that the original article is used for the full details and results.

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Impact of nutrient density of nocturnal enteral feeds on appetite: A prospective, randomised crossover study

S Evans, A Daly, A MacDonald, P Davies, I W Booth

Archives of Disease in Childhood (2007) **92(7)**: 602-607

Abstract

Objective: To determine whether the energy density of isocaloric nocturnal enteral feeds (NEF) influences daily nutrient intake in children. **Method:** In a 6 week, randomised, crossover trial, the impact on spontaneous nutrient intake of manipulating the energy density of two isocaloric overnight feeds (1.0 kcal/ml and 1.5 kcal/ml) was compared in a group of 32 children aged 1–10 years (or 8–25 kg body weight) on long term, overnight enteral feeding at home. Total daily oral energy, protein, fat and carbohydrate intake were assessed using 3 day food diaries. Anthropometric data were also recorded during the study. **Results:** Spontaneous intakes of energy, protein, fat and carbohydrate from food were 20–30% greater when receiving the lower nutrient density feed (1 kcal/ml). This was due to a gender effect; males

consumed twice as much protein from food than females and had slightly higher (but not significant) energy and fat intakes when on the larger volume feed. All children increased in weight, height and mid-upper arm circumference in the 6 week period. **Conclusions:** Children appear to tolerate and grow equally well, irrespective of the nutrient density and volume of NEF taken. However, it appears that children will consume a more energy and nutrient dense oral diet when given their NEF as a higher volume/lower nutrient density feed. This is particularly so for boys, while for girls the volume of NEF or feed concentration appeared to have no impact on quantity of oral diet taken. However, further blinded studies with larger subject numbers would be useful to support these findings.

Implementation of the Canadian clinical practice guidelines for Nutrition Support: A multiple case study of barriers and enablers

N E Jones, J Suurdt, H Ouellette-Kuntz, and D K Heyland

Nutrition in Clinical Practice (2007) **22(4)**: 449-457

Abstract

Background: The Canadian Nutrition Support Clinical Practice Guidelines (CPGs), published in 2003, were designed to improve nutrition support practices in intensive care units (ICUs). However, their impact to date has been modest. This study aimed to identify important barriers and enablers to implementation of these guidelines. **Methods:** Case studies were completed at 4 Canadian ICUs. Semistructured interviews were conducted with 7 key informants at each site. During the interviews, the key informants were asked about their perceptions of the barriers and enablers to implementation of the Canadian Nutrition Support CPGs. Interview transcripts were analyzed qualitatively, using a framework approach. **Results:** Resistance to change, lack of awareness, lack of critical care experience, clinical condition of the patient, resource constraints, a slow administrative process, workload,

numerous guidelines, complex recommendations, paucity of evidence, and outdated guidelines were cited as the main barriers to guideline implementation. Agreement of the ICU team, easy access to the guidelines, ease of application, incorporation into daily routine, education and training, the dietitian as an opinion leader, and open discussion were identified as the primary enabling factors. Although consistent across all sites, the influence of these factors seemed to differ by site and profession. **Conclusions:** Our findings suggest that implementation of the Canadian Nutrition Support CPGs is profoundly complex and is determined by practitioner, patient, institutional, and guideline factors. Further research is required to quantify the impact of each barrier and enabler and the mechanism by which they influence guideline adherence.

Devices and techniques for bedside enteral feeding tube placement

S Roberts, P Echeverria and S A Gabriel

Nutrition in Clinical Practice (2007) **22(4)**: 412-420

Abstract

Enteral feedings are an integral part of care for many hospitalized patients. Accessing the gastrointestinal (GI) tract safely and in a timely manner can be challenging. Various techniques and devices to enhance the safety of bedside feeding tube placement are available for clinicians. Three specific devices are highlighted, including the colorimetric CO₂ detector (CCD), a magnetically guided feeding tube (MGFT), and the electromagnetic tube placement device (ETPD). The CO₂ detector is applied to

detect the presence or absence of CO₂, thus assisting in correct placement of the feeding tube tip into the GI tract vs the lung. The MGFT uses a magnetic device to manipulate the feeding tube through the GI tract into the small intestine. The ETPD provides real-time visualization of the feeding tube as it progresses into the small intestine. Training and repetition are essential for safe and successful feeding tube placement, and the highlighted devices can contribute to both of these goals.

A randomized trial on the efficacy of a 2-month tube feeding regimen in anorexia nervosa: A 1-year follow-up study

D Rigaud, L Brondel, A T Poupard, I Talonneau and J M Brun

Clinical Nutrition Volume (2007) **26(4)**: 421-429

Abstract

Background & Aims: Despite the high mortality rate in malnourished anorexia nervosa (AN) patients, very few trials have prospectively studied the efficacy of tube feeding. **Methods:** This open prospective study was conducted in malnourished AN patients, who were randomized in tube feeding (n=41) or control (n=40) groups during a 2-month period. Thereafter, body weight, body mass gain, energy intake, eating behavior and relapse rates were compared during a 1-year follow-up, using paired Student t-test and ANOVA. **Results:** At the end of the 2-months period, weight gain was 39% higher in the tube feeding group than in the control group

(194±14 vs 126±19 g/day; P<0.01). The fat-free mass gain was greater in the tube-feeding group: 109±14 vs 61±17 g/day (P<0.01). Energy intake was higher in the tube feeding group than in the control group (P<0.05), as well as the decrease in bingeing episodes (P<0.01). Most patients thought that CEN improved their eating disorder. After discharge, the relapse-free period was longer in the CEN group than in the control one: 34.3±8.2 weeks vs 26.8±7.5 weeks (P<0.05). **Conclusion:** CEN is helpful in malnourished AN patients for weight restoration, without hindrance on the eating behavior therapy nor inducing a more rapid relapse.

Bedside electromagnetic-guided feeding tube placement: An improvement over traditional placement technique?

R Gray, C Tynan, L Reed, J Hasse, M Kramlich, S Roberts, J Suneson, J Thompson, and J Neylon

Nutrition in Clinical Practice (2007) **22(4)**: 436-444

Abstract

Background: Registered dietitian/registered nurse (RD/RN) teams were created to place small bowel feeding tubes (SBFT) at the bedside in intensive care unit (ICU) patients using an electromagnetic tube placement device (ETPD). The primary objective of this study was to evaluate the safety of placing feeding tubes at the ICU bedside using an ETPD. Secondary outcomes included success rate, cost, and timeliness of feeding initiation. **Methods:** Data were collected prospectively on 20 SBFT blind placements in ICU patients (control group). After implementing a protocol for RD/RN teams to place SBFTs with an ETPD, 81 SBFTs were placed (study group). Complications, success rate, number of x-rays after tube placement, x-ray cost, and time from physician order to initiation of feedings were compared between the groups. **Results:** No adverse

events occurred in either group. Successful SBFT placement was 63% (12/19) in the control group and 78% (63/81) in the study group (not significant, NS). The median time between physician order for tube placement and feeding initiation decreased from 22.3 hours (control group) to 7.8 hours (study group, $p = .003$). The median number of x-rays to confirm correct placement was 1 in the study group compared with 2 in the control group ($p = .0001$), resulting in a 50% decrease in the mean cost for x-rays. **Conclusions:** No adverse events occurred with the implementation of bedside feeding tube placement using an ETPD. In addition, SBFT placement with an ETPD by designated ICU RD/RN teams resulted in lower x-ray costs and more timely initiation of enteral feedings compared with blind placement.

Home enteral tube feeding in children following percutaneous endoscopic gastrostomy: Perceptions of parents, paediatric dietitians and paediatric nurses

A Brotherton, J Abbott, M Hurley and P J Aggett

Journal of Human Nutrition & Dietetics (2007) **20(5)**: 431-439

Abstract

Background: The perceptions of parents and professionals are important in deciding to feed children by gastrostomy, yet there are few published studies in this field. This study explored and compared the perceptions of parents to those of paediatric outreach nurses and paediatric dietitians. **Methods:** A cross-sectional mixed-method study with purposive sampling was undertaken using structured interviews and questionnaires to explore perceptions of percutaneous endoscopic gastrostomy (PEG) placement and feeding. Binomial regression was used to investigate differences in perceptions across the groups of participants. **Results:** Parents, paediatric outreach nurses and dietitians shared similar perceptions regarding success of feeding, support for gastrostomy

reinsertion and the acceptability of the child's quality of life. Much greater differences in perceptions were evident regarding the parents' involvement in the decision-making process for PEG placement and the adequacy of the support received from healthcare professionals. **Conclusions:** A high level of support for feeding was demonstrated together with strong perceptions across all groups that feeding was successful. It is important for healthcare professionals to consider the perceptions of the parents throughout decision making and provision of care following PEG placement because it is highly likely there will be differences in the perceptions between parents and healthcare professionals.

Home enteral tube feeding in patients with inherited metabolic disorders: Safety issues

S Evans, A MacDonald, A Daly, V Hopkins, C Holden

Journal of Human Nutrition & Dietetics (2007) **20(5)**: 440-445

Abstract

Background: Many children with inherited metabolic disorders (IMD), at risk of hypoglycaemia and metabolic decompensation, are dependent on long-term home overnight enteral tube feeding but its safety issues have not been evaluated. **Objective:** To identify common safety issues and carer pressures for patients with IMD on home enteral tube feeds (HETF). **Methods:** Thirty-four patients (53% male; median age 4.1, range: 1.2-15.8 years), with IMD on home continuous overnight tube feeds were recruited. They were all following specialized feeding regimens. A questionnaire, administered by face-to-face interview with carers identified family members involved in

feeding, training they received; child safety issues; equipment reliability and carer night time disturbance. **Results:** The principal problems were: carer sleep disturbance (100%); tube entanglement (71%); untrained secondary carers (71%); faulty pumps (50%); tube blockages (45%); faulty equipment (32%); and child tampering with pumps and feeding equipment (29%). **Conclusions:** Significant risks for children on HETF with IMD were identified, potentially leading to metabolic decompensation and hospitalization. The safety of feeding equipment, lack of training of extended family members and practical support for carers requires urgent attention.

The effect of glutamine-enriched enteral nutrition on intestinal microflora in very low birth weight infants: A randomized controlled trial

A van den Berg, R M van Elburg, E A M Westerbeek, E G M van der Linde, J Knol, J W R Twisk and W P F Fetter

Clinical Nutrition Volume (2007) **26(4)**: 430-439

Abstract

Background & Aims: In a previous study, we have found that glutamine supplementation decreased the infection rate in very low birth weight (VLBW) infants. In this study, we investigated whether this beneficial effect originated from increased number of bifidobacteria and lactobacilli in the intestinal microflora of these infants. **Methods:** In a randomized controlled trial, VLBW infants (gestational age <32 weeks and/or birth weight <1500 g) received enteral glutamine supplementation (0.3 g/kg/day) or isonitrogenous placebo supplementation between d3 and d30 of life. Faecal microflora was determined by fluorescent in situ hybridization <48 h, at d7, d14 and d30 of life. **Results:** In 43/52 (glutamine group) and 43/50 (control group) infants, ≥2 samples were analyzed. Baseline characteristics were not

different between groups. The prevalence of bifidobacteria, lactobacilli, Escheria coli, streptococci and clostridia was not different between groups ($p>0.05$). In both groups, colonization with bifidobacteria was delayed, whereas potentially pathogenic bacteria such as E. coli, appeared rapidly after birth. Antibiotic treatment decreased the prevalence of all faecal bacteria ($p<0.05$). **Conclusions:** Decreased infectious morbidity in VLBW infants that received glutamine supplementation was not associated with alterations in the prevalence of bifidobacteria, lactobacilli, E. coli, streptococci and clostridia. In general, colonization with health-promoting bacteria was delayed, whereas potentially pathogenic bacteria appeared rapidly after birth. Antibiotic treatment delayed the bacterial colonization.

Effects of protein-rich supplementation and nandrolone on bone tissue after a hip fracture

B Tengstrand, T Cederholm, A Söderqvist and J Tidermark

Clinical Nutrition Volume (2007) **26(4)**: 460-465

Abstract

Background & Aims: Osteoporosis is a major health problem worldwide. Low weight is a major risk factor for low bone mass and fractures. The aim of this study was to investigate the effects on bone tissue of protein-rich supplementation alone or in combination with nandrolone decanoate in lean elderly women after a hip fracture. **Methods:** Sixty elderly women with BMI <24 kg/m² admitted to hospital due to a femoral neck fracture were randomised to a control group, to receive a protein-rich formula or to receive the same formula with an addition of nandrolone decanoate for 6 months. All patients received additional calcium and vitamin D. The effects after 6 and 12 months were measured by means of bone mineral

density (BMD) using dual-energy X-ray absorptiometry (DXA), and with biochemical bone markers. Osteocalcin and C-terminal telopeptide of collagen-1 (CTX) were used to estimate bone formation and bone resorption, respectively. **Results:** The analyses showed an increase in total body BMD at 6 and 12 months in patients who received protein-rich supplementation. Nandrolone decanoate did not appear to have any additional effect on BMD. Osteocalcin increased in all groups while no significant changes were found for CTX. **Conclusion:** The overall results of the study indicated that protein-rich supplementation given to lean elderly female hip fracture patients increased the total body BMD.

Associations between underlying disease and nutritional status following acute illness in older people

S Gariballa and S Forster

Clinical Nutrition (2007) **26(4)**: 466-473

Abstract

Background & Aims: Undernutrition in hospitalised patients is likely to be contributed to by the dual action of the underlying disease and acute catabolism associated with it. The aim of this study was to measure the association between underlying disease and nutritional status in acutely ill older patients. **Methods:** Four hundred and forty-five randomly selected patients had their nutritional status assessed from anthropometric, haematological and biochemical data within 72 h of admission, at 6 weeks and at 6 months. Data were also collected on age, disability, chronic illness, medications, smoking and acute-phase response. **Results:** Patients admitted with chronic obstructive pulmonary disease (COPD), heart failure and falls had significantly lower

anthropometric measurements compared with all study populations than for example those admitted with ischaemic heart disease (IHD), chest infections and for elective hip surgery. Nutritional status has deteriorated between admission and 6 weeks among those with COPD, heart failure and falls compared with all study populations. Over 6-months 33 (52%) COPD patients and 14 (39%) heart failure patients were readmitted to hospital compared with 137 (35%) patients of all study populations. Nutritional supplements lead to a limited but significant benefit in transferrin and red cell folate among patients with heart failure and IHD. **Conclusion:** In older patients, underlying diseases have variable contributions to the poor nutritional status associated with acute illness.

Update on Immunosuppressive Drugs Used in Solid-Organ Transplantation and Their Nutrition Implications

K J McPartland and J J Pomposelli

Nutrition in Clinical Practice (2007) **22(5)**: 467-473

Abstract

The success of solid organ transplantation rests heavily on the major advances in immunosuppressive therapy. The early years of organ transplantation were plagued with high failure rates and frequent episodes of acute rejection. With the introduction of improved immunosuppressive agents, successful organ transplantation has become the norm. The emphasis of immunosuppressive therapy has shifted from preventing rejection to balancing acceptable rates of rejection with moderation in adverse effects of the immunosuppressive agents. Among the many possible adverse effects of immunosuppressive therapy is the

potential for these agents to affect the nutrition status of the transplant recipient. Given the fact that many patients undergoing transplantation are catabolic and nutritionally vulnerable, it is particularly important for those involved in the care of these patients to be familiar with the nutrition implications of immunosuppressive drugs. In this article, we review the different classes of immunosuppressive medications used in transplantation and emphasize their interactions with the nutrition status of the transplant recipient.

Nutritional screening with Subjective Global Assessment predicts hospital stay in patients with digestive diseases

T Wakahara, M Shiraki, K Murase, H Fukushima, K Matsuura, A Fukao, S Kinoshita, N Kaifuku, N Arakawa, T Tamura, J Iwasa, N Murakami, T Deguchi, and H Moriwaki

Nutrition (2007) **23(9)**: 634-2639

Abstract

Objective: Nutritional status is an important factor that determines hospital stay, and the Subjective Global Assessment (SGA) is a candidate tool for nutritional screening on admission. However, the significance of the SGA has not been evaluated well in the ward for digestive diseases. We conducted the present study to test whether the SGA predicts hospital stay of these patients. **Methods:** Two hundred sixty-two patients with digestive diseases were consecutively enrolled between July 2004 and April 2005. They consisted of 145 males and 117 females and included 110 patients with cancer. Disease category was gastrointestinal in 94, hepatic in 111, and biliary/pancreatic in 57. The SGA was performed by a certified dietician.

Effects of SGA and other nutritional parameters on hospital stay were examined by simple and multiple regression analysis. **Results:** Among tested variables, simple regression analysis identified the SGA, disease category, presence of malignancy, serum albumin level, percent triceps skinfold thickness, and percent arm muscle circumference as significant predictive parameters for hospital stay. Multiple regression analysis revealed that the SGA had the best predictive power, followed by the presence of malignancy and disease category. **Conclusion:** The SGA is a simple and reliable predictor for hospital stay in patients with digestive diseases.

Subjective Global Assessment in the Clinical Setting

F Baccaro, MD, J Balza Moreno, C Borlenghi, L Aquino,
G Armesto, G Plaza and S Zapata

Journal of Parenteral and Enteral Nutrition (2007) **31(5)**: 406-409

Abstract

Background: Our goal was nutrition assessment in hospitalized patients of an internal medicine service.

Methods: Ours was a longitudinal, prospective, and observational study. Four hundred twelve patients participated in this study using the Subjective Global Assessment (SGA). We used χ^2 for univariate and logistic regression. **Results:** Of 412 patients, 47.6% presented with malnutrition: 38.8% with moderate malnutrition

(group B), and 8.58% with severe malnutrition (group C). Malnutrition was related to male patients older than 65 years, oncologic and infectious diseases, and length of hospitalization. **Conclusions:** Malnutrition incidence in an internal medical service is high. There is remarkable lack of interest in hospitalized patients' nutrition state. Results show similarities to other studies from Latin America.

Handgrip strength as a hospital admission nutritional risk screening method

L C Matos, M M Tavares and T F Amaral

European Journal of Clinical Nutrition (2007) **61(8)**: 1128–1135

Abstract

Objective: To investigate if handgrip strength (HGS) could be used as a single screening procedure in identifying patients who are classified as being undernourished or nutritionally-at-risk at hospital admission. **Design:** Cross-sectional study. In the second day of hospital admission, HGS was evaluated and results were compared with Nutritional Risk Screening (NRS-2002). **Setting:** Two public hospitals in Porto, Portugal, a university and a district one. **Subjects:** A probabilistic sample of 50% in-patients from each hospital of 314 patients (age range of 18–96) was studied. Patients were considered eligible if they were ≥ 18 years old and able to give informed consent. Hand pain, upper limb deformities, incapacity to perform muscle strength measurements and pregnancy were considered further exclusion criteria. **Results:** Patients identified as undernourished by NRS-2002

(37.9%) were older, shorter and lighter, with a lower functional capacity, a longer length of stay and a lower HGS ($P < 0.001$). When comparing patients with lower HGS (first quartile) with those with the highest HGS (fourth quartile), this parameter revealed good sensitivity (86.7%) and specificity (70.2%) and a $k = 0.56$. Multivariate analysis showed that patients with higher HGS had an independent decreased risk of being at nutritional risk (P for trend < 0.001) odds ratio = 0.19 (95% confidence interval = 0.08–0.48). Our entire sample of hospitalized patients was -1.96 Z-score below the HGS cutoff of distribution data for healthy individuals. **Conclusions:** HGS identifies a high proportion of nutritionally-at-risk patients and can be a reliable first screening tool for nutritional risk in hospitals.

Nutritional status and length of stay in patients admitted to an Acute Assessment Unit

J M Thomas, E Isenring and E Kellett

Journal of Human Nutrition & Dietetics (2007) **20(4)**: 320-328

Abstract

Background: The Redesigning Care initiative at Flinders Medical Centre aimed to improve access to timely, consistent, quality care. This led to the creation of an Acute Assessment Unit (AAU) where all patients are assessed by the Allied Health team on admission. This study aimed to: (i) determine the nutritional status of patients admitted to the AAU using the scored Patient Generated-Subjective Global Assessment (PG-SGA); and (ii) determine the association between nutritional status and length of stay (LOS). **Methods:** A prospective, observational study was conducted in 64 patients (mean age 79.9 ± 11 years, 76% female). Nutritional status was assessed within 48h of admission and LOS data were collected prospectively. **Results:** According to PG-SGA global rating, 53% (n=34) of patients were malnourished.

There was a weak association between PG-SGA score and LOS ($r=0.250$, $P=0.046$). The malnourished patients had a longer LOS by 1 day compared to well-nourished patients, and while this did not reach statistical significance ($Z=-0.988$, $P=0.323$), it has implications for health care costs. LOS overall was short at a median of 4.5 days (range 1-24). **Conclusions:** A significant proportion of patients admitted to the AAU is malnourished. There was a trend for these patients to have a longer LOS, indicating a critical need for nutritional management; however LOS as a whole was short. While nutrition support in hospital is useful in reinforcing dietary education, the short LOS emphasized the importance of discharge education and follow-up.

Comparison of equations for estimating resting metabolic rate in healthy subjects over 70 years of age

K Melzer, V L Karsegard, L Genton, M P Kossovsky, B Kayser and C Pichard

Clinical Nutrition (2007) **26(4)**: 598-505

Abstract

Introduction: There is a lack of validation studies of formulas for estimating resting metabolic rate (RMR) in healthy subjects over 70 years of age. Indirect calorimetry allows measuring RMR (RMRm), but is time consuming and costly and therefore formulae are generally used to estimate RMR (RMRe). We assessed the degree of agreement between RMRm and RMRe predicted by five popular equations: Harris-Benedict (HB), Mifflin-St Jeor (MJ), Owen (OW), World Health Organization (WHO/FAO/UNU) and Lüthmann (LM) in a cohort of elderly subjects. **Methods:** In 119 healthy subjects, aged 70-98 yr, RMRm was obtained by indirect calorimetry and RMRe by the HB, MJ, OW, WHO/FAO/UNU and LM equations. Means were compared by paired t-test. The Bland and Altman method was used to assess agreement between RMRm and RMRe. Accuracy was

defined as the % of individuals whose RMRe was within $\pm 10\%$ of RMRm. **Results:** The HB showed the lowest mean RMRe-RMRm difference (-40.9 kcal/day), followed by LM (+44.8 kcal/day) and WHO/FAO/UNU (+53 kcal/day). The HB performed the best of the five equations, having 72.4% of the cases within $\pm 10\%$ of RMRm. In 18.7% of male subjects and 20% of female subjects HB underestimated the measured values. **Conclusions:** Large discrepancies exist between RMRm and RMRe in subjects above 70 years of age. HB performs best, but still tends to underestimate in both sexes. In order to develop more accurate equations to estimate RMR in elderly subjects it would be worthwhile to examine whether additionally specific markers of body composition should be taken into consideration.

Feeding critically ill patients: What is the optimal amount of energy?

R Stapleton, Renee, N Jones, D K Heyland

Critical Care Medicine (2007) **35(9)**: Suppl: S535-S540

Abstract

Hypermetabolism and malnourishment are common in the intensive care unit. Malnutrition is associated with increased morbidity and mortality, and most intensive care unit patients receive specialized nutrition therapy to attenuate the effects of malnourishment. However, the optimal amount of energy to deliver is unknown, with some studies suggesting that full calorie feeding improves clinical outcomes but other studies concluding that caloric intake may not be important in determining outcome. In this narrative review, we discuss the studies of critically ill patients that examine the relationship between dose of nutrition and clinically important outcomes. Observational studies suggest that achieving targeted caloric intake might not be necessary since provision of approximately 25% to 66% of goal calories may be sufficient. Randomized controlled trials comparing early aggressive

use of enteral nutrition compared with delayed, less aggressive use of enteral nutrition suggest that providing increased calories with early, aggressive enteral nutrition is associated with improved clinical outcomes. However, energy provision with parenteral nutrition, either instead of or supplemental to enteral nutrition, does not offer additional benefits. In summary, the optimal amount of calories to provide critically ill patients is unclear given the limitations of the existing data. However, evidence suggests that improving adequacy of enteral nutrition by moving intake closer to goal calories might be associated with a clinical benefit. There is no role for supplemental parenteral nutrition to increase caloric delivery in the early phase of critical illness. Further high-quality evidence from randomized trials investigating the optimal amount of energy intake in intensive care unit patients is needed.

Gastric feed intolerance is not increased in critically ill patients with type II diabetes mellitus

N Q Nguyen, S W Lam, K Ching, M Chapman, R J Fraser and R H Holloway

Intensive Care Medicine (2007) **33(10)**: 1740-1745

Abstract

Objective: To examine the occurrence of feed intolerance in critically ill patients with previously diagnosed type II diabetes mellitus (DM) who received prolonged gastric feeding. **Design and Setting:** Retrospective study in a level 3 mixed ICU. **Patients:** All mechanically ventilated, enterally fed patients (n=649), with (n=118) and without type II DM (n=531) admitted between January 2003 and July 2005. **Interventions:** Patients with at least 72h of gastric feeding were identified by review of case notes and ICU charts. The proportion that developed feed intolerance was determined. All patient received insulin therapy. **Results:** The proportion of patients requiring gastric feeding for at least 72h was similar between patients with and without DM (42%, 50/118, vs. 42%, 222/531). Data

from patients with DM were also compared with a group of 50 patients matched for age, sex and APACHE II score, selected from the total non-diabetic group. The occurrence of feed intolerance (DM 52% vs. matched non-DM 50% vs. unselected non-diabetic 58%) and the time taken to develop feed intolerance (DM 62.6±43.8h vs. matched non-DM 45.3±54.6 vs. unselected non-diabetic 50.6±59.5) were similar amongst the three groups. Feed intolerance was associated with a greater use of morphine/midazolam and vasopressor support, a lower feeding rate and a longer ICU length of stay. **Conclusions:** In critically ill patients who require prolonged enteral nutrition, a prior history of DM type II does not appear to be a further risk factor for feed intolerance.

Glutamine: Mode of action in critical illness

P E Wischmeyer

Critical Care Medicine (2007) **35(9)**: Suppl: S541-S544

Abstract

A recent editorial in Critical Care Medicine was titled "Glutamine, a life-saving nutrient, but why?" (2003; 31:2555-2556). This review will attempt to utilize new understanding of gene-nutrient interactions and molecular medicine to address potential mechanisms by which glutamine may be lifesaving after critical illness and injury. Recent meta-analysis data reveal that glutamine seems to exert a beneficial effect on mortality in critically ill patients. However, this effect seems to be dose and route dependent. The questions that remain to be answered are in what settings and via what method of administration does this pharmaconutrient show optimal benefit? It is likely that examination of the molecular mechanisms by which glutamine exerts its effects will lead to an understanding of how best to utilize glutamine as both a pharmacologic and a nutritional agent. Clearly, clinical

critical illness leads to a marked deficiency in glutamine that is correlated with mortality in the intensive care unit setting. It makes obvious sense that the deficiency of this vital stress nutrient should be replaced. In addition, recent laboratory data reveal glutamine may act via mechanisms independent of its role as a metabolic fuel. These include enhanced stress protein response, attenuation of the inflammatory response, improved tissue metabolic function, and attenuation of oxidant stress. Present data indicate that glutamine functions as a metabolic fuel and "stress-signaling molecule" after illness and injury. Thus, deficiencies observed in critical illness demand replacement for both pharmacologic and metabolic optimization. Presently, randomized, multicenter, clinical trials utilizing glutamine as a pharmacologic and a nutritional agent are ongoing.

Reference List

Further references on nutrition support published in the last quarter.

- Roberts E (2007) Nutritional support via enteral tube feeding in hospital patients. *British Journal of Nursing* 16(17): 1058-1062.
This article aims to provide a practical overview of feeding solutions and administration to enable nursing staff to understand prescribed regimens and provide patients with optimum care.
- Hunt F (2007) Changing from oral to enteral feeding: impact on families of children with disabilities *Paediatric Nursing* 19(7): 30-32.
This article aims to help nurses understand the nature and scale of the impact that continuing with oral feeding or changing to gastrostomy feeding has on the whole family.
- Tsaloglidou A et al. (2007) Nursed ethical decision-making role in artificial nutritional support. *British Journal of Nursing* 16(16): 996-1001.
This article provides an insight into the process of ethical decision-making regarding the initiation or withdrawal of artificial nutritional support of seriously ill patients and explores the nursing involvement in it.
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