CASE REPORT: CYSTIC FIBROSIS IN INFANCY

Kristi Wilkerson, Dietetic Intern, Johns Hopkins Bayview Medical Center, Dietetic Intern

Reader will demonstrate the ability to estimate the nutritional needs for managing cystic fibrosis (CF) in infants’ ages 0-6 months.

CF is a progressive, life-limiting, genetic disease primarily affecting the lungs, pancreas, and small intestine. A defective gene causes an imbalance of sodium and chloride ions creating a buildup of thick, sticky mucus promoting obstructions, infections, and inflammation throughout the body.

Patient was a 4 month 2 week former full term male infant with CF presenting to Johns Hopkins Hospital with a fever and increased work of breathing. Energy and protein estimations were 1.2-2 x RDA and 1.5-2 x RDA respectively. Term formula, fat-soluble vitamin, and pancreatic enzyme recommendations included Pregestimil® 27 kcal/oz @ 45 ml/hr x 22 hours, 1 ml of aquADEKs™ daily, and 1 Creon® 6 capsule every three hours. On day 10, recommendations were made increasing enzyme dose to 3 Creon® 3 capsules every three hours for abdominal distention. To assess the appropriateness of recommended provisions, weight and length measurements were mapped utilizing WHO growth charts. Weights from days 1 and 17 ranked in the 11th and 40th percentiles respectively; literature suggests a weight goal of >50th percentile by age 2.

With significant increases in weight and length percentiles and 3 siblings with CF, a good outcome is expected after discharge. However, there are numerous CF-related complications that this infant may endure over time including ongoing vitamin, mineral, and enzyme deficiencies. A key component to managing these challenges is following a treatment plan based on individualized needs.

CASE REPORT: NUTRITIONAL SIDE EFFECTS OF CHEMOTHERAPY IN THE SETTING OF ESOPHAGEAL ADENOCARCINOMA WITH MALGNANCIES TO LIVER, LUNGS AND ABDOMINAL LYMPHADENOPATHY

Rebecca Flanagan, BS, Johns Hopkins Bayview Medical Center Dietetic Intern

Reader will demonstrate the ability to provide nutritional interventions for weight loss prevention in cancer patients.

Cancer treatments such as chemotherapy can have side effects that significantly impact the nutritional status of patients. Nutrition implications include cachexia, weight loss and poor appetite secondary to taste alterations, nausea and vomiting.

59-year-old Caucasian male presented with persistent hematemesis and was found to have a GI bleed. The patient’s past medical history included Stage IV esophageal adenocarcinoma with metastases to lungs and liver, lymphadenopathy, orthostatic hypotension and depression. The patient received chemotherapy treatment 6 months prior to admission. The patient reported a 24% weight loss since
starting chemotherapy treatment. The patient denied any swallowing problems.

Estimated nutrition requirements were 2181 kcal/day (30 kcal/kg) and 73 -87 gram of protein per day (1.0 – 1.2 gram/kg). During the initial assessment, the patient was ordered for a clear liquid diet for bowel rest and advanced to regular diet as tolerated. Ensure® Complete was recommended three times daily. Due to taste alterations, Ensure® was discontinued and Magic Cup® was ordered twice daily. The patient’s appetite improved to 50 to 75% of meals. Education on strategies for improving food intake during cancer treatment was provided. After discharge, patient maintained and started to regain body weight.

Nutrition intake decreases with side effects of chemotherapy such as lack of appetite, taste alterations and vomiting. Severe weight loss is common among cancer patients. Encouragement of high-calorie/high protein foods and the use of nutrition supplements may help prevent weight loss.

Case Study: Systolic Heart Failure with Reduced Ejection Fraction

Jana Wolff, B.S., Johns Hopkins Bayview Medical Center dietetic Intern

Reader will demonstrate the ability to define nutritional needs for patients with heart failure.

Heart failure (HF) is a chronic condition in which the heart is unable to pump adequate blood to meet oxygen and metabolic needs. Damaged tissues of the heart decrease contractility of the left ventricle, reducing the ejection fraction.

A 58 year old African American male presented to the Johns Hopkins Bayview Medical Center Emergency Department with dyspnea on exertion, lower extremity 4+ pitting edema, and elevated jugular venous pressure. He was diagnosed with decompensated congestive heart failure with a reduced ejection fraction of 15%. Past medical history was significant for smoking, substance abuse and poor eating habits. His deceased mother provided his meals.

The patient appeared malnourished and fatigued. His weight upon admission was 63.1 kg; however, using his dry body weight of 55.8 kg, he was 77% of IBW. Recommendations included a Hearth Healthy 3-4 g Na diet with 1.5 L fluid restriction and Ensure Complete® 8oz daily, plus a multi-vitamin. Education on sodium and fluid restrictions, and increased calories and protein were provided. The patient was receptive but fair compliance was expected due to previously poor nutrition behaviors and inability to recall earlier education.

HF is a progressive condition in which nutrition and medical compliance is crucial to improve prognosis and maintain quality of life. In this case, modifiable (smoking status, dietary choices) and non-modifiable (race, family history) risk factors contributed to the patient’s outcomes. Despite medical advances, HF significantly increases morbidity and mortality.
Case Study Abstract: Stroke Complicated by Dysphagia

Hermann, Nicole, Johns Hopkins Bayview Medical Center Dietetic Intern

To better understand stroke and the nutritional implications and management of patients who are complicated by dysphagia.

Stroke is the fourth leading cause of death worldwide and second leading cause of death in the U.S. There are two types of stroke, ischemic (most common) and hemorrhagic (most fatal). During a stroke blood flow is blocked to the affected area and tissue damage/death occurs. Malnutrition can arise with disabilities such as; dysphagia, dementia, and hemiparesis.

Patient was a 76-year-old male who presented with slurred speech, facial drooping, and difficulty swallowing. He was diagnosed with left lateral medullary stroke (ischemic stroke) and placed NPO for the entirety of his hospital course. This case study presents nutritional management from admission to Day 18 of hospital course.

Patient was placed NPO on day of admission due to difficulty swallowing. A Speech Language Pathologist consult on day 2 revealed dysphagia. PEG placement was scheduled on Day 3, he suffered a tachycardic event, the PEG was postponed. On Day 5, nasogastric tube was placed and Osmolite® 1.2 was initiated Day 6. The patient had a possible GI bleed on Day 10; which marks the last day of tube feeds prior to passing away Day 18. Patient suffered multiple tachycardic events and a retroperitoneal bleed, which was the cause of death.

Had the patient survived, he would have had a poor dysphagia prognosis. The patient would have had a PEG placement and received bolus feeds throughout recovery, if not life.

Case Study: Diabetic Nephropathy

Chelsea Reynolds, B.S., Johns Hopkins Bayview Medical Center Dietetic Intern

To understand the connection between diabetes and chronic kidney disease, and the nutritional management of an individual with both conditions.

Diabetic nephropathy is currently the leading cause of end-stage renal disease in the United States.

A 61 year old African American female presented to the Emergency Department at Johns Hopkins Bayview Medical Center with altered mental status and shortness of breath. The patient had an extensive past medical history including type 2 diabetes, hypertension, and chronic kidney disease stage V requiring immediate hemodialysis.

The patient was ordered a carbohydrate controlled, heart healthy, renal diet; however, due to the patient’s knowledge deficits regarding this diet order and her expected poor compliance, a carbohydrate
controlled, no added salt diet was recommended. The patient received diabetes diet education focusing on sources of carbohydrates, how to locate carbohydrates on a nutrition label, and how to balance her plate. Brief renal diet education consisting of limiting her sodium intake and consumption of dark sodas was also discussed. The patient had a history of noncompliance with medical recommendations and since her discharge she has had multiple visits to the emergency department.

Compliance is a key factor to prognosis in patients with diabetic nephropathy. To manage the disease, they must take their insulin as prescribed, monitor their blood sugar, and control their carbohydrate intake. Once they reach the point where dialysis is required, they must attend each session as well as control their fluid, phosphorus, potassium, and sodium intakes; otherwise a poor prognosis can be expected.

**Case Study: Nutrition Education for an Illiterate Patient Diagnosed with Type II Diabetes Mellitus and Osteomyelitis**

*Erin Fauer, B.S., Johns Hopkins Bayview Dietetic Intern*

To estimate the nutritional needs for managing Type II Diabetes Mellitus in a patient with complications and comorbidities.

Diabetes mellitus is the most common endocrine disorder and one of the foremost public health concerns. Without proper management, complications including osteomyelitis can occur. Osteomyelitis is inflammation or infection of the bone/bone marrow. In the feet of diabetics with ulcers and wounds, there can be a contiguous spread of pathogens resulting in osteomyelitis.

A 64 year old female with a BMI of 38.86 kg/m$^2$ presented with a nine day history of right foot redness, swelling, and drainage. Her past medical history included: Stage II obesity, Type 2 DM, hypertension and Stage III chronic kidney disease. Medical work up revealed Osteomyelitis. Upon admission, blood glucose was 335 mg/dL, and HbA1C was 11.4%. The patient was on a Heart Healthy Carb Controlled diet.

Hyperglycemia was addressed with diet education focused on The Plate Method and insulin management. Daily Glargine and Aspart were ordered during admission. Before discharge the patient was able to name sources of carbohydrates, state what proportion of her plate each macronutrient should comprise, and estimate appropriate portion sizes without measuring equipment. Her blood glucose was under 200mg/dL for the last nine days of admission.

Although the patient achieved glycemic control prior to discharge, long term maintenance is difficult. Poor management and poor compliance was expected due to the patient’s lack of resources, unlikely follow up, and lack of knowledge to make appropriate food choices. Progression of osteomyelitis and comorbidities is expected.
Associations Between Energy, Alcohol, and Macronutrient Intake and Measures of Sleep Quality

Sarah Goff, B.S., Rachel Gabauer, B.S., Donna Gitt, B.S., Erin Reese, MPH Nutrition Department, Clinical Center, National Institutes of Health

Objective: To evaluate associations between dietary components and measures of sleep quality.

Introduction:
Previous research suggests a link between dietary intake and sleep, but limited studies measure both subjective and objective sleep quality. This study examined associations between energy, alcohol, and macronutrient intake and measures of sleep quality in healthy adults from the metropolitan Washington, DC area.

Methods:
This cross-sectional study examined baseline data from a natural history protocol conducted at the National Institutes of Health Clinical Center (n=223). Seven day food records were reviewed by nutrition staff and coded in Nutrition Data System for Research. Subjects also completed the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Objective sleep data was collected from a subset of the sample (n=103) using the Apnea Risk Evaluation System Unicorder. Multivariate general linear regression was used to evaluate associations between dietary variables and subjective and objective measures of sleep quality while controlling for potential confounders.

Results:
The subjects’ average (mean±SE) age and BMI were 40.5±0.9 years and 33.4±0.7 kg/m², respectively. Energy intake was associated with PSQI components of sleep disturbance (β=0.165, P=0.019) and daytime dysfunction (β=0.195, P=0.006). PSQI daytime dysfunction was associated with protein intake (β=-0.151, P=0.02). Remaining individual macronutrients and alcohol intake were not associated with any subjective or objective measures of sleep quality.

Conclusions:
Our findings are consistent with previous research suggesting higher caloric intake is associated with poorer sleep quality. However, our results suggest that subjective and objective measures of sleep used in this study are generally not associated with macronutrient intake.

Food Insecurity of Participants of the Special Supplemental Nutrition Program for Women, Infants and Children (WIC Program) of Frederick County, MD

Samantha Forster, VA/MD WIC Dietetic Internship & Frederick County WIC Program Dietetic Intern

Learning Outcome: To better understand the prevalence and severity of food insecurity among Frederick County WIC program participants to improve client services, nutrition education and community
referrals.

Introduction: WIC program participants are at or below 185% of the poverty line, which increases their risk for food insecurity and nutrition-related health problems. By studying the prevalence and severity of food insecurity among participants, the Frederick County WIC program will be able to provide more effective client services, nutrition education and community referrals.

Design: A six-question survey was offered to Frederick County, MD WIC Program participants for 3 weeks. The survey was modified from a six-item interview on food insecurity from the USDA and scored using their point system.

Results- Participants reporting food insecurity reported a range of severity from high food security to very low food security. The zip codes associated with each survey response were used to analyze the relationship between living in a food desert and food insecurity.

Conclusion- The data collected from this survey will be shared with the Frederick County WIC employees to broaden the office’s understanding of how food insecurity affects our participants. In the future, conducting the survey for a longer period of time is recommended to get a more representative sample of zip codes.

Effects of the Shipshape Weight Management Program on Changes in Body Composition, Dietary Intake, and Physical Activity in Active Duty Personnel Enrolled in a Fitness Enhancement Program

Michael Stablein, Michelle Mardock, Walter Reed National Military Medical Center Dietetic Intern

INTRODUCTION: In 2013 the United States Army alone spent $137 million to replace soldiers who could not adhere to body composition (BC) standards. The high prevalence of active duty personnel not within BC standards creates an intensified demand for effective weight management programs. PURPOSE: To examine the efficacy of the Shipshape Weight Management Program (SWMP) combined with a fitness enhancement program (FEP) in modifying participant’s BC, dietary intake, and physical activity (PA) volume.

METHODS: A prospective pre-post-design study examining changes in BC, dietary intake, and daily PA volume of active duty service members enrolled in the SWMP while also enrolled in a FEP was conducted at Walter Reed National Military Medical Center. Data were collected from participants at three time points: baseline, completion of the SWMP (approximately two months), and a six month follow up.

RESULTS: A preliminary analysis was conducted of participants (n=16, female=8). Males and females combined showed a significant reduction in total mass (p=0.002) and waist circumference (p=0.001) upon completion of the SWMP. Self-reported vigorous PA increased in all participants at two months (p=0.020); however, there were no increases in total PA at either 2 or 6 months. No changes in dietary intake were observed between males or females or over time at either two or six months.

CONCLUSION: BC improved and vigorous PA increased following the SWMP. However, improvements
were not maintained at six months even though participants were enrolled in a FEP which may indicate a need for further interventions following completion of the SWMP.

**Effects of an Accelerometer, Multidisciplinary Intervention, or Combined Approach on Body Composition and Weight Loss in Overweight and Obese Department of Defense Beneficiaries.**

*Derek B. Anderson, B.S., Travis Combest, B.S., Asha Jain, B.S., Robert Goldberg, B.S., Walter Reed National Military Medical Center Dietetic Intern*

**INTRODUCTION:** A high prevalence of overweight and obesity in Department of Defense beneficiaries demonstrates the continued need for effective weight loss interventions. Accelerometers, such as the ones used in wearable activity monitors, may facilitate weight loss and improve body composition.

**OBJECTIVE:** To compare the effect of three weight loss interventions: Multidisciplinary weight loss counseling (MDI) which is considered the standard of care, self-monitoring physical activity using an accelerometer (ACC), and a combined approach (CB) using an accelerometer and a MDI on weight loss and body fat percentage over a 3 month period.

**DESIGN:** Prospective, open-label, randomized control trial.

**METHODOLOGY:** Weight and percent body fat (BF%) were measured at baseline, 1, 2, and 3 months using direct segmental multi-frequency bioelectrical impedance.

**RESULTS:** Fifty four participants were analyzed. For all groups combined there was a significant change over 3 months in weight (-1.31±3.15 kg, p=0.010) and BF% (-0.82±1.92%, p=0.005). Only the CB and MDI groups had a significant change in weight (-2.34±4.31 versus -0.81±1.28 kg, p<0.05) at 3 months. The CB group had a significant change in BF% (-1.40±2.45%, p<0.05) at 3 months.

**CONCLUSION:** The ACC group had no significant change at 3 months in weight or BF% which suggests the use of an accelerometer alone does not facilitate weight loss or improve body composition. There were no significant differences between groups in changes over time and no significant group by time interactions, which suggests no additive benefit of combining an accelerometer with the standard of care.

**Nutritional Adequacy of Rate-Based Feeding in Adult Intensive Care Units at University of Maryland Medical Center (UMMC): A Retrospective, Quality Improvement Study**

*Kathryn Violette, Sara Quinteros-Fernandez, M.S., Taylor Sirles, Sara Foreman, UMMC Dietetic Intern*

**Introduction:** Rate based-feeding (RBF) enteral nutrition (EN) remains the most commonly used feeding protocol in medical institutions. However, recent evidence supports the use of volume based feeding (VBF) to increase total nutrition intake. SCCM and ASPEN guidelines recommend patients receive protein and caloric intakes that meet at least 80% of estimated needs. Data shows VBF allows patients to receive greater total volume of EN regardless of delivery interruptions. Based on these findings, the present study aimed to assess nutritional adequacy of RBF at UMMC.
Uniqueness of Project/Tool: This project showcases self-collected data from six ICUs at five separate time points.

Methodology: In this quality improvement retrospective study, data was collected from electronic medical records (EMR) over five, 72-hour periods from multiple ICUs.

Results: Data, from a sample of 94 ICU patients receiving RBF, was analyzed based on three-day average intakes. Forty-seven percent of the total sample met between 80-100% of goal calories and 23% met goal protein intake. Overall, 62% of EN orders matched Registered Dietitian (RD) recommendations. Of patients compliant with RD recommendations, 44.8% met goal calories and 22.4% met goal protein.

Conclusion: Initiation of a gradual ramp-up to goal VBF protocol may be beneficial to improve nutrition delivery at UMMC. However, inconsistent EN infusion, protein modular documentation and errors in EN orders may have skewed the data. System-wide documentation protocols and staff education are critical for initiation of VBF. Once documentation in the EMR is consistent, a repeat study is suggested to validate the need for VBF.

WIC BREASTFEEDING MOMS DURATION OF BREASTFEEDING IMPACTS POSTPARTUM WEIGHT RETENTION

Alesha Rogers, MPH VA/MD WIC Dietetic Internship

Research has shown an association between maternal weight gain with breastfeeding during the postpartum period. Breastfeeding for 6-12 months of life has proven to have significant long-term health benefits for both mother and infant. This study aims to determine whether the duration of breastfeeding impacts postpartum weight retention among WIC breastfeeding mothers at 4 to 12 months postpartum. A record review was conducted among 50 WIC breastfeeding moms (4 to 12 months postpartum) at a local WIC agency. Pre-pregnancy and postpartum weights, breastfeeding duration, and other contributing factors (diet, physical activity, and breastfeeding history) were obtained from the WIC program’s electronic record system (WOW) to evaluate factors associated with breastfeeding duration and postpartum weight retention. Results show a relationship between breastfeeding exclusively, breastfeeding mostly, and breastfeeding some and its impact on the retention of weight for breastfeeding mothers within these categories. The results were limited by time constraints and a larger sample size would provide more conclusive results. However, the WIC program has an unique opportunity to demonstrate patterns of breastfeeding duration and its impact on maternal weight gain among postpartum moms.

Diabetes Related Complications and Expense Knowledge of The University of Maryland Eastern Shore Student Population

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Malnda Cecil, Ph.D., RD, LDN and Cathy Ferraro, MS, RD, LDN

The literature is replete with information about college students’ knowledge of diabetes risk factors, but less information is available about their knowledge of diabetes related complications and expenses. Since diabetes is a common medical condition and one of the most expensive, this research was designed to evaluate students’ awareness of the complications and costs of the disease at a Historically Black College University (HBCU) on Maryland’s Eastern Shore. It was hypothesized that upperclassmen (graduate students, seniors, and juniors) would be more knowledgeable than underclassmen (sophomores and freshmen). A questionnaire was developed, field tested, and distributed to 191 students (106 underclassmen, 85 upperclassmen; 93 male and 98 female; ages 18-35) at the University of Maryland Eastern Shore. A significant number of students (82%) incorrectly identified gallbladder disease as a diabetes complication and only one quarter (25%) of students correctly identified lancets as a treatment supply for diabetes. There was also limited knowledge about which health professionals provide diabetes care—only 37% identified podiatrists. Over half (61%) of students recognized that medical costs for people with diabetes are twice as high compared to individuals without the disease; yet only 25% were able to identify monthly expenses and yearly medical costs and lost wages. Overall, few differences were found between underclassmen and upperclassmen regarding knowledge of diabetes complications and expenses. There appears to be a greater understanding among upperclassmen than underclassmen that diabetes can cause blindness. However, there was an overall lack of knowledge about diabetes complications and expenses among all the students surveyed.

Evaluation of the Knowledge of Pre-Professional Healthcare Students on the Differences between Type 1 and Type 2 Diabetes

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Diabetes is a prevalent disease in the United States and has a significant impact on healthcare. A ten-item questionnaire was distributed to 189 students pursuing medical careers in Physical Therapy, Physician’s Assistant, Pharmacy, and Nursing to evaluate their diabetes-related knowledge and preferences for working with either type 1 or type 2 diabetes. The study investigated how the level of knowledge varies among disciplines and years in each program. Notable trends identified include a large knowledge gap between physical therapy students and the other surveyed groups. Improved knowledge levels were noticed during later years in each program with the exception of nursing students. Questions related to life threatening hypoglycemia and use of medications and insulin where overwhelmingly answered incorrectly by all participants of the study. There was also a preference for working with type 2 diabetes. Further evaluation may be necessary to understand the reason why students indicate this preference.