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Fresenius Kabi

Caring for Life
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
- Dysphagia
- European Journal of Clinical Nutrition
- Gastrointestinal Nursing
- GUT
- International Journal of Palliative Nursing
- 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 in 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.

Please note that due to copyright law our ability to copy and distribute clinical papers is restricted.

This publication and previous editions are also available online at www.fresenius-kabi.co.uk under the nutrition service section.
Effects of food fortification on nutritional and functional status in frail elderly nursing home residents at risk of malnutrition

C Smoliner, K Norman, R Scheufele, W Hartig, M Pirlich and H Lochs

Abstract
Objective: Malnutrition is a frequent problem in the elderly and is associated with an impaired functional status and higher morbidity and mortality. In this study we evaluated the effect of a 12-wk nutritional intervention with fortified food on nutritional and functional status in nursing home residents at risk of malnutrition.

Methods: Nutritional status was assessed with the Mini Nutritional Assessment. Body composition was measured with bioelectrical impedance analysis. Functional status was assessed with handgrip strength, peak flow, the Barthel Index, and the Physical Functioning component of the Short Form 36 questionnaire. The residents were assigned to a group receiving the standard food of the nursing home or a group with a protein- and energy-enriched diet and snacks.

Results: Sixty-five nursing home residents were included; 62 were at nutritional risk and 3 were severely malnourished according to the Mini Nutritional Assessment. Protein intake was significantly higher in the group on the enriched diet, whereas energy intake did not differ from the group on the standard diet. Both groups significantly improved most nutritional and body composition parameters during the intervention period. We did not observe convincing improvements in muscle function. Furthermore, the Barthel Index and the Physical Functioning component of the Short Form 36 questionnaire declined in all participants.

Conclusion: Standard food in this nursing home provided sufficient energy and macronutrients. Provision of snacks was not effective in increasing energy intake. Although nutritional status improved, functional status did not increase as a consequence. Functional frailty in this study population seems to be influenced more by age-related morbidity and immobilization than by nutritional intake.

Multifaceted nutritional intervention among nursing-home residents has a positive influence on nutrition and function

A M Beck, K Damkjær, and N Beyer

Abstract
Objective: We tested the hypothesis that a multifaceted 11-wk intervention comprising nutrition, group exercise, and oral care would have a significant influence on nutrition and function in elderly (≥65 y) nursing-home residents. Methods: The study was an 11-wk randomized controlled intervention study with nutrition (chocolate and homemade oral supplements), group exercise twice a week (45–60 min, moderate intensity), and oral care intervention one to two times a week, with the aim of improving nutritional status and function in elderly nursing-home residents. A follow-up visit was made 4 mo after the end of the intervention. Assessments were weight, body mass index, dietary intake, handgrip strength, Senior Fitness Test, Berg’s Balance Scale, and the prevalence of plaque. Results: A total of 121 subjects (61%) accepted the invitation and 62 were randomized to the intervention group. Six of these dropped out during the 11 wk. At the 4-mo follow-up there were 15 deaths in the intervention group and 8 in the control group. The nutrition and exercise were well tolerated. After 11 wk the change in percentage of weight (P = 0.005), percentage of body mass index (P = 0.003), energy intake (P = 0.084), protein intake (P = 0.012), and Berg’s Balance Scale (P = 0.004) was higher in the intervention group than in the control group. In addition, the percentage of subjects whose functional tests improved was higher in the intervention group. Both groups lost the same percentage of weight after the intervention (P = 0.908). The total percentage of weight loss from baseline to follow-up was higher in the control group (P = 0.019). Oral care was not well accepted and the prevalence of plaque did not change. Conclusion: It is possible to improve nutrition and function in elderly nursing-home residents by means of a multifaceted intervention consisting of chocolate, homemade supplements, group exercise, and oral care.
Dietary protein recommendations and the prevention of sarcopenia

D Paddon-Jones and B B Rasmussen

Abstract

Purpose of review: To draw attention to recent work on the role of protein and the amount of protein needed with each meal to preserve skeletal muscle mass in ageing.

Recent findings: Ageing does not inevitably reduce the anabolic response to a high-quality protein meal. Ingestion of approximately 25-30 g of protein per meal maximally stimulates muscle protein synthesis in both young and older individuals. However, muscle protein synthesis is blunted in elderly when protein and carbohydrate are coingested or when the quantity of protein is less than approximately 20 g per meal. Supplementing regular mixed-nutrient meals with leucine may also enhance the muscle protein synthetic response in elders.

Summary: On the basis of recent work, we propose a novel and specific dietary approach to prevent or slow down muscle loss with ageing. Rather than recommending a large, global increase in the recommended dietary allowance (RDA) for protein for all elderly individuals, clinicians should stress the importance of ingesting a sufficient amount of protein with each meal. To maximize muscle protein synthesis while being cognizant of total energy intake, we propose a dietary plan that includes 25-30 g of high quality protein per meal.

Validity of the ActiReg® system and a physical activity interview in assessing total energy expenditure in long-term survivors after total gastrectomy

L Copland, B Liedman, E Rothenberg, L Ellegård, B-E Hustvedt and I Bosaeus

Abstract

Background & aims: Malnutrition is common after total gastrectomy. There is a need for clinically useful methods to assess energy requirements. We aimed to validate measurements of energy expenditure by an activity monitor (ActiReg®) and a physical activity interview (HPAQ modified), in long-term survivors after gastrectomy for gastric carcinoma, using doubly labelled water as reference method.

Methods: Total energy expenditure (TEE) was estimated by DLW (14 days), ActiReg® (3 days) and HPAQ modified (7 days) in 15 patients. Basal metabolic rate was measured with indirect calorimetry. Results: ActiReg® and HPAQ modified both underestimated TEE by 180 (±254 SD) and 130 (±326 SD) kcal day−1, i.e. 14% vs. 12%, respectively. However, this was evident only at higher levels of physical activity (PALDLW ≥ 1.65), whereas at lower levels (PAL < 1.65) no difference was found. There were no changes in TEE over time independent of the method used. DLW and ActiReg® had approximately the same width of the 95% confidence interval of this estimate, while it was 2.4 times larger by HPAQ modified.

Conclusion: Both simple methods underestimated total energy expenditure at higher, but not at lower physical activity levels. The ActiReg® method appears useful to estimate changes in TEE over time.
Nutrition assessment in critically ill patients

H Sungurtekin, U Sungurtekin, O Oner, and D Okke

Abstract

**Background:** The aim of this study was to assess whether subjective global assessment (SGA) is useful in identifying malnutrition and outcomes in the intensive care unit (ICU).

**Methods:** After obtaining institutional approval, 124 consenting patients were enrolled in this study. Patients were evaluated at admission using clinical data, SGA, height, weight, triceps skinfold thickness (TSF), mid-arm circumference (MAC), Acute Physiology and Chronic Health Evaluation (APACHE II), and Simplified Acute Physiologic Score (SAPS). Patients were classified as well nourished, moderately malnourished, or severely malnourished with SGA. Results: According to SGA, 62% (n = 77) of the patients were classified as well nourished, 26% (n = 33) as moderately malnourished, and 11% (n = 14) as severely malnourished. Body weight, body mass index (BMI), MAC, TSF, and mid-arm muscle circumference (MAMC) were lower, whereas APACHE II and SAPS II scores and mortality were higher in the malnourished groups compared with the well-nourished group. The SGA rating correlated significantly with age, body weight, percentage of weight loss, serum albumin level, APACHE II and SAPS II scores, and mortality. Anthropometrics data were correlated with SGA. Mortality rate was correlated with high APACHE II score, SAPS II score, days in the ICU and low BMI, MAMC, and serum albumin level. Conclusions: The results support that SGA is simple and may predict the patient’s outcomes in the ICU.

Are enterally fed ICU patients meeting clinical practice guidelines?

C A Miller, S Grossman, E Hindley, D MacGarvie, and J Madill

Abstract

**Background:** The 2003 Canadian clinical practice guidelines (CPGs) for nutrition support in mechanically ventilated, critically ill patients recommended early EN and maintaining a 45-degree head-of-bed (HOB) angle during EN administration. Current practices at University Health Network have not been examined with regard to these guidelines. The purpose of this study was to determine the proportion of mechanically ventilated, enterally fed intensive care unit patients meeting the CPG recommendations for early EN and HOB elevation.

**Methods:** This was a cross-sectional study involving data collection in 2 parts. Early EN data were collected via chart review and HOB data through observation of HOB angle reader. Reasons for not meeting each recommendation were obtained when data were collected via chart review and feedback from nurses. Data analysis was conducted using frequency distributions. Results: Sixty-six percent of patients met the recommendation for early EN. Of those not meeting this recommendation, the most common reason for the delay was hemodynamic instability (28.1%). For the HOB recommendation, 4.9% of patients met the 45 degree recommendation, and 52.5% had an HOB angle between 21 and 30 degrees. The most common reason for not attaining the 45-degree angle was reported as unknown (29.5%). Conclusions: The proportion of patients meeting clinical practice guidelines compares favorably to similar studies. In some cases, patients’ clinical conditions or unit HOB angle protocol explained not meeting guidelines. However, there were cases where reasons for not meeting guidelines were unknown.
Immunonutrition in critically ill patients: A systematic review and analysis of the literature

P E Marik and G P Zaloga

Abstract

Background: The role of immuno-modulating diets (IMDs) in critically ill patients is controversial. Objective: The goal of this meta-analysis was to determine the impact of IMD’s on hospital mortality, nosocomial infections and length of stay (LOS) in critically ill patients. Outcome was stratified according to type of IMD and patient setting. Data sources: MEDLINE, Embase, Cochrane Register of Controlled Trials. Study selection: RCT’s that compared the outcome of critically ill patients randomized to an IMD or a control diet. Data synthesis: Twenty-four studies (with a total of 3013 patients) were included in the meta-analysis; 12 studies included ICU patients, 5 burn patients and 7 trauma patients. Four of the studies used formulas supplemented with arginine, two with arginine and glutamine, nine with arginine and fish oil (FO), two with arginine, glutamine and FO, six with glutamine alone and three studies used a formula supplemented with FO alone. Overall IMD’s had no effect on mortality or LOS, but reduced the number of infections (OR 0.63; 95% CI 0.47–0.86, P = 0.004, I² = 49%). Mortality, infections and LOS were significantly lower only in the ICU patients receiving the FO IMD (OR 0.42, 95% CI 0.26–0.68; OR 0.45, 95% CI 0.25–0.79 and WMD -6.28 days, 95% CI −9.92 to −2.64, respectively). Conclusions: An IMD supplemented with FO improved the outcome of medical ICU patients (with SIRS/sepsis/ARDS). IMDs supplemented with arginine with/without additional glutamine or FO do not appear to offer an advantage over standard enteral formulas in ICU, trauma and burn patients.

Cachexia: A new definition


Abstract

On December 13th and 14th a group of scientists and clinicians met in Washington, DC, for the cachexia consensus conference. At the present time, there is no widely agreed upon operational definition of cachexia. The lack of a definition accepted by clinician and researchers has limited identification and treatment of cachectic patient as well as the development and approval of potential therapeutic agents. The definition that emerged is: “cachexia, is a complex metabolic syndrome associated with underlying illness and characterized by loss of muscle with or without loss of fat mass. The prominent clinical feature of cachexia is weight loss in adults (corrected for fluid retention) or growth failure in children (excluding endocrine disorders). Anorexia, inflammation, insulin resistance and increased muscle protein breakdown are frequently associated with cachexia. Cachexia is distinct from starvation, age-related loss of muscle mass, primary depression, malabsorption and hyperthyroidism and is associated with increased morbidity. While this definition has not been tested in epidemiological or intervention studies, a consensus operational definition provides an opportunity for increased research.
Accuracy of the volume-viscosity swallow test for clinical screening of oropharyngeal dysphagia and aspiration

P Clavé, V Arreola, M Romea, L Medina, E Palomera and M Serra-Prat

Abstract
Aims: To determine the accuracy of the bedside volume-viscosity swallow test (V-VST) for clinical screening of impaired safety and efficacy of deglutition. Methods: We studied 85 patients with dysphagia and 12 healthy subjects. Series of 5–20 mL nectar (295.02 mPa.s), liquid (21.61 mPa.s) and pudding (3682.21 mPa.s) bolus were administered during the V-VST and videofluoroscopy. Cough, fall in oxygen saturation ≥3%, and voice changes were considered signs of impaired safety, and piecemeal deglutition and oropharyngeal residue, signs of impaired efficacy. Results: Videofluoroscopy showed patients had prolonged swallow response (≥1064 ms); 52.1% had safe swallow at nectar, 32.9%, at liquid (p < 0.05), and 80.6% at pudding viscosity (p < 0.05); 29.4% had aspirations, and 45.8% oropharyngeal residue. The V-VST showed 83.7% sensitivity and 64.7% specificity for bolus penetration into the larynx and 100% sensitivity and 28.8% specificity for aspiration. Sensitivity of V-VST was 69.2% for residue, 88.4% for piecemeal deglutition, and 84.6% for identifying patients whose deglutition improved by enhancing bolus viscosity. Specificity was 80.6%, 87.5%, and 73.7%, respectively. Conclusions: The V-VST is a sensitive clinical method to identify patients with dysphagia at risk for respiratory and nutritional complications, and patients whose deglutition could be improved by enhancing bolus viscosity. Patients with a positive test should undergo videofluoroscopy.

What information do clinicians use in recommending oral versus nonoral feeding in oropharyngeal dysphagic patients?


Abstract
There is little evidence regarding the type(s) of information clinicians use to make the recommendation for oral or nonoral feeding in patients with oropharyngeal dysphagia. This study represents a first step toward identifying data used by clinicians to make this recommendation and how clinical experience may affect the recommendation. Thirteen variables were considered critical in making the oral vs. nonoral decision by the 23 clinicians working in dysphagia. These variables were then used by the clinicians to independently recommend oral vs. nonoral feeding or partial oral with nonoral feeding for the 20 anonymous patients whose modified barium swallows were sent on a videotape to each clinician. Clinicians also received data on the 13 variables for each patient. Results of clinician agreement on the recommendation of full oral and nonoral only were quite high, as measured by Kappa statistics. In an analysis of which of the 13 criteria clinicians used in making their recommendations, amount of aspiration was the criterion with the highest frequency. Recommendations for use of postures and maneuvers and the effect of clinician experience on these choices were also analyzed.
The effectiveness of targeted feeding assistance to improve the nutritional intake of elderly dysphagic patients in hospital

L Wright, D Cotter and M Hickson

Abstract

Background: Dysphagic older patients are prescribed texture modified food or fluids as treatment. The present study aimed to determine whether targeted feeding assistance using trained volunteers increased oral intake in elderly dysphagic patients. Method: Individualized feeding assistance was given to patients who were diagnosed with dysphagia by a speech and language therapist. Data were collected between 08.00 h and 16.00 h and compared with previously collected data from dysphagic patients who received no targeted feeding assistance. Results: The group with targeted assistance (n = 16) had higher intakes of energy and protein from both meals and supplements combined compared to the controls (n = 30); mean difference = 2327 kJ (554 kcal) (95% CI = 1294-3360 kJ; P < 0.001) and 28 g protein (95% CI = 13.41 g; P = 0.01). The assisted group ate more from meals only; mean difference = 1336 kJ (318 kcal) (95% CI = 517-2155 kJ; P = 0.002) and 6 g of protein (95% CI = 2.26 g; P = 0.02); and from nutritional supplements only, median difference = 1205 kJ (287 kcal) (95% CI = 613-1273 kJ; P = 0.0002) and 15 g protein (95% CI 6.9-15 g; P < 0.0001). Conclusion: Nutritional intake can be improved by targeted feeding assistance in hospitalized elderly dysphagic patients on texture modified diets.

The use of an inflammation-modulating diet in patients with acute lung injury or acute respiratory distress syndrome: A meta-analysis of outcome data

A Pontes-Arruda, S DeMichele, A Seth and P Singer

Abstract

Background: This meta-analysis of clinical trials compares an inflammation-modulating diet enriched with eicosapentaenoic acid (EPA), -linolenic acid (GLA), and elevated antioxidants (EPA + GLA) vs a control diet to determine the effectiveness of this specialized diet on oxygenation and clinical outcomes in mechanically ventilated patients with acute lung injury (ALI)/acute respiratory distress syndrome (ARDS). Methods: MEDLINE, EMBASE, Cochrane Clinical Trials Register, and the U.S. National Institute of Health Clinical Trials databases were searched. The outcome measures assessed were 28-day in-hospital mortality, 28-day ventilator-free and intensive care unit (ICU)-free days, and the development of new organ failures. An evaluation of oxygenation and ventilatory variables was also performed. Outcomes were analyzed using both fixed-effects and random-effects models. Results: Three randomized controlled studies (n = 411 patients) were included in this meta-analysis. Among the most important findings of this evaluation is a significant reduction in the risk of mortality (odds ratio [OR] = 0.40; 95% confidence interval [CI] = 0.24–0.68; P = .001), with significant reductions in the risk of developing new organ failures (OR = 0.17; 95% CI = 0.08–0.34; P < .0001), time on mechanical ventilation (standardized mean difference [SMD] = 0.56; 95% CI = 0.32–0.79; P < .0001), and ICU stay (SMD = 0.51; 95% CI = 0.27–0.74; P < .0001) in patients who received EPA + GLA. Conclusions: The meta-analysis showed a significant reduction in the risk of mortality as well as relevant improvements in oxygenation and clinical outcomes of ventilated patients with ALI/ARDS given EPA + GLA.
Nutrition considerations in traumatic brain injury

A M Cook, A Peppard, and B Magnuson

Abstract
The provision of adequate nutrition support for patients with traumatic brain injury (TBI) has been a clinical challenge for decades. The primary and secondary injuries create unique metabolic derangements along with accompanying issues such as optimal timing and route of nutrition, appropriate fluid and electrolytes, drug administration, rehabilitation, and dysphagia. Enteral nutrition is clearly established as the preferential route of nutrition support for this population vs parenteral nutrition. There appears to be a consensus on early initiation of enteral nutrition, but less definitive are recommendations on advancement timing and formula components. Nutrition therapies should include exact fluid resuscitation goals specific for TBI and strict electrolyte monitoring to avoid extreme fluid, electrolyte, or glucose shifts that could be detrimental to the patient. While the critical care patient often tolerates small bowel feeding, the long-term rehabilitation patient should transition to and tolerate gastric feeding. Drug-nutrient and adverse drug reactions such as diarrhea should be routinely evaluated in patients receiving enteral nutrition. Monitoring for dysphagia is critical to avoid the costly negative aspects associated with aspiration and to capitalize on quality of life and appropriate oral nutrition. Emphasizing the priority of early nutrition support within a multi-disciplinary team may be the critical key for successful provision and tolerance of nutrition support in the TBI population.

Feasibility of self-propelling nasojejunal feeding tube in patients with acute pancreatitis

C Joubert, L-E Tiengou, I Hourmand-Ollivier, M-T Dao, and M-A Piquet

Abstract
Background & Aims: To assess the success rate of a self-propelling nasojejunal feeding tube in patients with acute pancreatitis. Methods: All patients admitted for acute pancreatitis were included. A self-propelling nasojejunal feeding tube was introduced into the stomach, and gastrointestinal motility was stimulated using metoclopramide. If the tube failed to advance to the ligament of Treitz, a nasojejunal tube was placed endoscopically. Results: A total of 108 patients, 94 with necrotizing pancreatitis (Balthazar D/E) and 14 with nonnecrotizing pancreatitis (Balthazar B/C), were referred for artificial nutrition. In 11 cases, ileus persisted and parenteral nutrition was initiated. Among the remaining 97 patients, 5 refused tube placement. The self-propelling feeding tube was inserted in 92 patients with successful migration to the ligament of Treitz in 61% (n = 56) and failure in 39% (n = 36). Of the 36 patients with an initial failed placement, endoscopic placement of a nasojejunal tube was successful 80% of the time (29 patients). The success rate of a nasojejunal self-propelling feeding tube placement correlated directly with the severity of the acute pancreatitis (92% in B/C vs 61% in D vs 48% in E; P < .05). Conclusions: Use of a self-propelling nasojejunal tube is a simple technique that can be successfully performed in the majority of patients with acute pancreatitis. The utility of this procedure in the most severe cases of acute pancreatitis continues to pose a challenge.
The routine bridling of nasojejunal tubes is a safe and effective method of reducing dislodgement in the intensive care unit

C W Seder and R Janczyk

Abstract
Purpose: To determine if the routine bridling of nasoenteric feeding tubes in the intensive care unit is a low-morbidity, cost-effective method of decreasing tube dislodgement. Methods: Data were prospectively collected from 62 consecutive bridled patients and compared with that from 172 consecutive unbridled patients for differences in tube dislodgement, nasal ulceration, and estimated cost. Results: Bridled patients demonstrated significantly less tube dislodgement (6.5% vs 32.6%, P < .0001). Bridling resulted in 4 cases of nasal ulceration per 800 tube feeding days, all of which were associated with red rubber catheter bridles. Conversion to 1/8-in umbilical tape bridles eliminated ulceration and further reduced dislodgement from 10% to 4.8%. Implementation of bridling saved an estimated $4038 over 3 months. Conclusions: Nasal bridling is a simple, cost-effective practice that may reduce the rate of nasoenteric tube dislodgement. The use of 1/8-in umbilical tape may be more effective and safer than 8-Fr red rubber catheters for this purpose.

The push-pull T technique: An easy and safe procedure in children with the buried bumper syndrome

R I Furlano, M Sidler and H Haack

Abstract
Percutaneous endoscopic gastrostomy (PEG) tube placement is a well-established procedure in adults as well as in pediatric patients who cannot be orally fed. However, potential serious complications may occur. The buried bumper syndrome is a well-recognized long-term complication of PEG. Overgrowth of gastric mucosa over the inner bumper of the tube will cause mechanical failure of formula delivery, rendering the tube useless. However, published experience in children with buried bumper syndrome is very scarce. In the authors’ clinic, 76 PEG tubes were placed from 2001 to 2008, and buried bumper syndrome occurred in 1 patient. The authors report on their experience with buried bumper syndrome, an adapted safe endoscopic removal technique, as well as recommendations for prevention of buried bumper syndrome.
Outpatient nutrition management of the neurologically impaired child

M R Mascarenhas, R Meyers and S Konek

Abstract
The nutrition care of children who are neurologically impaired is a challenge for the nutrition care team. Many factors should be considered in the assessment and development of a nutrition plan. That these children can have significant abnormalities in nutrition status, growth, and body composition should be kept in mind. Energy needs are often hard to assess. For this reason, monitoring of weight status over time provides the best indicator of energy requirements. Protein needs are not increased for the healthy child who is neurologically impaired. Nutrition rehabilitation usually corrects micronutrient deficiencies when they are found. Nutrition assessment is a key component of the care of these children. Height assessment can be difficult, and alternative measures of height should be used in the evaluation of growth. For optimal care, management should be done by a multidisciplinary team including a registered dietitian. Improved nutrition status results in improved health outcomes.

Implementation of a multidisciplinary team that includes a Registered Dietitian in a neonatal intensive care unit improved nutrition outcomes

J Sneve, K Kattelmann, C Ren and D C Stevens

Abstract
This study determined whether nutrition outcomes of neonates who were receiving neonatal intensive care were improved with the implementation of a fully functioning multidisciplinary team that included a registered dietitian. A medical record review was conducted of neonates with birth weights of 1500 g or less who were cared for in Sanford Children’s Hospital neonatal intensive care unit from January 1 to December 31, 2001 (prior to functioning multidisciplinary team establishment) and January 1 to December 31, 2004 (subsequent to establishment of a multidisciplinary team). Data from charts in the 2 time periods were examined for differences in nutrition outcomes. Outcome variables included length of stay, birth weight, discharge weight, weight gained for specified time periods, weight at full feeds, weight gain per day, length, head circumference, and number of days to start enteral feeding. Analysis of covariance, controlling for the effect of birth weight, was used to determine differences and was considered significant at P < .05. The mean length of stay (65 days, 95% confidence interval [CI]: 48-68 vs 72 days, 95% CI: 53-73) was not different for the 2 periods. The mean weight at the beginning of enteral feeding was significantly less in the period prior to the establishment of the multidisciplinary team (1099 g, 95% CI: 955-1165 vs 1164 g, 95% CI: 1067-1211, respectively). Weight at discharge, total weight gained, total daily weight gained, daily weight gain from birth to the initiation of enteral feeds, daily weight gain from birth to full feeds, and head circumference growth were significantly greater for neonates in the postgroup than in the pre-multidisciplinary team group. Implementation of a multidisciplinary team that included a registered dietitian improved the nutrition outcomes of low birth weight infants in a neonatal intensive care unit.
Protein and calorie prescription for children and young adults receiving continuous renal replacement therapy: A report from the Prospective Pediatric Continuous Renal Replacement Therapy Registry Group

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Critical Care Medicine (2008) 36(12): 3239-3245

Abstract

Objective: Few published reports describe nutrition provision for critically ill children and young adults with acute kidney injury receiving continuous renal replacement therapy. The goals of this study were to describe feeding practices in pediatric continuous renal replacement therapy and to evaluate factors associated with over- and under-preservation of protein and calories. Design: Retrospective database study. Setting: Multicenter study in pediatric critical care units. Patients: Patients with acute kidney injury (estimated glomerular filtration rate <75 mL/min/1.73 m2 at continuous renal replacement therapy initiation) enrolled in the Prospective Pediatric Continuous Renal Replacement Therapy Registry. Interventions: None. Measurements: Nutrition variables: initial and maximal protein (g/kg/day) and caloric (kcal/kg/day) prescription and predicted resting energy expenditure (kcal/kg/day). We determined factors predicting initial and maximal protein and caloric prescription by multivariate analysis. Results: One hundred ninety-five patients (median [interquartile range] age = 8.1 [12.8] yrs, 56.9% men) were studied. Mean protein and caloric prescriptions at continuous renal replacement therapy initiation were 1.3 +/- 1.5 g/kg/day (median, 1.0; range, 0-10) and 37 +/- 27 kcal/kg/day (median, 32; range, 0-107). Mean maximal protein and caloric prescriptions during continuous renal replacement therapy were 2.0 +/- 1.5 g/kg/day (median, 1.7; range, 0-12) and 48 +/- 32 kcal/kg/day (median, 43; range, 0-117). Thirty-four percent of patients were initially prescribed <1 g/kg/day protein; 23% never attained >1 g/kg/day protein prescription. By continuous renal replacement therapy day 5, median protein prescribed was >2 g/kg/day. Protein prescription practices differed substantially between medical centers with 5 of 10 centers achieving maximal protein prescription of >2 g/kg/day in >=40% of patients. Caloric prescription exceeded predicted resting energy expenditure by 30%-100%. Factors independently associated with maximal protein and caloric prescription while on continuous renal replacement therapy were younger age, initial protein and caloric prescription and number of continuous renal replacement therapy treatment days (p < 0.05). Conclusions: Protein prescription in pediatric continuous renal replacement therapy may be inadequate. Inter-center variation exists with respect to nutrition prescription. Feeding practice standardization and research in pediatric acute kidney injury nutrition are essential to begin providing evidence-based feeding recommendations.
Association of serum prealbumin and its changes over time with clinical outcomes and survival in patients receiving hemodialysis

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Abstract

**Background:** In patients receiving maintenance hemodialysis (MHD), a low serum prealbumin is an indicator of protein-energy wasting. **Objective:** We hypothesized that baseline serum prealbumin correlates independently with health-related quality of life (QoL) and death and that its change over time is a robust mortality predictor. **Design:** Associations and survival predictability of serum prealbumin at baseline and its changes over 6 mo were examined in a 5-y (2001–2006) cohort of 798 patients receiving MHD. **Results:** Patients with serum prealbumin ≥40 mg/dL had greater mid-arm muscle circumference but lower percentage of total body fat. Both serum interleukin-6 and dietary protein intake correlated independently with serum prealbumin. Measures of QoL indicated better physical health, physical function, and functionality with higher prealbumin concentrations. Although baseline prealbumin was not superior to albumin in predicting survival, in both all and normoalbuminemic (albumin ≥3.5 g/dL; n = 655) patients, prealbumin < 20 mg/dL was associated with higher death risk in adjusted models, but further adjustments for inflammatory cytokines mitigated the associations. In 412 patients with baseline prealbumin between 20 and 40 mg/dL whose serum prealbumin was remeasured after 6 mo, a ≥10-mg/dL fall resulted in a death hazard ratio of 1.37 (95% CI: 1.02, 1.85; P = 0.03) after adjustment for baseline measures, including inflammatory markers. **Conclusions:** Even though baseline serum prealbumin may not be superior to albumin in predicting mortality in MHD patients, prealbumin concentrations <20 mg/dL are associated with death risk even in normoalbuminemic patients, and a fall in serum prealbumin over 6 mo is independently associated with increased death risk.

Is controlling phosphorus by decreasing dietary protein intake beneficial or harmful in persons with chronic kidney disease?


Abstract

**Background:** Dietary restrictions to control serum phosphorus, which are routinely recommended to persons with chronic kidney disease, are usually associated with a reduction in protein intake. This may lead to protein-energy wasting and poor survival. **Objective:** We aimed to ascertain whether a decline in serum phosphorus and a concomitant decline in protein intake are associated with an increase in the risk of death. **Design:** In a 3-y study (7/2001–6/2004) of 30 075 prevalent maintenance hemodialysis (MHD) patients, we examined changes in serum phosphorus and in normalized protein nitrogen appearance (nPNA), a surrogate of dietary protein intake, during the first 6 mo and the subsequent mortality. Four groups of MHD patients were defined on the basis of the direction of the changes in serum phosphorus and nPNA. **Results:** Baseline phosphorus had a J-shaped association with mortality, whereas higher baseline nPNA was linearly associated with greater survival. Compared with MHD patients whose serum phosphorus and nPNA both rose over 6 mo, those whose serum phosphorus decreased but whose nPNA increased had greater survival, with a case mix-adjusted death risk ratio of 0.90 (95% confidence limits: 0.86, 0.95; P < 0.001), whereas those whose phosphorus increased but whose nPNA decreased or those whose phosphorus and nPNA both decreased had worse mortality with a risk ratio of 1.11 (1.05,1.17; P < 0.001) and 1.06 (1.01,1.12; P = 0.02), respectively. **Conclusions:** The risk of controlling serum phosphorus by restricting dietary protein intake may outweigh the benefit of controlled phosphorus and may lead to greater mortality. Additional studies including randomized controlled trials should examine whether nondietary control of phosphorus or restriction of nonprotein sources of phosphorus is safer and more effective.
Reference List

Further references on nutrition support published in the last quarter.

  This article discusses the prevalence of malnutrition, the role of screening and practical steps towards improving nutritional management

  This article discusses the nutritional management of cystic fibrosis

  This article discusses the principles of fortification and offers some simple suggestions

  This article discusses the impact of the condition on medicine compliance and considers alternative methods of administration

  This article discusses the management of patients with high stoma outputs in the community
Notes