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| Clinical Case Study |
| Veterans Affairs Medical Center |
| Oklahoma City, Oklahoma |
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1. **CLIENT HISTORY AND STATUS**

The patient I chose for my case study was a 90 year old, Caucasian, English-speaking, male Veteran. Unfortunately, during all encounters with the Veteran, he presented either lethargic, asleep, or sedated due to intubation. All my information regarding the Veteran’s life and nutrition-related history came from his family.

The Veteran was born and raised in Oklahoma. He completed high school before enlisting in the US Navy at age 17. In order to serve our country in WWII, the patient had to lie about his age. After serving 6 years in the Pacific, as a sonar man on a destroyer, the Veteran returned home to Oklahoma and attended a small junior college in western Oklahoma. He completed his associates’ degree in business. During his time in junior college, the Veteran met his wife. They were happily married for 62 years until her passing in 2012 due to cancer. Together they had 5 children – 3 girls and 2 boys. The Veteran was very close to his 5 children and their families. With every encounter I had with the Veteran, at least one family member, if not more, was present in the room with him.

To support his family, the Veteran worked in a variety of sales jobs before his retirement at age 65. These jobs included meat salesman, bread salesman, and retail sales. The Veteran’s family stated his jobs were often “blue-collar, working-class” but he was always a hard worker and a good provider for his wife and 5 children.

During his married life, he was a homeowner in the Oklahoma City metro area. After his wife’s passing in 2012, he decided to downgrade and began researching independent living centers within the Oklahoma City metro area. The daughters stated the independent living center in southwest Oklahoma City he selected is very similar to a full apartment with a bedroom, kitchen, living room, laundry space, and bathroom. Each unit within the living center is equipped with a pull-cord which notifies the staff at the center in case there were to be a medical emergency. The independent living center staff is not a medical staff, and would therefore be required to notify 911 if there was an emergency. The independent living center provides lunch and dinner meals. Lunch consists of light fare and dinner consists of home-cooked, comfort-foods traditional to Oklahoma and other southwestern states. The independent living center offers activities such as Bingo Night and dominoes league, church services, and day outings. The center even owns a limo to escort residents during evening group outings.

Up until his recent admittance, the Veteran demonstrated a high level of functional independence. Prior to admittance, the Veteran managed all ADLs and IADLs on his own, even adopting a kitten to keep him company. The only exception was he required the use of a motorized scooter when he was out in a public setting. Per Veteran’s family, he had been using the motorized scooter for a little over 1 year. When in his apartment, he used a straight cane to help with mobility. The family reported around the same time the Veteran started using the scooter; he also decided to not renew his driver’s license. The Veteran was driving his truck up until age 89 when he came in too close of contact with a curb resulting in a 2-tire blowout. The Veteran depended on his family for rides to appointments, social outings, and errands. Sometimes his family would run errands for him, such as picking up groceries or prescriptions.

The Veteran was a 100% service-connected Veteran and therefore received compensation benefits to help with medical expenses. A 100% service-connection allowed the Veteran to use the VA for medical services on an inpatient as well as outpatient basis. He was 100% service connected for hearing impairment (100%) and tinnitus (10%). Both these impairments were a result from his days as a sonar man. The Veteran did wear hearing aids to correct these impairments. Per Veteran’s family, the patient did not receive any medical care outside of the VA Health Care System. The Veteran did not engage in complementary/alternative medicine (CAM) and had no past history of CAM. The Veteran’s daughters reported that he had received past nutrition education related to weight management, type 2 diabetes mellitus, and heart health. One of his daughters stated the Veteran did not get much out of the diabetes self-management classes. She said he did not benefit from nutrition education regarding the ADA’s Create Your Plate method or diabetic exchange lists because he felt like it limited his food choices. The Veteran had a sweet tooth and liked to indulge in milkshakes and homemade cookies frequently. However his daughters reported the he would buy chocolate Atkins shakes as a way to have a treat similar to a chocolate milkshake, only lower in carbohydrates. His daughters did report the Veteran often monitored his blood sugars and recorded them in his meter log book. The Veteran was also knowledgeable on the signs/symptoms of hypoglycemia and how to properly treat it using the “15-15” Rule. Lastly, the Veteran did not eat beef because it irritated his gout. The Veteran had a 35 year history of tobacco use, with an average of 2 packs per day. He quit and was tobacco free for 26 years. Per Computerized Patient Record System (CPRS), the Veteran did not have a history of alcohol or illicit drug use.

As the Veteran aged, he was faced with more and more health problems. Perhaps the greatest health concern was his worsening kidney function. Prior to admittance, the Veteran had been seen at the outpatient nephrology clinic due to advanced stage 4/onset stage 5 Chronic Kidney Disease (CKD) with necessary initiation of hemodialysis (HD). At the time of the outpatient visit, the Veteran was against starting HD because he did not want to become a “burden” to his family in terms of needing rides to and from dialysis. Once admitted, the Veteran agreed to start HD in order to relieve uremia. Sadly, at the age of 90, the initiation of HD would not be enough.

The Veteran and his family are devout Baptists. They are all very strong in their faith and many members of the Veteran’s church family paid him a visit while he was admitted. I strongly believe that was vital for the Veteran as medical goals slowly began to shift to comfort care. The Veteran and his family also worked closely with Chaplain Services to help with end-of-life care. The notes recorded in CPRS by Chaplain Services allowed me to realize that the Veteran was prepared for the end of his life. In the event he could no longer make medical decisions, artificial nutrition was not something he wanted. Although I am a future dietitian and I hate to see any form of nutrition withheld, I am also a Christian and respected the Veteran’s wishes. Therefore I knew my plans/interventions might change in order to provide the best Veteran-centered care.

**II. MEDICAL HISTORY AND STATUS**

The Veteran and his daughter arrived at the Oklahoma City Veterans Affairs Medical Center (VAMC) Emergency Room (ER) at 10:02 PM June 20th, 2016. The Veteran’s chief complaint was chest pain. He first noticed chest pain when he and his cat were enjoying a night of television in his recliner. Instead of using the pull cord in his apartment, he decided to call his daughter and requested that she would take him to the ER. At this point, he had been experiencing chest pain for two hours. The Veteran was admitted to the VAMC and was transported to the Cardiac Intensive Care Unit (CICU) with the admitting diagnosis of unstable angina. Secondary diagnoses consisted of volume overload, End Stage Renal Disease (ESRD), hyperkalemia, and metabolic acidosis.

On June 21st, 2016, the Multidisciplinary Screening Inventory (MSI) was conducted on the Veteran. However no triggers, which include unintentional weight loss of ≥ 10 pounds, BMI ≤ 22 or ≥ 40, Braden Scale ≤ 18 or presence of pressure ulcers, food allergies/intolerances, or food restrictions due to religious beliefs, were present to indicate the Veteran needed a consult with nutrition at that time. The Veteran was initially seen by a nephrologist regarding End Stage Renal Disease (ESRD). As a result of uremia, the Veteran agreed to begin HD. The nephrologist documented plans to place a temporary dialysis catheter to start HD while inpatient. The Veteran was given Kayexelate and started on Lasix to restore potassium to normal limits. The Veteran also received sodium bicarbonate to correct metabolic acidosis. It is at this initial nephrology visit that a request for a nutrition consult was generated. The nephrologist cited the following reasons for the consult request: low albumin, chronic pressure ulcers, unstable angina, and elderly individual with renal needs.

For the remainder of June 21st, 2016 the Veteran was kept in CICU, receiving additional consults from Chaplain Services and Social Work. Social Work planned to help with coordinating a Renal Social Worker as well as transportation to and from the outpatient dialysis center once outpatient dialysis began. On June 22nd, the Veteran was seen by both nephrology and cardiology. At this time he was feeling better and having good urine output. The Veteran’s pH also began to improve and he was no longer in metabolic acidosis. Cardiology notes the patient had two episodes of choking on food and was at a risk for aspiration. At this point the patient is made NPO until speech can evaluate. Later in the morning, the patient was seen by wound care. The wound care nurse only noted moisture-related pink spots on buttocks likely due to diarrhea resulting from the Kayexelate treatments given on June 21, 2016. At this time the patient had a Braden Scale Score of 13 indicating moderate risk for pressure ulcers with a nutrition rating of 2 which is probably inadequate.

On June 22nd, I had my first encounter with the Veteran. I considered him to be at moderate risk per the Subjective Global Assessment (SGA). The Veteran was later seen by Speech and the following recommendations were made regarding diet: Veteran is allowed to initiate a soft diet consistency with thin liquids as tolerated. The SLP notes if a concern for reflux and aspiration still exists, patient may need gastroenterology services due to concern with esophageal motility. On the evening of the 22nd, he was transferred from CICU to Ward 5 North, which is a medical floor. At this time, everything was starting to look promising for the Veteran in terms of restoring labs and preparing for HD initiation.

On the morning of June 23rd 2016, a Rapid Response was called for hypoxia. The Veteran experienced an acute change in oxygen saturation and was transported to the Medical Intensive Care Unit (MICU). During MICU rounds, the Veteran was evaluated and the following diagnoses were made: respiratory stress secondary to flash pulmonary edema mostly likely due to renal failure and fluid overload. The Veteran was taken off nasal cannula and placed on Bi-PAP. Due to rapid changes in oxygen saturation and high concerns for fluid overload and renal failure, the Veteran undergoes a procedure for the placement of a central venous dual lumen dialysis catheter. Later that evening the patient undergoes his first round of HD removing only 1.5 liters.

On June 24th, 2016, MICU medical team concluded that, due to concerns of low blood pressure during HD treatments, the Veteran would likely need Continuous Renal Replacement Therapy (CRRT). Oxygenation was starting to improve and the Veteran was placed on oxymizer. Results of the Veteran’s chest x-ray continued to indicate diffuse widespread pulmonary edema.

Later that afternoon, I had my second interaction with the Veteran and obtained permission from his family to use him as my case study patient. June 25th – June 27th consisted of the Veteran receiving CRRT with intermittent HD and overall improvements in oxygenation.

During my follow-up nutrition assessment on June 27th, I noticed the Veteran had progressed to severe nutritional risk per the SGA mainly due to poor oral intake. Eventually the Veteran had a major setback in oxygenation and was placed back on Bi-Pap. He was also still experiencing large drops in blood pressure with CRRT and HD treatments at the time of my fourth interaction on the 29th of June. In the early morning of June 30th, the Veteran was intubated due to complete respiratory compromise. The patient was hypotensive and immediately placed on vasopressors. A palliative care consult was initiated per family’s request. I had my fifth and final interaction with the Veteran and his family that afternoon. I conducted a follow-up nutrition assessment but with the goals of care shifting to palliative, I felt it was no longer appropriate to continue my nutrition interventions. I noted in the palliative care consult that the family stated the Veteran did not want to be kept intubated and on artificial nutrition if the only other option was end-of-life.

The Veteran passed away peacefully in the Palliative Care Unit on July 5th, 2016. He was surrounded by his loving family. Just prior to his passing, he was pinned with the emblem of the US Navy and his family was presented with a tri-fold US flag.

Complete the table below for all diagnoses and relevant disorders included in medical record.

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| **Diagnosis or Disorder with ICD-10 code** | **Definitionand Etiology** | **Pathophysiology** | **Current Medical Treatment** | **Nutritional Treatment** |
| Hypoxic Respiratory Failure\*  ICD-10-CM J96.01 | -Occurs when the respiratory system can no longer carry out normal functions.1  -Usually a direct result of chronic conditions such as COPD or acute injury to the respiratory system such as those associated with ARDS.1  -In the case of this Veteran, pulmonary edema and volume (fluid) overload likely caused an increase in pressure within the alveolar and capillary space. This pressure impairs gas exchange and causes hypoxia.1, 2 | -Ineffective gas exchange across the lungs which results in any of the following: an abrupt cessation of respirations, confusion, or unresponsiveness.1  -The presence of hypoxia indicates either a specific body system or the whole body has been deprived of adequate oxygen.1, 2 | -Oxygen therapy via nasal cannula, face mask, CPAP, BiPAP, or mechanical ventilation. The Veteran received all of these forms of oxygen therapy plus oxymizer and high-flow nasal cannula. 1  -Additional treatments include pharmacological agents such as respiratory stimulants, bronchodilators, antibiotics, steroids, sedatives, narcotics, and paralytic agents.1 | -Nutritional needs will vary from patient to patient; therefore treatment will be individualized. Thorough nutrition assessment is warranted. If mechanical ventilation is utilized, nutritional treatments need to be appropriate in order to promote successful ventilator weaning. 2  -Early and aggressive nutrition support has been found to greatly improve patient outcomes. Research has found enteral nutrition within the first 24 to 48 hours can promote successful weaning.2  -Additional research does not support the use of omega-3 fatty acids, arginine, glutamine, and antioxidants to mute the systemic inflammatory response in MICU patients.8  -Research now points to use of a standard formula when starting EN in an intensive care setting.8  -Early and aggressive nutrition support would have been appropriate for this Veteran because he presented with a Nutric Score of ≥5 which indicates high nutrition risk and was initially hemodynamically stable. |
| Pulmonary Edema\*  ICD-10-CM J81.1 | -An abnormal accumulation of fluid in the lungs.  -Likely cause for this case would be the volume overload patient is experiencing due to ESRD. Other contributors to pulmonary edema include CHF, HTN, certain medications, and traumatic lung injury.3 | -As fluid begins to accumulate within the lungs, the flow of oxygen is impaired. As a result shortness of breath is experienced.3 | -Oxygen therapy via nasal cannula, face mask, CPAP, BiPAP, or mechanical ventilation. The veteran received all of these forms of oxygen therapy plus oxymizer and high-flow nasal cannula.1  -Medications such as diuretics are used to help remove fluid from the body.3 | -A diet low in sodium and fat has found to be beneficial. Additionally a fluid restriction of 1-1.5L/d may be warranted.1 |
| End Stage Renal Disease\*  ICD-10-CM N18.6 | -When individuals with chronic kidney disease have a glomerular filtration rate (GFR) of 15 mL/min/1.73m^2) or less along with a wide host of complications.1  -Leading causes of ESRD include poorly controlled diabetes and HTN.1  -At this point, a patient will require intervention in the form of dialysis or CRRT.1 | -Abnormal functions associated with ESRD include a dangerous amount of wastes building up within the blood, large increases in blood pressure, retention of excess fluid, an absence of urine production, altered mental function, and alterations in lab values.1 | - Medical treatments include HD, peritoneal dialysis (PD), CRRT, or kidney transplant.1  -Patients will often present with iron-deficiency anemia, low vitamin D status, and altered bone mineral metabolism. These patients will likely need Erythropoietic Stimulating Agent (EPO) therapy, iron supplementation, and vitamin D supplementation.1  -The use of phosphate binders with meals is necessary to limit the absorption of phosphorus.1 | -Malnutrition is a huge concern with this population, especially those ages 65 and above.4  -These patients require an immense amount of diet education and nutrition counseling. Major focal points include education on meeting high protein and calorie needs, while limiting sodium, potassium, calcium, phosphorus, and fluids to amounts that will not exacerbate symptoms of ESRD or yield poor dialysis treatments.1  -Additional exceptions with phosphorus include refeeding a malnourished individual as well as individuals receiving CRRT. If rehabilitating an individual via enteral nutrition, it is important to make sure serum phosphorus is within normal limits to ensure refeeding syndrome is not occurring. With CRRT, requirements for phosphorus might actually increase. Therefore continuous monitoring is a must.1, 2 |
| Unstable Angina\*  ICD-10-CM I20.0 | -Chest pain which occurs while at rest.1  -Possible etiologies include CAD and past history of MI.1  -Cardiac dysrhythmias and alterations in electrical transmission of cardiac muscles can be a direct result from hyperkalemia.1 Therefore the Veteran’s diagnosis of hyperkalemia could have very well caused his unstable angina. Had he not arrived to the ER, he may have gone into cardiac arrest.1 | -Erosion or rupture of atherosclerotic plaques takes place.1  -This results in thrombus formation and vasoconstriction.1 | -Percutaneous Coronary Intervention (PCI) with stent placement is often necessary.1 The Veteran had a past history of this.  -Use of medications that work to break apart clots, oxygen therapy, aspirin, and morphine are additional medical treatments.1 | -Diet education with an emphasis on limiting trans and saturated fats.1  -Therapeutic Lifestyle Changes diet has been found to be beneficial.1 |
| Hyperkalemia\*  ICD-10-CM E87.5 | -High potassium levels in the blood.1  -Usual cause is poor excretion of potassium; a common characteristic of renal failure.1 | -An abnormal shift in potassium from the intracellular fluid to the extracellular fluid within the body.1  -Poor kidney function disturbs the Renin-Angiotensin-Aldosterone System (RAAS). When this occurs, the ability of the kidneys to release the hormone renin is impaired and therefore aldosterone is not released by the adrenal glands when potassium levels in the body are elevated. As a result, potassium builds up in the body and is not excreted via urine.1  -This will greatly impact acid-base balance within the body.1 | -In times of emergency, calcium gluconate can be given to the patient via IV to correct any alterations in cardiac cells that could cause cardiac arrest.1  -In this case, the cation exchange resin, Kayexalate, was used. This drug works to promote the exchange of sodium for potassium in the large intestine.1  -Long-term treatment includes dialysis.1 | -A diet which sets a limit on potassium consumption is often necessary.1  -Research also points to the prevention of malnutrition and use of nutrition support if warranted in patients with poor renal function. With high levels of catabolism, high levels of potassium in the body can be a result.1 |
| Respiratory Acidosis\*  ICD-10-CM E87.2 | -Results from an excess of acid compared to base; in the case of respiratory, retention of carbon dioxide.1  - Usually the lungs are unable to expire CO2 effectively.1  -For the case of this Veteran, possible causes include pulmonary edema and poor kidney function.1 | -As CO2 increases within the lungs, more carbonic acid (H2CO3) results. Therefore pH trends towards acidosis.1  -Healthy kidneys would normally correct this acidic pH within 12 to 24 hours, but compensated kidneys cannot correct effectively.1 | -Oxygen therapy is necessary to correct.1 | -In order to prevent or exacerbate respiratory acidosis, specifically on patients who require nutrition support, overfeeding must be avoided. Research points towards slight underfeeding with a higher percentage of calories coming from protein to be more beneficial for the patient.1 |
| Metabolic Acidosis\*  ICD-10-CM E87.2 | -Any type of acidosis not caused by excessive amounts of CO2.1  -In this case study, metabolic acidosis likely occurred due to high levels of bicarbonate excretion from the kidneys.1 | -Poor kidney function disrupts the bicarbonate-carbonic acid buffer system within the body. The kidneys fail to respond to high levels of hydrogen ions in the blood as well as to retain HCO3-.1 | -The goal is to treat the main cause of acidosis. It is important to avoid correcting pH too quickly, as that can cause further complications.1 | -Nutritionally, it is important to encourage patients to adhere to any fluid restrictions. With CKD, the combination of volume overload and pulmonary edema can create both respiratory and metabolic acidosis.1 |
| Volume (Fluid) Overload\*  ICD-10-CM E87.7 | -The most common culprit to volume overload is a reduction in urine output.1  -When excess fluid is present, fluid will shift into interstitial spaces causing edema.1 | -Volume overload increases blood pressure and overworks the heart.1 | -Medical treatment will focus on the root cause.1  -In this case, the Veteran received diuretics. | -Encourage patients to adhere to fluid and sodium restrictions.1 |
| Anemia, Unspecified  ICD-10-CM D53.9 | -Unspecified anemia is generally considered more of a symptom due to an underlying disease.1  -In this case study, the likely cause of anemia was related to poor kidney function and the inability to produce the hormone erythropoietin.1 | -A lack of erythropoietin contributes to an overall decrease in the production of red blood cells and a subsequent drop in hemoglobin levels.1  -If left untreated, anemia can lead to any of the following: cardiac and ventricular hypertrophy, angina, CHF, malnutrition, and poor immunological response.1 | -Treatment centers around recombinant human erythropoietin (rHuEPO) as well as iron supplementation either orally or intravenously.1 | -Educating patients on heme and nonheme iron food sources.  -Educating patients on tips to absorb iron from nonheme food sources (this can be a bit of a challenge since a lot of common acidic foods used to promote iron absorption are high in potassium).1 |
| Abdominal Aortic Aneurysm without rupture  ICD-10-CM I71.4 | -A weak portion of the abdominal aorta wall without complete breakage. Usually the vessel widens and forms a rounded dilation.1, 5  -Likely etiologies include CAD, HTN, HLD, poor diet, and lack of physical activity. All of these contribute to plaque formation in vessels like the aorta.1 | -Inflammation and insult from plaques in the aorta are the likely cause of the weakened portion of the vessel wall.1 | -Often invasive surgical procedures are necessary to correct the dilation. These include open surgery with prosthetic graft placement or the less invasive endovascular aneurysm repair (EVAR).5 | -Similar to the nutrition treatments for CAD.  -A heart-healthy, low-sodium diet.  -Tobacco cessation.  -Weight loss  -Physical Activity  -Regular blood pressure and cholesterol screenings.1 |
| Coronary Artery Disease with Myocardial Infarction  ICD-10-CM I25-10 | -CAD is a term often used to classify all causes of heart disease which are associated with the narrowing of blood vessels supplying the heart.1  -Etiologies include family history, age, gender, HLD, HTN, T2DM, obesity, poor diet, tobacco use, and physical inactivity.1 | -An increase in the hardening of atherosclerotic plaque results in narrowing of blood vessels. If plaque breaks loose and becomes lodged in a narrowed vessel, blood flow ceases and the heart can become deprived of oxygenated blood. The end result is an MI.1 | -Drug therapy includes statin drugs, bile acid sequestrants, nicotinic acid, fibric acids, and in the case of an MI nitroglycerin, supplemental oxygen, aspirin, and morphine for pain.1  -One surgical treatment is Percutaneous Coronary Intervention (PCI) with stent placement. The Veteran had a past medical history of this.  -Other procedures include atherectomy/endarterectomy, laser angioplasty, Percutaneous Transmyocardial Revascularization (PTMR), and Coronary Artery Bypass Graft (CABG).1 | -The goals of nutrition intervention for CAD is to prevent further narrowing of blood vessels which could result in an MI.  -Nutrition intervention centers around the Therapeutic Lifestyle Changes (TLC) diet. This diet stresses limiting saturated and trans fats within the diet. This diet promotes consumption of monounsaturated fats, omega-3 fatty acids, and omega-6 fatty acids.1  -Other components of this diet include increasing fiber intake through whole grains, fruits, and vegetables.1  -Other interventions include physical activity and weight loss.1 |
| Gout  ICD-10-CM M1A.9 | -Gout is an inflammatory disease. It causes redness, swelling, pain, heat, and rigidity in the impacted joint.1  -Gout occurs when the amount of uric acid in the blood becomes so elevated that uric acid precipitates into crystals within synovial fluid of joints.1  -Risk factors for gout include genetics, being male, old age, obesity, a diet rich in purines, excessive alcohol intake, and use of certain medications including aspirin, diuretics, and cyclosporine.1  -Comorbid conditions that can increase the likelihood of gout include HTN, T2DM, HLD, renal insufficiency, and anemia.1 | -Uric acid is a result of purine metabolism.1  -The synovial fluid is an inadequate solvent for uric acid and therefore precipitate is likely to form there.1 | -For mild cases, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) are used to resolve pain and inflammation.1  -For chronic cases, glucocorticoids and cochicine are used to lessen inflammation.1 | -Lifestyle changes such as moderate alcohol intake, eating a diet lower in high/moderate purine rich foods, achieving a healthy body weight, and avoiding crash dieting.1 |
| Type 2 Diabetes Mellitus  ICD-10-CM E11.8 | -The direct result of the body’s inability to use the hormone insulin to transport glucose from the blood into the cells for use as energy.1  -Overtime insulin resistance can cause consistently elevated blood glucose levels. This can lead to damage of blood vessels, nerves, and organs.1 | -T2DM can occur when insulin demand is greater than what the pancreas is capable of producing.1  -On the other hand, the pancreas may be making enough insulin but the cells have developed a resistance to it due to consistently elevated levels.1  -Either abnormality can result in chronically elevated blood glucose levels.1 | -Medically, the first route of treatment is glucose lowering medications. There are several drug classes available on the market: biguanides, sulfonylurea agents, thiazolidinediones, GLP-1 receptor agonists, DPP-4 inhibitors, and alpha-glucosidase inhibitors.1  -Perhaps the most commonly used medication is metformin, however its use presents with terrible GI side effects. 1  -If blood sugars are still persistently elevated, the next step in medical treatment is initiation of recombinant human insulin. Several different insulin regimens can be used in order to better control blood glucose. 1  -Above all, the most important tool, in terms of medical interventions, is the use of a blood glucose monitor and log book in order to check and monitor blood sugars. 1 | -T2DM can be managed or prevented through a consistent carbohydrate diet and regular physical activity. 1  -Depending on how the patient learns and what the patient is willing to do, several methods can be used to teach patients about a consistent carbohydrate diet. These include the use of the ADA’s Create Your Plate, the Diabetic exchange system, or carbohydrate counting. 1  -Additional education on healthy, “nutrient-dense” carbohydrate sources vs “empty-calorie” carbohydrate sources may be necessary as well. 1 |
| Hyperlipidemia  ICD-10-CM E78.5 | -Hyperlipidemia is a term used to describe a lipid panel that reflects an increased likelihood for CAD development.1  -Usually a patient will present with elevated total cholesterol, LDL cholesterol, and Triglyceride values and depressed HDL cholesterol values. 1  -Many of the etiologies for HLD are similar to those for HTN and CAD. 1 | -High amounts of cholesterol and lipids in the blood can cause the development of atherosclerotic plaques. 1 | -Drug therapy includes statin drugs, bile acid sequestrants, nicotinic acid, and fibric acids. 1 | -Nutrition intervention centers around the Therapeutic Lifestyle Changes (TLC) diet. This diet stresses limiting saturated and trans fats within the diet. This diet promotes consumption of monounsaturated fats, omega-3 fatty acids, and omega-6 fatty acids. 1  -Other components of this diet include increasing fiber intake through whole grains, fruits, and vegetables. 1  -Other interventions include physical activity and weight loss. 1 |
| Hypertension  ICD-10-CM I10 | -An elevation in blood pressure which is chronic. 1  -Etiologies include heredity, gender, age, excessive sodium intake, physical inactivity, smoking, excessive alcohol intake, high levels of stress, and obesity. 1 | -Due to numerous etiologies, the exact pathophysiology of HTN is somewhat of a mystery. 1  -Much of research points to alterations in the RAAS. 1 | -Many different types of pharmaceutical agents are used to treat HTN. These include diuretics, ACE inhibitors, Beta blockers, and calcium channel blockers. 1 | -Strong research centers around the DASH diet, which is low in sodium and unhealthy fats and high in fiber. 1  -Weight loss has also been shown to reduce blood pressure. 1  -Tobacco cessation, alcohol consumption in moderation, and physical activity are all necessary to improve blood pressure. 1 |

\*Indicates diagnoses from recent hospitalization beginning 6/20/16

B. Additional Treatments as Applicable (surgery, physical therapy, occupational therapy, speech therapy, respiratory therapy, wound care, etc.)

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| Type of Therapy | Purpose | Relationship to  Nutritional Status |
| Placement of a central venous dual lumen dialysis catheter | -This procedure provided the Veteran with a temporary access to the circulatory system in order for dialysis to begin while inpatient. 1  -If the Veteran had been stable and life expectancy outcomes had improved, he would have received an arteriovenous fistula (AVF) in order to receive dialysis on an outpatient basis. | -When any form of dialysis is initiated, a patient’s energy and nutrient needs change greatly. Protein and calorie needs increase and monitoring of sodium, potassium, phosphorus, and calcium is necessary for successful dialysis. The patient is usually placed on a fluid restriction as well. This restriction is often based on a patient’s urine output or their dry weight after a dialysis treatment. 1 |
| Blood Transfusion | -When the Veteran consistently presented with a hemoglobin level ≤ 8 g/dL plus a history of CAD, he met criteria to receive a blood transfusion.  -Low hemoglobin can impact the Veteran’s ability to supply oxygen throughout his body, damage the cardiovascular system, and can cause drops in blood pressure leading to shock. 1 | -Persistently low hemoglobin may be an indicator of other co-morbid nutrition related conditions or a sign of critical illness. Comorbid nutrition related conditions include low levels of vitamin C and vitamin A, protein-energy malnutrition, zinc deficiency, and iodine deficiency. 1 |
| Erythropoietic Stimulating Agent (EPO) | -EPO is often necessary for patients with ESRD due to the inability to synthesize erythropoietin. 1  -EPO works to stimulate red blood cell production synthetically. 1 | -For effective EPO therapy, a patient needs to have a well-managed iron status. This is due to the need for iron in order to produce adequate red blood cells. 1  -Ineffective EPO treatments can result from inadequate iron, malnutrition, infections, inflammation, large blood loss, and deficiencies in vitamin B12 and folate. 1  -Often individuals receiving EPO are also receiving subsequent iron supplementation; this was the case for this Veteran. 1 |
| Social Work | -The social worker was working with the Veteran and his family to set up an outpatient dialysis regimen through DaVita. Per Veteran’s wishes, she was working to find a DaVita close to his home as well as transportation to and from dialysis. | -Besides the importance of dialysis to sustain the Veteran’s life, the dialysis center would have provided the Veteran with a RD knowledgeable in renal nutrition. This would provide the Veteran with more personalized patient care than what could be provided to him in an inpatient setting. 1 |
| Wound Care | -The Veteran presented with a Braden Score Scale of 13 which indicates moderate risk for pressure ulcer development with a nutrition rating of 2 which is probably inadequate. The nursing skin assessment also included possible skin breakdown in the sacrum/coccyx area therefore a wound care consult was initiated.  -The Ostomy/Wound nurse noted no pressure ulcers on sacrum/coccyx or elsewhere, only some issues on buttocks that appeared to be related to moisture. | -If skin breakdown and pressure ulcers occur, a patient will have increased needs for calories, protein, fluids, vitamin C, and zinc (with zinc, supplement no more than 14 days to avoid copper deficiency).6  -Research has shown supplemental glutamine does not improve wound healing. Supplemental arginine may or may not have an effect on improved wound healing; more research is warranted.6 |
| Bedside Swallow Evaluation | -A bedside swallow evaluation is done to determine what level of dysphagia is present in a patient. Depending on the results of the bedside swallow, a modified barium swallow study may be needed. 1 | -The results of this Veteran’s bedside swallow showed the Veteran had adequate oropharyngeal swallowing considering advanced age and denture requirements. Choking was likely due to gastric reflux.  -As a precaution, he was given a soft diet consistency with thin liquids as tolerated. A modified diet consistency could potentially help with increased oral intake.  -It is important to talk with the patient to make sure they understand why diet consistency modification took place and to provide them with information on how to carry out a soft diet in the home should they be discharged. 1 |
| Respiratory Therapy | -Respiratory therapy is provided by a nurse who is a specialist in diseases of the respiratory system. 1  -He or she is knowledgeable in the various equipment used to provide supplemental oxygen to patients; as well as what indicators to monitor when accessing oxygen status.1 | -Good communication between respiratory therapists and RDs is necessary in order to provide the right amount of nutrition to the patient. Energy needs will depend highly on the patient’s current situation in regards to overall oxygenation, what mode of supplemental oxygen they are placed on, and their overall metabolic state. 1 |
| Hemodialysis (HD) | -HD requires access to the blood either through an AV fistula or graft. Once access is obtained, a patient is hooked up to a dialysis machine with a semi-permeable membrane referred to as a dialyzer. 1  -Wastes and uremic toxins are removed from blood by the dialyzer and the clean blood is returned to the body. 1 | -HD has a significant impact on overall nutrition status.  -Several studies looking at elderly populations receiving HD have found an increased likelihood for malnutrition, frailty, and overall mortality.4, 7 |
| Continuous Renal Replacement Therapy (CRRT) | -CRRT is often used with acute kidney injury; especially in patients with multiple organ failure.1  -Patients that typically go on CRRT include the hemodynamically unstable, those with inadequate cardiac output, and those who simply cannot tolerate HD. 1  -In the case of this Veteran, he continued to be hypotensive during HD and thus was placed on CRRT.  -CRRT is provided continuously at a much slower rate. This allows for a significant amount of fluid to be removed. 1 | -With CRRT, energy needs, especially protein needs, are much higher. 1  -As with HD, patients placed on CRRT are at an increased risk for malnutrition simply due to the high levels of catabolism within the body. 1, 8 |
| Palliative Care | -The palliative care team works to provide optimum end of life care for Veterans. The goals are to provide comfort to the patient and their loved ones. | -This impacts nutrition status because comfort care may mean no longer using nutrition support to sustain life.  -This was the case for this Veteran. He had an advanced directive that indicated removal of “artificial nutrition” should likelihood of death be evident. Should I have continued my role in his care, I would have worked to provide food/beverages of the Veteran’s choice should he desire to eat. |
| Chaplain Services | -Chaplain services provide spiritual support to Veterans and their loved ones. | -In my own personal biases, I have always believed strong spiritual health can impact how one views nourishment of the body. |

**III. NUTRITION SCREENING AND ASSESSMENT**

1. Subjective Food and Nutrition Related History
   1. Food and Nutrient Intake & Food and Nutrient Administration

At the independent living center, the Veteran was provided with lunch and dinner. The family provided me with a lunch and dinner menu which allowed me to have a better glimpse into the patient’s diet prior to admittance. The lunch menu consisted of lighter options such as salads, hot or cold sandwiches, soups, and an entrée of the day. The dinner menu was heavier with comfort food items such as meatloaf, chicken pot pie, and country fried steak. Since breakfast was not provided, the Veteran would often drink chocolate Atkins shakes as his breakfast meal. For snacks the Veteran enjoyed sweets, particularly chocolate milkshakes and homemade cookies from his granddaughter, or Ritz crackers with peanut butter. Prior to admittance, the Veteran functioned independently with meal set-up and self-feeding.

Although the Veteran had many medical diagnoses which could be impacted positively or negatively by dietary choices, the family did not report any special diets the Veteran followed. The Veteran had received past nutrition education for weight management, diabetes, and heart health, but the Veteran felt very restricted in terms of food choices. The family did cite an aversion towards beef due to gout. The family denied any food allergies or intolerances.

Prior to admittance, the Veteran’s appetite was poor. The Veteran’s daughters reported he usually would eat 50% at breakfast and dinner and 0% at lunch. In fact the daughters shared a humorous story with me regarding the Veteran and his lunch meals. To make his daughters believe he was eating regularly, he would secretly give his lunch to his youngest son. Eventually the daughters caught on. Using the menus provided by the daughters, Appendix A depicts the Veteran’s food and nutrient intake prior to admittance.

Upon admission to CICU, the Veteran was placed on a 2100 calorie American Heart Association diet order. This diet order is typically the standard diet order used in CICU. This diet is lower in sodium and fat compared to the House (Regular) diet order. On the evening of June 20th, the Veteran experienced two episodes of choking on foods but not liquids. Due to concern for aspiration, the Veteran was made NPO until Speech could evaluate. After the Veteran’s bedside swallow study, the Veteran’s diet order shifted to a Soft, 2200 calorie American Diabetic Association diet with thin liquids as tolerated.

Even with the modified diet texture, the Veteran’s appetite continued to be poor. The family stated his appetite had been the best after his first HD treatment on June 24th. His son stated he ate 50% of each item on his breakfast tray; Appendix B depicts the Veteran’s intake during admittance. After that point, the Veteran’s intake steadily declined until the point where my interventions warranted nutrition support. Enteral nutrition was utilized in my interventions.

In addition to major changes in intake during the Veteran’s hospitalization, significant declines in his ability to set-up and self-feed occurred. Initially he needed help opening up food items. As the Veteran became more lethargic, fatigued, and critically ill, he lost the ability to hold on to food items and utensils. In one instance his daughter reported the Veteran spilling chocolate Ensure Muscle Health all over himself.

* 1. Medication and Herbal Supplement Use – Subjective and Objective

In addition to typical dietary intake, the Veteran took prescribed VA medications regularly. Many of his outpatient medications are noted in the table below. His daughter specifically stated he was good about taking his glipizide (5 mg tab by mouth, twice daily) and would keep track of his blood glucose in his glucose meter logbook. No reports of non-VA medication use, but he did take a renal multivitamin at home. A renal multivitamin is mainly composed of water soluble vitamins. Large doses of fat soluble vitamins have not been found to be beneficial for patients with CKD and perhaps may be contraindicated.1 Based on the Veteran usual intake, taking a renal multivitamin would be appropriate in order provide adequate micronutrients. The Veteran presented to the ER already on a host of prescribed VA medications. During the Veteran’s hospital stay, additional medications were warranted. The table below indicates all prescribed outpatient and inpatient medications utilized during the Veteran’s admittance.

|  |  |  |  |
| --- | --- | --- | --- |
| Medication | Dosage and Route of Administration | Indication(s)9 | Food/Medication Interactions9 |
| Generic name of medication |  |  |  |
| Nitroglycerin Topical Ointment | 1 inch topical  Administer Once | -Given at time of ER arrival.  -Anti-Angina | -Dry mouth, nausea/vomiting, abdominal pain  -Avoid with alcohol |
| Aspirin | 325 mg by mouth  One Time Order | -Given at time of ER arrival.  -Analgesic, Anti-pyretic, Anti-arthritic, NSAID, To prevent CVA or MI, Platelet Aggregation Inhibitor | -Food decreases rate of absorption  -Increase foods high in vitamin C and folate with long term use,  -Avoid/limit natural foods which affect coagulation, cause sudden serious gastric bleeding  -Depletes vitamin C, Fe, folic acid |
| Sodium Polystyrene Sulfonate Suspension | 30 g/120 mL by mouth once | -Given at time of ER arrival.  -Anti-Hyperkalemia  -Cation Exchange Resin | -Avoid potassium supplement  -Decreases serum potassium, magnesium, calcium  -Anorexia, nausea/vomiting, gastric irritation, diarrhea, constipation, fecal impaction, bezoars, GI ulceration/necrosis |
| Sodium Bicarbonate Tab | 650 mg by mouth twice daily | -Antacid  -Alkalinizing Agent | -Take iron supplement separately  -Caution with calcium supplement or high milk intake  -May increase thirst  -May cause edema, belching, gastric distention, cramps, flatulence |
| Carvedilol Tab\* | 25 mg by mouth two times a day | -CHF treatment  -Anti-HTN  -Non-selective Beta blocker & Alpha1 blocker | -Avoid grapefruit juice  -Depletes CoQ10  -Avoid natural licorice  -Can cause weight gain, nausea/vomiting, diarrhea |
| Potassium Chloride Injection, Solution 40 MEQ in Sodium Chloride 0.9% Injection | 500 mL intravenously  Infuse over 4 hours – 3 doses total | -Electrolyte  -Mineral Supplementation  -Needed due to Veteran’s drop in potassium after Kayexelate administration and diarrhea | -May cause GI irritation, nausea/vomiting, diarrhea, flatulence, abdominal pain |
| Sodium Chloride 0.9% | Intravenous Bag Injection in Normal Saline  500 mL | -Electrolyte  -Mineral Supplementation  -Fluid replacement  -Works to increase blood pressure | -Caution with high blood pressure, fluid retention, CHF, kidney disease, liver disease, pleural effusion |
| Naloxone | 0.4 mg/mL Injection, Solution  Give Once | -Opioid  -Pain management | -Avoid Alcohol |
| Furosemide\* | 500 mg in Normal Saline 50 mL concentration:  Run at 80 mg/hr intravenously | -Loop Diuretic  -Anti-HTN  -To treat edema associated with CHF, renal, or hepatic disease | -Depletes potassium, calcium, magnesium, sodium, thiamine, vitamin B-6, vitamin C, and zinc  -May cause anorexia, increased thirst, oral irritation, cramps, nausea/vomiting, diarrhea, constipation |
| Albumin 25% (Human) Injection | 50 g IV Once  Given during HD | -Anti-hypoalbuminemia  -Often indicated in order to correct fluid overload and restore oncotic pressure within the body | -Use with caution when the following conditions are present: cardiac insufficiency, HTN, pulmonary edema, esophageal varices, severe anemia, anuria |
| Zolpidem Tab | 5 mg by mouth once | -Sleep Aid | -Do not take immediately after meals  -Food decreases absorption  -May cause dry mouth, pharyngitis, nausea/vomiting, hiccups, diarrhea, constipation  -Avoid alcohol |
| Metoprolol Injection | 5 mg Intravenously daily | -Anti-HTN, Anti-Angina, CHF Treatment, MI Treatment  -Cardioselective Beta-blocker | -Low sodium, low calorie diet may be recommended  -Avoid natural licorice  -May cause dry mouth, nausea/vomiting, dyspepsia, flatulence, diarrhea, constipation |
| Piperacillin/Tazobactam | 2.25 g in Ready to Use Solution 50 mL Intravenously Piggy-Back; Infuse over 30 minutes | -Used to treat infections | - Take 1 hr before/2hr after meals to increase absorption;  -Caution w/ vitamin K supplements;  -Anorexia/nausea/vomiting/diarrhea; oral candidiasis; abdominal pain; --Depletes Biotin, Inositol, Thiamine, Riboflavin, Niacin, vitamin B-6, vitamin B-12, vitamin K, Lactobacillus acidophilus, and Bifidobacteria bifidum |
| Allopurinol Tab\* | 100 mg by mouth daily | -Anti-Gout medication | -Drink 2.5-3 L/day, avoid large doses of vitamin C  -Taste loss/changes, nausea/vomiting, gastritis, abdominal pain, diarrhea |
| Amlodipine Tab\* | 10 mg by mouth daily | -Anti-HTN, Anti-Angina, Ca Channel Blocker | -Depletes CoQ10, Riboflavin  -May take with food to decrease GI distress  -Avoid natural licorice  -No significant interaction with grapefruit/related citrus  -May cause dysphagia, nausea, cramps |
| Aspirin\* | 81 mg Tab, Chewable by mouth daily | -Analgesic, Anti-pyretic, Anti-arthritic, NSAID, To prevent CVA or MI, Platelet Aggregation Inhibitor | -Food decreases rate of absorption  -Increase foods high in vitamin C and folate with long term use,  -Avoid/limit natural foods which affect coagulation, cause sudden serious gastric bleeding  -Depletes vitamin C, Fe, folic acid |
| Atorvastatin Tab | 40 mg by mouth daily | -Anti-HLD: Works to decrease total & LDL cholesterol as well as TG  -Slows progression of atherosclerosis | -Caution with grapefruit/related citrus  -Take without regard to food  -May cause nausea, dyspepsia, abdominal pain, constipation, diarrhea, flatulence |
| Calcium Acetate Cap, Oral\* | 2668 mg (4 caps)by mouth three times a day with meals | -Phosphate binder  -For use in renal failure | -Avoid calcium supplement/antacid  -Take iron separately  -Decreases iron absorption  -May cause anorexia, nausea/vomiting, constipation |
| Cyanocobalamin Tab\* | 1000 mcg by mouth daily | -B-complex vitamin  -Anti-anemic | -Caution with folate supplement  -May mask pernicious anemia  -May cause mild transient diarrhea  -Limit alcohol |
| Insulin Regular Injection | Subcutaneously  Give as needed using the following correction factor: For Blood Glucose of 150-199 give 1 unit, 200-249 give 3 units, 250-299 give 5 units, 300-349 give 7 units, >349 give 8 units and notify MD | -The Veteran did not require the use of insulin at home.  -In the inpatient setting, patients are often given insulin subcutaneously or through a drip because hyperglycemia can occur due to catabolism and metabolic stress. Even individuals without T2DM may require an insulin drip if they were to become critically ill. (nelms) | -Time injection in relation to food  -Can cause weight gain  -Caution with alcohol – may cause hypoglycemic effect |
| Isosorbide Mononitrate Slow-Acting Tab\* | 30 mg by mouth daily | -Anti-Angina  -Vasodilator | -Take on empty stomach or with water to increase rate of absorption  -May cause dry mouth, epigastric distress  -Avoid with alcohol |
| Lanthanum Carbonate Tab, Chewable\* | 250 mg by mouth three time daily with meals | -Phosphate binder for use in ESRD | -Take with or right after meals  -May cause nausea/vomiting, abdominal pain, diarrhea, constipation |
| Levothyroxine (Synthroid) Tab\* | 0.1 mg by mouth once daily | -Thyroid Hormone (T4) | -Take with glass of water on an empty stomach before breakfast to increase drug absorption.  -Take iron, calcium, or magnesium supplement separately from drug by ≥4 hours  -Poor drug absorption can occur also with soy, walnuts, cottonseed meal, and high fiber foods  -Caution with grapefruit/related citrus  -Can cause appetite changes, decreased weight |
| Ondansetron Injection Solution | 4 mg intravenously every 6 hours as needed | -Anti-Emetic, Anti-Nauseant | -May cause dry mouth, abdominal pain, constipation, diarrhea |
| Ferrous Sulfate Tab | 325 by mouth three times daily | -Hematinic  -Anti-Anemic  -Mineral Supplement | -Take with water of juice on empty stomach  -May take with food to decrease GI distress but food decreases absorption by 50%  -Meat/fish/poultry will increase absorption  -Take 1 hour before or 2 hours after bran, high phytate foods, fiber supplements, tea, coffee, caffeine, red grape juice, wine, soy, dairy products, or eggs  -Take carbonate acids, calcium, phosphorus, zinc, or copper supplements separately by ≥2 hours  -May cause anorexia, nausea/vomiting/diarrhea/constipation, dyspepsia, bloating, or dark stools |
| Heparin Injection, Solution | 500 units/mL subcutaneously every 8 hours | -Anti-Coagulant | -May cause N/V, abdominal pain, GI bleeding, constipation, black tarry stools |
| Pantoprazole Tab | 40 mg by mouth daily | -Anti-GERD  -Anti-Secretory  -Proton Pump Inhibitor | -May decrease iron and vitamin B12 absorption  -May increase gastric pH, nausea, abdominal pain, diarrhea |
| Epoetin Alfa, Recombinant Injection, Solution | 500 units subcutaneously Mon-Wed-Fri @0900 | -Recombinant Human Erythropoietin  -Anti-Anemic  -Stimulates RBC production | -May need iron, vitamin B12, or folate supplement  -ESRD: Diet compliancy mandatory  -May cause nausea/vomiting and diarrhea |
| Fentanyl Injection, Solution | 25 mcg intravenously every 4 hours as needed | -Analgesic  -Narcotic  -Opioid  -Provides sedation | -May cause anorexia, dry mouth, dyspepsia, N/V, hiccups, abdominal pain, flatulence, diarrhea, constipation  -Avoid alcohol |
| Midazolam Injection, Solution | 1 mg intravenously every 2 hours as needed | -Sedative  -Anesthesia Adjunct | -Caution with grapefruit/related citrus  -Caution with sedative herbal products like chamomile or kava; can increase drug effect  -Caution with caffeine; can decrease drug effect  -Caution with Echinacea; can decrease drug effect  -Avoid St. John’s Wort  -May cause dry mouth or increased salivation, nausea/vomiting/diarrhea/constipation |
| Midodrine Tab | 2.5 mg by mouth twice daily | -Blood Pressure Support; treats hypotension | -Caution with nutrition support and hemodynamic instability; may cause gut ischemia |
| Norepinephrine Injection | 16 mg in Dextrose 5%/Water 250 mL concentration: 64 mcg/mL initially, titrate to MAP 60 and then 2-4 mcg/minute | -Vasopressor | -Caution with nutrition support and hemodynamic instability; may cause gut ischemia |

\* Denotes a medication used inpatient as well as outpatient

* 1. Knowledge/Beliefs/Attitudes

The family shared with me the relationship the Veteran had with his typical diet. The Veteran found great pleasure in sweets and this became clear to me as I collected his typical food intake. The Veteran also did not like be restricted on what foods he could and could not have. As a result, the Veteran did not benefit from nutrition education regarding diabetes, heart health, or weight management. One daughter even said the Veteran would “eat what he wanted, when he wanted”. I noted the daughters honored this philosophy throughout the Veteran’s admission. After providing nutrition education regarding the importance of protein for wound healing and dialysis treatments, the daughters were still hesitant in encouraging the Veteran to eat the protein foods on his tray. I suspected the daughters’ hesitation was due to the want to respect their father’s relationship towards food and diet. The Veteran’s family denied any food allergies.

* 1. Behavior

Although a widower, the Veteran presented with a strong social network including family, his church family, his friends from the independent living center, and of course his kitten. His lunch and dinner meals were provided in the living center dining hall and his son would usually join him at the lunch meal. Breakfast and snacks were consumed in his apartment. As the Veteran’s appetite began to decline, the Veteran developed a habit of giving away his lunch to his son. His daughters believed this habit was done as an attempt to hide his rapid health declines. The Veteran did not demonstrate adherence to any strict diet regimens, however the Veteran did avoid beef completely. This was done as an attempt to better control his gout.

* 1. Factors Affecting Access to Food and Food/Nutrition-Related Supplies

The Veteran was very fortunate in that food insecurity was not a daily concern for him. Through the independent living center as well as the groceries his family would pick up for him, the Veteran always had access to safe food. The Veteran always had safe access to water as well. Per the Veteran’s daughters, he had the ability to buy his own blood glucose test strips and meter so that he could monitor his blood glucose at home. Lastly, the Veteran was able to obtain his dentures through the VA and therefore was able to chew most foods without difficulty. The Veteran’s use of enteral nutrition while inpatient would not yield a necessity for at-home tube feeding formula or nutrition support equipment.

* 1. Physical Activity and Function

At 90 years old, the Veteran was truly functional on his own with all ADLs and IADLs including the ability to remember to eat meals and feed himself without the use of adaptive devices. His only limitations were the use of a straight cane for short distance mobility, a motorized scooter for longer distance mobility, and the lack of a driver’s license. Due to limited mobility, the Veteran did not engage in any physical activity. His family was not even sure when the Veteran had last participated in physical activity. Per CPRS Medical Record, no reports of physical activity participation were indicated.

* 1. Nutrition-Related Patient/Client-Centered Measures

Overall, the Veteran had the means to have a high nutrition quality of life. He had the finances to purchase safe food and water. He had received nutrition education on several occasions through the VA. He also had a strong support system which is key for overall high quality of life. However, the Veteran’s approach of eating “what he wanted, when he wanted” versus moderation kept him from achieving a high nutrition quality of life. I truly believe many of the Veteran’s co-morbid conditions could have been prevented or lessened if he had used his financial resources, his nutrition-related knowledge, and his support system more appropriately.

1. Anthropometric Measurements

|  |  |  |
| --- | --- | --- |
| Date | Usual Body Weight – Per Veteran’s Family | Ideal Body Weight |
| 6/22/16 | 160 lb | 166 lb |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Height | Weight | BMI | Note |
| 6/16/16 | 70 in  Actual | 159 lb  Actual | 22.9  Normal | -Weight 4 days prior to admit at outpatient appointment.  -Weight upon admission on 6/20/16 was not obtained.  -Currently 99.4% UBW & 95.8% IBW |
| 6/24/16 | 70 in | 163.5 lb  Actual | 23.5  Normal | -Veteran had volume overload at admission and this weight may reflect current fluid status  -Currently 102.1% UBW & 98.5% IBW |
| 6/28/16 | 70 in | 151 lb  Actual | 21.7  Normal | -A 7.6% weight change in 4 days; noted Veteran is receiving diuretics and undergoing CRRT/intermittent HD  -Currently 94.3% UBW & 91.0% IBW |
| 6/29/16 | 70 in | 146.4 lb  Actual | 21.0  Normal | -A 3.0% weight change in 1 day and a 10.5% weight change since 6/24/16; at this point weight change could be due to poor PO intake, diuretic use, and/or CRRT/intermittent HD treatments  -Currently 91.5% UBW & 88.2% IBW |

1. Biochemical Data, Medical Tests and Procedures
   1. Laboratory data – The dates listed below were labs drawn on the days I visited with the Veteran.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Lab Test** | **Normal Range** | **6/22** | **6/24** | **6/27** | **6/29** | **6/30** | **Explanation1, 10** |
| Glucose | 70-105 mg/dL | 137  H | 179  H | 144  H | 146  H | 163  H | Hyperglycemia occurs in patients with poorly controlled T2DM. Additionally the Veteran in this case was under high metabolic stress. When the body is in a catabolic state, blood glucose is elevated. This explains why the Veteran was placed on an insulin regimen verses just his glipizide pill. |
| Blood Urea Nitrogen | 10-20 mg/dL | 125  H | 73  H | 67  H | 54  H | 53  H | BUN can be elevated with high protein intake, inadequate urea excretion by the kidneys, dehydration, catabolism, CHF, poor dialysis, GI bleeding, and certain medications. After dialysis initiation on the 23rd, BUN did drop but still remained high up until passing. |
| Creatinine | 0.6-1.2 mg/dL | 7.38  H | 5.62  H | 2.22  H | 3.16  H | 2.72  H | Creatinine is high during times of muscle damage, catabolism, MI, CKD, poor dialysis, certain medications, and high protein intake. The Veteran had ESRD, was in a catabolic state, and had difficulty achieving good dialysis due to becoming hypotensive. |
| Sodium, Plasma | 136-145  mEq/L | 148  H | 138 | 134 | 140 | 137 | Sodium can be elevated due to dehydration or imbalances in maintaining electrolyte homeostasis. In this case, this lab was drawn the day after the Veteran had received the cation exchange resin, Kayexelate. This drug works to excrete potassium and maintain sodium. |
| Potassium, Blood | 3.5-5  mEq/L | 2.9  L | 4.2 | 4.3 | 4.3 | 3.8 | Potassium can be decreased due to diuretic use, diarrhea, vomiting, or malabsorption. In this case, the Veteran was given Kayexelate to relieve hyperkalemia upon admission. The Veteran’s family reported he also suffered from large amounts of diarrhea as a side effect of this drug. |
| White Blood Cell Count | 4.5-10.9  k/cmm | 12.2  H | 11.6  H | 12.0  H | 13.7  H | 14.7  H | White blood cells are elevated at times of infection, inflammation, trauma, stress, catabolism, and certain medications. The Veteran arrived at the ER already in a lot of stress due to unstable angina and failing kidneys. As he began to deteriorate, his body was in a complete state of catabolism resulting in continual increases in WBC Count. |
| Hemoglobin | 14-18 g/dL  Men | 6.8  L | 7.7  L | 7.5  L | 7.7  L | 7.6  L | Hemoglobin can drop due to iron deficiency, anemias, blood loss, and ESRD. Erythropoietin is produced by healthy kidneys. In failing kidneys, erythropoietin no longer works to generate red blood cells and therefore a reduction in overall hemoglobin occurs. |
| Hematocrit | 42-52%  Men | 20.6  L | 23.1  L | 23.3  L | 23.6  L | 23.6  L | Hematocrit decreases with ESRD, anemias, loss of blood, and insufficient ESA administration. The Veteran had ESRD, blood loss (due to catheter placement and dialysis), and likely received ESA too late in the game to improve hematocrit. |
| Albumin, Blood | 3.5-5  g/dL | 3.2  L | 2.5  L | 3.0  L | No New  Value | No New  Value | Albumin is not a sign of nutritional status but rather a sign of morbidity/mortality. The Veteran was experiencing inflammation, stress, catabolism, all of which decrease albumin. Albumin can also decrease in the presence of fluid overload, which was one of the Veteran’s admitting diagnoses. |
| PO4 | 2.2-4.5  mg/dL | 12  H | No New  Value | 2.6 | 2.7 | 4.2 | PO4 can be elevated due to ESRD and the kidneys inability to excrete PO4, osteodystrophy, excess intake, poor dialysis, or insufficient use of phosphate binders with meals. It was likely a combination of factors that lead to the Veteran’s elevated PO4. He was not receiving dialysis at that point for his failing kidneys and had a diet recall that included items high in phosphorus like chocolate milkshakes and convenience foods. Even if he was taking binders, they likely did not provide enough coverage for those meals. |
| Magnesium | 1.6-2.5  mg/dL | 1.8 | 2.2 | 2.1 | 2.1 | 2.0 | Magnesium is an important lab to monitor in patients with cardiac issues. Low magnesium can increase cardiac issues and disrupt electrical charges. CKD can increase magnesium mainly because excess magnesium is no longer excreted properly. The Veteran was receiving loop diuretics which increase magnesium levels yet was receiving antibiotics and insulin which decrease levels. These drugs may have been able to help maintain values within normal limits. |
| Calcium | 8.6-10.3  mg/dL | 6.9  L | 8.7 | 11.0  H | 8.9 | 9.1 | Calcium and phosphorus have an inverse relationship. The Veteran initially had elevated phosphorus and decreased calcium. Calcium can be low due to insufficient vitamin D levels, malabsorption, low albumin levels (albumin transports calcium), and renal failure. Calcium can be elevated due to hyperparathyroidism. |
| Vitamin D, 25-Hydrox | 32-100  ng/mL | 21.6  L | No New  Value | No New  Value | No New  Value | No New  Value | Low levels of vitamin D can result from inadequate vitamin D intake, lack of exposure to sunlight, malabsorption, or kidney disease. A deficiency of vitamin D can cause osteomalacia and can contribute to osteoporosis. In the case of this Veteran, failing kidneys cannot effectively synthesize the active form of vitamin D, calcitriol. |
| Iron | 50-170  ug/dL | 16  L | No New  Value | No New  Value | No New  Value | No New  Value | Iron can be low due to inadequate iron intake, poor absorption, or blood loss. Likely the Veteran’s low iron status was due to a limited production of RBCs which contain hemoglobin. Hemoglobin is what binds and transports iron throughout the body. |
| Total Iron Binding Capacity  (TIBC) | 250-420  ug/dL | 186.4  L | No New  Value | No New  Value | No New  Value | No New  Value | TIBC can be low due to malnutrition, chronic disease, infection, and inflammation. The Veteran presented with all four of these indicators upon admission. |
| Iron Saturation | 20-50  %  Men | 8.6  L | No New  Value | No New  Value | No New  Value | No New  Value | Iron saturation can be low due to malnutrition, chronic disease, infection, and iron deficiency. The Veteran presented with all four of these indicators upon admission. |
| Transferrin | 215-365  mg/dL  Men | 125.1  L | No New  Value | No New  Value | No New  Value | No New  Value | Transferrin can be low due to malnutrition, chronic disease, infection, and inflammation. The Veteran presented with all four of these indicators upon admission. |
| Calculated Estimated Serum Osmolality | 275-295  mosm/kg | 354  H | 320  H | 309  H | 316  H | 310  H | Serum osmolality may be elevated during times of hyperglycemia, uremia, dehydration, hypernatremia, or poor secretion of antidiuretic hormone. The Veteran presented to the ER with uremia due to ESRD and hyperglycemia. The Veteran was also placed on diuretics in order to remove fluids. |
| Estimated Glomerular Filtration Rate (EGFR) | Normal Kidney Function  Value is ~125  mL/min/1.73m^2 | 7  ESRD  Dx | 9.6 | 22.2 | 18.6 | 22.1 | EGFR provides an estimate of the filtration rate/clearance ability of the glomerulus within the kidney. It is a common value used to stage CKD. |
| Lactic Acid | 0.7-2.1 mmol/L | No New  Value | No New  Value | 1.2 | 1.6 | No New  Value | Lactic acid is frequently monitored in the critical care setting. This value helps determine the extent of the tissues’ ability to receive oxygen. If the body cannot receive adequate oxygen supply, glucose is metabolized anaerobically resulting in lactic acid as an end-product. If lactic acid continues to build up within the body, lactic acidosis can occur. |
| CO2 | 25-33 mmol/L | No New  Value | 25 | 27 | 31 | 26 | Monitoring CO2 is done to determine the pH status of the patient as well as to monitor electrolyte balance. The Veteran had diagnoses of both respiratory and metabolic acidosis as well as alterations in electrolyte status. |

* 1. Tests

|  |  |
| --- | --- |
| Test | Explanation/Rationale10 |
| Chest X-Ray 6/20/16 | -Done upon admittance to confirm volume overload |
| Chest X-Ray 6/22/16 | -Ordered because Veteran had two incidents of choking on food when diet was AHA  -Performed to rule out aspiration pneumonia  -Started Veteran on antibiotic even though he was afebrile |
| Chest X-Ray 6/24/16 | -Ordered after Rapid Response  -Performed to determine the extent of the Veteran’s pulmonary edema |
| Chest X-Ray 6/26/16 | -Monitoring for HCAP  -Veteran is afebrile but continued on antibiotics |
| Chest X-Ray 6/27/16 | -To confirm proper placement of Dobhoff Tube (DHT) |
| CT Scan of Head 6/29/16 | -Veteran has become somnolent |
| Chest X-Ray 6/30/16 – Done daily until Extubation | -Veteran was intubated early on the 30th  -Orders placed for daily Chest X-Rays to confirm Veteran does not have ventilator-acquired pneumonia  -Additionally if Veteran were to become septic, the high levels of inflammation the body experiences increases vascular permeability. As a result, fluid can shift into the lungs. |

1. Nutrition-Focused Physical Findings

The Veteran presented to the ER with the chief complaint of chest pain. Per CICU History and Physical Note 6/20/16 obtained from CPRS, the Veteran was very pleasant, alert, and oriented. A review of systems was conducted with the following results:

|  |  |
| --- | --- |
| System | Findings |
| Overall Appearance | -Pleasant  -Elderly  -Appearance was appropriate for advanced age |
| Head-Eyes-Ears-Nose-Throat | -Extraocular movements intact  -No jugular venous distention observed  -Left carotid bruit  -Hard of hearing; wears hearing aids |
| Nerves/Cognition | -All gross nerves intact  -Alert and oriented x4 |
| Cardiovascular | -Regular rhythm and rate  -No murmurs, gallops, or rubs |
| Respiratory | -Good air exchange bilaterally  -Bibasilar crackles |
| Abdomen | -Soft  -No tenderness to percussion  -Presence of bowel sounds |
| Gastrointestinal | -Veteran placed on AHA Diet |
| Extremities/Skin | -Feels cool  -Tattoos noted  -Ecchymosis on bilateral upper extremities  -Bilateral asterixis  -2+ pitting edema extending all the way up to bilateral knees  -Chronic venous stasis with skin changes  -No clubbing  -Braden Score Scale of 13 which indicates moderate risk for pressure ulcer development with a nutrition rating of 2 which is probably inadequate.  -Ostomy/Wound nurse noted no pressure ulcers on sacrum/coccyx or elsewhere, only some issues on buttocks that appeared to be related to moisture. |
| Excretory | -Foley catheter in place  -500 mL output over 5 hours on furosemide |

Using the Subjective Global Assessment upon initial visit on 6/22/16, I was able to conclude that the Veteran was at moderate risk for malnutrition. The table below conveys my findings.

|  |  |  |  |
| --- | --- | --- | --- |
| SGA Component | Findings | Nutrition Implication1 | Potential Intervention1 |
| Weight History | -Per Veteran’s family, UBW was 160 lb and last weight per CPRS was 159 lb  -Veteran presents weight stable = 0 points | -At that point in time weight per CPRS likely inaccurate due to volume overload. | -Determine Veteran’s dry weight and base estimated energy needs off of that weight.  -With elderly patients on dialysis, the risk for malnutrition is high. Goal is to maintain weight status. |
| Appetite/Intake | -Per Veteran’s family, Veteran has a poor appetite.  -Significant appetite/intake changes = 2 points  -Nutrition needs would likely be met by diet + oral supplements either in the form of dense snacks, Ensure Muscle Health, or ProGelatein = 1 point | -Poor appetite indicates overall inadequate oral intake.  -Veteran’s appetite changes likely due to uremia and fluid overload. When BUN and creatinine are elevated, an individual’s appetite is greatly impacted. | -A patient on dialysis requires higher energy needs than a healthy person.  -If needs are not being met, an individual is at an increased risk for malnutrition.  -Potential interventions involve learning patient’s food likes and dislikes and working with them to modify those favorite foods to be higher in calories/protein. |
| Gastrointestinal Symptoms   * Chewing * Swallowing * N/V * Diarrhea | -Veteran is edentulous and has ill-fitting dentures. I suspected the Veteran’s weight was a reflection of volume overload and his current weight was less than his usual. As a result his dentures fit poorly and were the culprit to his chewing difficulties. If unable to chew solid foods, Veteran would likely consume a reduced percentage at meals. Chewing issues = 1 point  -Veteran had experienced 2 bouts of choking and coughing up food when on the AHA diet. Swallowing difficulties = 2 points  -Veteran presented with nausea with occasional vomiting since prior to admit. Uremia as a result of renal failure, likely the cause and a primary reason for appetite changes. Nausea issues greater than 3 days = 1 point  -Veteran experienced diarrhea as a result of receiving Kayexelate for hyperkalemia. Large volumes of diarrhea can result in dehydration and disturb the balance of electrolytes, mainly sodium and potassium. Metabolic acidosis can also set in due to large losses of bicarbonate ion. Since the Veteran only had diarrhea for one day and not greater than three = 0 points | | -For chewing and swallowing: Veteran had a consult with speech. Per speech recommendations, the Veteran’s diet needed to be downgraded to a consistency that could be chewed and swallowed safely.  -For nausea/vomiting: Veteran may benefit from consuming liquids separately from solid foods, consuming cold food items, consuming foods with weak aromas, asking nursing to remove tray lid from food outside of room, and consuming bland/dry food items. Monitoring of electrolyte and fluid status is necessary.  -For diarrhea: Although diarrhea had only occurred for 1 day, it is necessary to continue to monitor fluid and electrolyte status and replenish as indicated. If indicated, the patient may benefit from pre/probiotics or food items containing pre/probiotics. Often a diet low in fiber and fat is needed until symptoms subside. |
| Functional Capacity | -Veteran required the use of a scooter for long-distance mobility. However this did not keep him from getting out in about in society. He also presented with family members who could pick up groceries for him if needed. The Veteran was very functional in his ADLs; this includes meal-set up and self-feeding.  Functional capacity does not interfere with nutrition status = 0 points | -No nutritional implications present upon initial assessment.  -Continue to monitor Veteran because changes in disease state(s) could impair the ability to set up and feed self. | -If alterations in functional status occur provide the following: nurse or family member for feeding assistance, provision of adaptive equipment, liberalizing diet to include more finger foods and incorporating more convenience/easy-to-prepare items. |
| Metabolic Stress (as it relates to nutrition status) | -The Veteran presented with significant metabolic stress due to the following medical diagnoses ESRD, unstable angina, hyperkalemia, volume overload, and metabolic acidosis. As time went on during his admission and more diagnoses occurred; his body was under continuous amounts of metabolic stress. Patient with significant metabolic stress = 2 points | -Due to increased metabolic stress, this Veteran’s estimated energy needs are going to be much greater than a healthy individual. | -Proper energy, protein, and fluid needs are warranted in order to prevent catabolism and resuscitate/rehabilitate the body. |
| Physical Nutrition Assessment | -I observed the following during my nutrition focused physical exam:   * Edentulous with poor-fitting dentures * Lethargic/Sleepy * Mild bilateral muscle wasting of the temporal and interosseous regions * Mild subcutaneous fat loss of the orbital regions * Frail arms with thin skin   -Noted by other health care providers:   * Ecchymosis on bilateral upper extremities * 2+ pitting edema extending all the way up to bilateral knees * No pressure ulcers on sacrum/coccyx or elsewhere, only some issues on buttocks that appeared to be related to moisture.   Positive signs of protein-calorie malnutrition and/or nutrient deficits/excesses = 2 points | - Poor-fitting dentures likely due to unintended weight loss.  -Changes in LOC likely due to medications, disease processes, or pain.  -Mild muscle and subcutaneous fat loss indicative of inadequate calorie/protein intake.  -Frail arms with thin skin likely due to advanced age.  -Ecchymosis indicative of vitamin K, ascorbic acid, or protein-energy deficiencies.  -Pitting edema can be related to overall fluid status along with inadequate calorie/protein intake. | -Encourage adequate energy/protein intake to prevent malnutrition, reduce edema, and improve weight status.  -Learn patient’s food likes/dislikes to provide a diet rich in calories/protein the patient is more likely to consume.  -If intake continues to be poor and malnutrition is of major concern, use of oral nutrition supplements or enteral nutrition may be warranted.  -For ecchymosis, supplementation of vitamin K and vitamin C may be warranted along with educating patient on foods rich in those nutrients.  -For pitting edema caused by volume overload, encourage patient to adhere to fluid restrictions. Provide patient with education on how to better control thirst. |
| -Level of Malnutrition Risk: Veteran’s total complied SGA rating is ≥6, which indicates a GREATER RISK of malnutrition and completion of a comprehensive nutrition assessment is warranted to determine nutritional status.  -Total Score – 11 Points→ MODERATE RISK; Will assess Veteran weekly or per nutrition consult | | | |

1. Comparative Standards and Summary of Nutrition Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Applicable Nutrition Assessment Data** | **Comparative Standard or Evidence-based Recommendation** | **Rationale1** | **Recommendation for Nutrition Prescription13, 14** |
| Current weight(Obtained 4 days PTA): 72.3 kg (Dry wt unknown at time of admit)  CXR confirms volume overload (fluid)  2+ pitting edema extending all the way up to bilateral knees (fluid)  UBW: 72.7 kg (99.4%)  IBW: 75.5 kg (95.8% IBW)  BMI: 22.9 kg/m2  Abnormal biochemical indicators:   * BUN, creatinine, sodium, PO4 all elevated * Potassium, Hgb, Hct, albumin, vitamin D, iron profile panel all low * EGFR of 9.6 mL/min/1.73m^2 | Hamwi formula11 used to estimate % IBW  Laboratory normal ranges  WHO Body Weight Classification: normal 12  AND Nutrition Care Manual recommends the use of dry (edema-free) body weight when determining nutrition needs; referred to as standard body weight13  **AND Nutrition Care Manual Chronic Kidney Disease, Stage 5 Hemodialysis Recommendations13**   * Protein: ≥1.2 g/kg of body weight, with ≥50% HBV protein   For malnourished individuals, protein needs will be closer to 1.5 g/kg   * Energy needs: <60 yrs of age 35 kcal/kg, >60 yrs of age 30-35 kcal/kg * Fluid Needs: Urine Output + 500-1000 mL (minimum of 1000 mL/d) * Sodium: less than 2.4 g/d * Potassium: less than 2.4 g/d * Phosphorus: 800-1000 mg/d or 10-12 mg phosphorus per gram of protein when serum PO4 >5.5 mg/dL or intact PTH is elevated * Calcium: Total elemental intake (including dietary, supplemental, or calcium based-binders) should not exceed 2 g/d * Vitamin C: 660-100 mg/d * Vitamin B6: 2 mg/d * Folate: 1-5 mg/d * Vitamin B12: 3 mcg/d * DRI for all other water-soluble vitamins * Vitamin E: 15 IU/d * Zinc: 15 mg/d * Iron: IV supplementation recommended if serum ferritin below 200 ng/mL and TSAT below 20% * Vitamin D: Correct using treatment strategies recommended for general population   **AND Nutrition Care Manual CRRT Recommendations14**   * Energy: 35-50 kcal//kg recommended body weight/d * Protein: 1.5-2 g/kg * Carbohydrate: Should not exceed 4-5 mg/kg/min/d * Fat: 20-30% of kcals/d * Fluids: 24 hr urine output + 500 mL; dependent on urinary sodium, and total fluid output including urine * Sodium: 1.1-3.3 g/d; individualized in absence of edema; sodium should be comparable to urinary losses * Potassium: 2-3 g/d; individualize * Closely monitor electrolytes: CRRT causes large losses of magnesium, calcium, phosphorus, and potassium. In addition monitoring potassium and phosphorus is important in malnourished patients at risk for refeeding syndrome. * Literature is limited for CRRT and the effects it has on vitamin and mineral status. Below include some general guidelines for supplementation. * Vitamin K: 4 mg/week * Vitamin E: 10 IU/d * Niacin: 20 mg/d * Thiamin: 1.5 mg/d * Riboflavin: 1.5-1.7 mg/d * Vitamin B6: 5-10 mg/d * Vitamin C: 60-125 mg/d * Biotin: 150-300 mcg/d * Folic acid: 1 mg/d * Vitamin B12: 4 mcg/d * Zinc: 20 mg/d * Vitamin A: Avoid | * The admitting diagnoses included volume (fluid) overload, respiratory and metabolic acidosis, hyperkalemia, and unstable angina. * Four out of five admitting diagnoses are secondary to the underlying issue which is ESRD. * Elevated BUN, creatinine, sodium, and phosphorus support a diagnosis of ESRD as well as low Hgb, Hct, iron profile panel, and albumin. * EGFR less than 15 mL/min/1.73m^2 is diagnosing criteria for ESRD. * Potassium is below normal due to the treatment of hyperkalemia with Kayexelate. Prior to treatment, was elevated at 5.7 mEq/L. * Veteran will likely need education related to ESRD specifically the prevention of malnutrition, a common complication with ESRD and dialysis initiation. * Veteran may require nutrition support due to increased nutrition needs, current poor oral intake, and elevated risk for malnutrition. | Established two nutrition prescriptions when adequate oral intake became unachievable and a constant battle between HD and CRRT use persisted:  Nutrition Rx #1:  If Veteran continues CRRT: 2059-2401 kcal/d, 137-172 g pro//d, 1-1.5 L fluids/d (30-35 kcal/kg/d, 2-2.5 g pro/kg/d, <1 L fluid output provide 1-1.5 L fluids/d; All based on dry weight of 151 lb = 68.6 kg)  Nutrition Rx #2:  If Veteran is placed on HD: 2059-2401 kcal/d, 103-137 g pro/d, 1-1.5 L fluids/d (30-35 kcal/kg/d, 1.5-2 g pro/kg/d, <1 L fluid output provide 1-1.5 fluids/d) |
| Positive personal history of CKD with additional comorbidities including CAD with MI, AAA, T2DM, HLD, HTN, and Anemia.  Recent diet history reveals overall inadequate intake of calories, protein, and micronutrients which are healthful for patients with CKD. Diet history indicates greater intake of micronutrients which should be limited with CKD: sodium, phosphorus, potassium, and calcium. | The Nutrition Care Manual suggests an initial comprehensive assessment should be done in order to provide an individualized nutrition plan based on the patient’s current nutrition status. Continual follow-ups every 3 months should be done on maintenance dialysis patients whereas acute, high-risk, or malnourished patients should be followed frequently. No exact diet plan was provided in the NCM because the degree of chronic kidney disease is truly different for every patient. Every patient will require needs specific to their current state. | Will need to determine if Veteran has received any nutrition education related to the importance of calorie/protein intake. Using “restrictive or foods that should be avoided approach” would not be beneficial to this patient due to high risks for malnutrition, unsuccessful past nutrition education adherence, and advanced age/limited mobility. Will need to closely monitor oral intake and critical illness severity. Should oral intake continue to be inadequate, the next step would be to implement nutrition support in order to lessen or halt catabolic processes. | After conducting a comprehensive assessment, determined it would be more beneficial to focus on overall intake of calories and protein than educating patient on foods high in sodium, phosphorus, potassium, and calcium. I just wanted him to focus on eating in an attempt to avoid severe malnutrition. I continuously monitored this Veteran whether it was in person, through chart review, or via nursing flow sheets. As he began to decline, I realized nutrition support would be crucial. |

1. Evaluation of Diet Orders (Nutrition Prescriptions): List diet orders in chronological order. Complete hospital diet history-include all diet orders from date of admission

|  |  |  |  |
| --- | --- | --- | --- |
| Date of Diet Order | Diet Order  *EN/PN/PPN/oral/supplements* | Is Diet Order Appropriate?  *Why or Why Not? Explain if change in estimated needs.* | Changes Indicated and Supporting Rationale |
| 6/20/16 | 2100 kcal American Heart Association (AHA) Diet | -Prior to choking event, this diet would be appropriate for the Veteran. It provides adequate protein and calories and is limited in sodium which would help with fluid overload.  -The VA does offer an AHA/ADA combination diet order; however the only major differences are fruit items for dessert verses sweets. Since the Veteran has a poor appetite, double restrictions might further exacerbate the issue of overall poor oral intake. | -Veteran had not officially been diagnosed with ESRD at this point and therefore had CKD without any type of renal replacement therapy.  -His needs at this point were 2169-2531 kcal/d, 80-101 g pro/d, and fluids as indicated by physician due to volume overload. (30-35 kcal/kg and 1.1-1.4 g/kg based on weight of 72.3 kg) |
| 6/21/16 AM | NPO  Waiting for Speech to Evaluate | -This diet is appropriate since the Veteran had a choking event and needs to undergo a swallow study to determine what consistency is safe.  -However a diet order of NPO is not appropriate for anything longer than 3 days. | -The results of the bedside swallow concluded the Veteran needed a soft diet consistency. He could continue to drink thin liquids as tolerated. |
| 6/21/16 PM – 6/27/16 PM | Soft, 2200 kcal American Diabetes Association (ADA) Diet +  Chocolate Ensure Muscle Health three times daily between meals | -This diet is appropriate in terms of calories, consistency, and blood glucose control. The commercial oral nutrition supplements were implemented to provide additional protein without impacting blood glucose. | -Chocolate Ensure Muscle Health provides 160 calories, 16 grams of protein, and 19 grams of carbohydrate compared to Ensure Plus which has 350 calories, 13 grams of protein, and 51 grams of carbohydrate. This will help with blood glucose control.15 |
| 6/27/16 PM – 6/29/16 AM | Soft, 2200 kcal American Diabetes Association (ADA) Diet +  Chocolate Ensure Muscle Health three times daily with meals + 1 prune juice at breakfast for constipation + Fruit Punch ProGelatin(90 kcals, 20 g pro/serving) three times daily with meals | -This diet would be appropriate if the Veteran was adequately eating. Per diet history from family, Veteran’s appetite had severely declined. Even with the additional oral nutrition supplements, he was not meeting his nutrition needs. | -Placed the following recommendations:  Recommend placing DHT with TwoCal HN TF with an initial rate of 20 mL/hr with goal rate of 50 mL/hr(=2400 kcal, 100g pro, 840 mL free water/d). Provide ~30 mL water flushes for maintenance fluids. Attempt to reach at least 40 mL/h by 6/30. Will order ProSource q6h once TF adequately advances. |
| 6/29/16 AM | DHT Placed  Order by Dr. was for Nutren 1.5 TF tra 20 mL/hr with 35 mL/hr flush with a goal rate of 40 mL/hr  \*Note: Observed TF at bedside with Isosource HN 1.2 formula hanging; this was a nursing error\* | -Appropriate that a DHT was finally placed.  -Unfortunately the TF ordered was incorrect in terms of concentration and goal rate.  -This order would not provide adequate calories/protein while limiting free water. | -When I went to the Veteran’s bedside to check his pump, I became even more frustrated to see Isosource HN 1.2 bag running.  -I resubmitted my recommendations and added the Attending as an additional signer along per the suggestion of the critical care RD who was helping me throughout this case. |
| 6/30/16  3:00 AM | TF Held | -Even though the Veteran was not receiving any form of nutrition, holding the TF was necessary at this time. | -The Veteran’s oxygen saturation dropped rapidly and he became hypotensive. He immediately had to be intubated. Due to hemodynamic instability and a MAP between 55-60, he was placed on Levophed. |
| 6/30/16  2:00 PM – 7/2/16 | TF resumes with the Nutren 1.5 formula tra 15 mL/hr with 35 mL/hr flush  No goal rate listed in the Attending’s orders | -Once Veteran became more hemodynamically stable and off Levophed, it was appropriate to begin the tube feeding again. | -With a few recommendations related to nutrition support and patients requiring ventilation from the critical care RD, I created new tube feeding recommendations: When adequately resuscitated and on at most stable, low-dose or decreasing pressors, recommend trophic feed at 10 mL/hr x 24-48 hrs with a goal rate of 65 mL/hr (=2340 kcal, 105 g pro, 1186 mL free water). If tolerated, provide 30 mL water q4h to prevent feeding tube occlusion. Will order 1 packet ProSource q6h once TF adequately advances.  -The critical care RD recommended switching to the Nutren 1.5 formula because she was concerned about the Veteran becoming hemodynamically unstable again. Together we had calculated a current NUTRIC score (without interleukin 6) of 5.8, 16  -A NUTRIC Score of 5 is a high score and indicates poor clinical outcomes for the patient and the need for aggressive nutrition therapy.16 |
| 7/2/16 – 7/5/16 | Withdrawal of Nutrition Support for comfort care; Veteran placed back on Soft, 2200 ADA Diet | -The appropriateness of this diet order depends on personal beliefs. | -Although the removal of nutrition support would only hasten the dying process, I realized this 90 year old Veteran had lived a full life.  -Therefore, I supported the family’s wishes in the removal of nutrition support for comfort care and eating for pleasure.  -If I had been at the hospital over the 4th of July weekend, I would have put recommendations in to liberalize his diet to a Soft, Regular/House diet.  -This would allow the Veteran zero restrictions in terms of sodium or added sugars.  -Additionally, it has been found that artificial nutrition and hydration (ANH) does not always improve outcomes for terminally ill individuals and can often exacerbate patient distress.8 |

1. **NUTRITION DIAGNOSIS**

June 22, 2016 – Initial Assessment

Using the VA’s 9-Step Nutrition Care Process

* Current Nutrition Status: MODERATE due to the following:
* Nutrition Diagnosis: Possibility of developing/presenting with morbidity, increased duration/severity of illness (D-S NDC 17.002) AEB Braden Scale Score of 13 with a nutrition rating of 2 which is probably inadequate.
* Nutrition Etiologies:
  + Intolerance of foods/nutrients (D-S NDC 12.002) r/t nausea/vomiting associated with current medical diagnosis.
  + Deficit in nutrition knowledge (D-S NDC 4.002) r/t importance of protein for wound healing along with other non-nutritional etiologies.
* Nutrition Goal: Patient will have a Braden Scale nutrition rating of 3-4 in 1 week.→ NOT MET; DISCONTINUE GOAL (6/27/16)

Using the AND’s Nutrition Care Process

* Primary – Inadequate oral intake (NI-2.1) r/t inability to consume food secondary to nausea/vomiting associated with current medical diagnoses AEB diet recall meeting only 58% of estimated energy needs, 65% of estimated protein needs and a Braden Score Scale nutrition rating of 2 which is probably inadequate.
* Secondary – Food- and nutrition-related knowledge deficit (NB-1.1) r/t lack of nutrition education over benefits of protein for wound healing and dialysis treatment AEB diet recall and a Braden Scale Score of 13 with a nutrition rating of 2 which is probably inadequate.

June 27, 2016 – Follow-Up Assessment

Using the VA’s 9-Step Nutrition Care Process

* Current Nutrition Status: SEVERE due to the following:
* Nutrition Diagnosis: Inadequate calorie/protein (D-S NDC 10.001) AEB diet recall.
* Nutrition Etiology: Inactive role in maintaining adequate nutrition (D-S NDC 9.001) r/t increased lethargy associated with current medical diagnoses and limited encouragement to consume meals/snacks.
* Nutrition Goal: Patient will meet 80% of calorie/protein needs by 6/30/16.→ NOT MET; REVISE GOAL (6/30/16)

Using the AND’s Nutrition Care Process

* Primary – Inadequate oral intake (NI-2.1) r/t limited encouragement to consume meals/snacks and altered mentation/functional status AEB diet recall and observing patient’s lunch tray with 0% PO intake.

June 30, 2016 – Follow-Up Assessment

Using the VA’s 9-Step Nutrition Care Process

* Current Nutrition Status: SEVERE due to the following:
* Nutrition Diagnosis: Inadequate calorie/protein intake (D-S NDC 10.001) AEB no current nutrition support.
* Nutrition Etiology: Inadequate feeding route (D-S NDC 10.004) r/t recent intubation, use of vasopressors, and hemodynamic instability.
* Nutrition Goal: Patient will meet at least 100% of estimated calorie, protein needs by 7/7/16. →NOT MET

Using the AND’s Nutrition Care Process

* Primary – Inadequate enteral nutrition infusion (NI-2.3) r/t no current nutrition support secondary to recent intubation, use of vasopressors, and hemodynamic instability AEB observation of TF pump placed on hold setting and nursing Ins/Outs with noted 0% intake from TF.
* Secondary – Enteral nutrition administration inconsistent with needs (NI-2.6) r/t 1.2 kcal/mL TF administered to patient AEB observation of 1.2 kcal/mL hanging from kangaroo pump on 6/29/16 d/t nursing error.

1. **INTERVENTIONS, MONITORING AND EVALUATION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date** | **Nutrition Problem(s)** | **Intervention**  *(what was done)* | **Monitoring Criteria**  *(signs/symptoms followed to determine whether interventions worked)* | **Outcome**  *(were nutrition goals met)* | **Intern Action** |
| 6/22/16 | - Inadequate energy intake  - Food- and nutrition-related knowledge deficit | -Food &/OR Nutrient Delivery: Meals and Snacks→ Texture-modified (Soft, per Speech recs, Easy to Chew), Carbohydrate-Modified Diet (2200 ADA, consistent-carbohydrate diet) & Nutrition Supplement Therapy→ Medical Food Supplement Therapy (Commercial Beverage; Ensure Muscle Health)  -Nutrition Education: Nutrition Education-Content→Nutrition relationship to health/disease (Importance of protein for wound healing and dialysis treatments) | -Food/Nutrition-Related History: Food & Nutrient Intake→ Monitor food intake (amount and types of foods/beverages), total energy intake, modified diet order tolerance  -Nutrition-Focused Physical Findings: Monitor nausea/vomiting  -Food/Nutrition-Related History: Food & Nutrient Intake→ Macronutrient Intake: Monitor total protein intake, high biological value protein intake (Helps determine if education provided was understood)  -Nutrition-Focused Physical Findings: Monitor dermatitis/potential pressure injury of buttocks | -Food & Nutrient Intake: Not Met  -Nausea/Vomiting: Improved/Resolved  -Macronutrient (Protein) Intake: Not Met  -Potential pressure injury to buttocks: Not Met | -Obtained Veteran’s food preferences/intolerances from family and entered them into Computrition.  -I knew he already enjoyed drinking chocolate Atkins shakes so determined it would be appropriate to send him chocolate Ensure Muscle Health three times daily in between meals for additional calories/protein.  -Provided nutrition education related to the importance of protein for wound healing and dialysis treatments to his family. Verbalized to family to encourage Veteran to eat all the protein foods on his tray first before satiety sets in. Provided handout from VA Nutrition and Food Services Patient Education Materials Library.  -Followed up with Veteran’s family on 6/24/16 to determine acceptance of Ensure and to determine overall calorie/protein intake as well as to see if nausea/vomiting had ceased. |
| 6/24/16 | - Inadequate energy intake | -Food &/OR Nutrient Delivery: Meals and Snacks→ Texture-modified (Soft, per Speech recs, Easy to Chew), Carbohydrate-Modified Diet (2200 ADA, consistent-carbohydrate diet), Protein-Modified Diet (increased protein diet via oral nutrition supplements) & Nutrition Supplement Therapy→ Medical Food Supplement Therapy (Commercial Beverage; Ensure Muscle Health) | -Food/Nutrition-Related History: Food & Nutrient Intake→ Monitor food intake (amount and types of foods/beverages), total energy intake, modified diet order tolerance,  -Food/Nutrition-Related History: Food & Nutrient Intake→ Macronutrient Intake (monitor total protein intake, high biological value protein intake) | -Food & Nutrient Intake: Not Met  -Macronutrient (Protein) Intake: Not Met | -Interviewed Veteran’s family and learned nausea/vomiting had resolved.  -Obtained a 24 hour recall from Veteran’s family. At this point he had had his first dialysis treatment and was experiencing improved appetite. He was eating an average of 50% at meals but this was not enough to meet goal energy needs.  -Learned from family that Veteran was not receiving his Ensures as nourishments.  -Went into Computrition and added Ensure three times daily with meals to make sure he received them. Family did state he ate the eggs first off of his breakfast tray before moving to the other items. |
| 6/27/16 | -Inadequate oral intake | -Food &/OR Nutrient Delivery: Nutrition Supplement Therapy→ Medical Food Supplement Therapy (Commercial food, ProGelatein), Enteral and Parenteral Nutrition→ Enteral Nutrition (Recommend insert enteral feeding tube)  -Nutrition Education: Nutrition Education-Content→ Nutrition relationship to health/disease (Importance of calories/protein with CRRT/HD)  -Coordination of Nutrition Care by a Nutrition Professional: Collaboration and Referral of Nutrition Care→ Collaboration with other providers | -Food/Nutrition-Related History: Food & Nutrient Intake→ Monitor food intake (amount and types of foods/beverages), total energy intake, modified diet order tolerance  -Food/Nutrition-Related History: Food & Nutrient Intake→ Macronutrient Intake (monitor total protein intake, high biological value protein intake)  -Food/Nutrition-Related History: Food & Nutrient Administration→ Diet History (Enteral nutrition order) & Enteral and Parenteral access (enteral access) | -Food & Nutrient Intake: Not Met  -Macronutrient (Protein) Intake: Not Met  -Food & Nutrient Administration: Not Met | -Added fruit punch ProGelatein three times daily with meals for additional calories/protein. Per Veteran’s family he likes gelatin.  -Added prune juice to his breakfast tray because Veteran was dealing with some constipation. Relief of constipation could improve overall intake.  -Provided additional nutrition education to family related to the importance of calorie/protein intake when undergoing CRRT/HD. Also discussed frozen “renal-friendly” frozen meal options. Provided handout from the Journal of Renal Nutrition.  -Compiled two sets of enteral nutrition recommendations: one tailored to meet Veteran’s needs on CRRT and the other one tailored to meet his needs should he transition back to HD.  -Shared my recommendations at the MICU huddle, a daily interdisciplinary team meeting. |
| 6/29/16 | - Enteral nutrition administration inconsistent with needs | -Food &/OR Nutrient Delivery: Enteral and Parenteral Nutrition→ Enteral Nutrition (modify concentration of enteral nutrition) | -Food/Nutrition-Related History: Food and Nutrient Intake→ Enteral and Parenteral Nutrition Intake (Enteral nutrition formula/solution)  -Food/Nutrition-Related History: Food and Nutrient Administration→ Diet History (Diet Order: Enteral Nutrition Order) | -Enteral Nutrition Formula: Not correct formula; energy needs not met  -Enteral Nutrition Order: order placed but not correct order to meet needs | -Viewed tube feeding pump at bedside with 1.2 kcal/mL formula when my recommendations were using a 2 kcal/mL formula.  -Notified nursing of this error but then later returned to the pump to find a 1.5 kcal/mL bag hanging. |
| 6/30/16 | - Inadequate enteral nutrition infusion | -Food &/OR Nutrient Delivery: Enteral and Parenteral Nutrition→ Enteral Nutrition (Modify rate of enteral nutrition) | -Food/Nutrition-Related History: Food and Nutrient Intake→ Enteral and Parenteral Nutrition Intake (Enteral nutrition formula/solution)  -Food/Nutrition-Related History: Food and Nutrient Administration→ Diet History (Diet Order: Enteral Nutrition Order) | -Enteral Nutrition Formula: Once tube feeding resumed; correct formula for new recommendations was used (1.5 kcal/mL)  -Enteral nutrition Order: order placed but not correct order to meet needs | -Notified Fellow at MICU huddle that once tube feeding was turned back on, I had new recommendations.  -Followed nursing flow sheets in order to determine when Veteran became more hemodynamically stable.  -Monitored tube feeding pump history and flow sheets to determine if rate had advanced. |

1. **ANALYSIS OF NUTRITION CARE PROCESS**

After thorough analysis and critique, I stand by all of the tube feeding recommendations I gave in order to care for this Veteran nutritionally. With guidance from the critical care RD and the latest in evidenced based research pertaining to nutrition support and the critically ill adult population8, I believe those recommendations were appropriate for this Veteran.

However I noticed several areas early on in the case, which in a perfect world, could have been carried out differently. First, I wish I would have utilized all the resources and trainings I had been given by the Clinical Nutrition Manager to thoroughly conduct a nutrition-focused physical exam. Perhaps I would have caught more signs of malnutrition, like the edema and the ecchymosis, before the Veteran began to deteriorate rapidly. I had two visits with the Veteran and his family spending time educating about and supplementing protein into the diet before I even realized malnutrition was going to be the greater issue warranting the use of nutrition support.

Second, I strongly disagree about my facility’s liberal use of oral nutrition supplements. I will live and die by the motto “Food First”, but at the VAMC that is not often the case. During my time as an intern at this facility, it seems like oral nutrition supplements are handed out right and left. I think the root cause of this is not on the clinical side but rather the foodservice side. With basically a non-select menu, only modified for therapeutic, consistency, or preference needs, the Veterans are limited in food options if increasing calories/protein is the main issue. I think this leaves the clinical staff basically forced to send supplements in order to reach calorie/protein needs. Research has shown that room service, in which patients order from a menu whenever they like (within a reasonable time frame), improves not only patient satisfaction but overall nutritional status and intake.17 Perhaps if the VA utilized a room service concept, the Veteran could have ordered high-calorie/high-protein (like an actual chocolate milkshake) items of his choice verses being told to drink chocolate Ensure Muscle Health because the dietetic intern did not know what else to send. On the other hand, I do realize a room service system could potentially work against my nutrition interventions. Since my Veteran has the “eat what he wants, when he wants” mentality, he might be the type who refuses to order a tray if he does not have the appetite for it. One positive with the non-select menu would be the sending of the tray regardless of whether or not it was ordered by the Veteran.

Lastly, I want to address the breakdown in the tube feeding order process, specifically why Isosource HN 1.2 was hanging from the kangaroo pump instead of the Nutren 1.5 ordered by the physician. After doing some investigating into the situation and talking to the Veteran’s nurse, it was discovered the nurse could not find the Nutren 1.5 bags in the unit stock. The critical care RD and I checked out the unit stock and found several bags of Nutren 1.5. We then showed the nurse that both products have similar packaging. In conclusion, the error in the system was the failure of the nurse to read the label on the tube feeding bag. This error could have easily been prevented. To keep these errors at bay, future in-services where dietitians and nurses come together to discuss tube feeding formula, regimens, and equipment, may prove to be beneficial for the overall quality of care provided to the Veterans.

1. **ECONOMIC OUTCOMES OF THE MNT**

I reached out to the Clinical Nutrition Manager in order to obtain the costs for both the 1.5 kcal/mL and 2.0 kcal/mL formulas on formulary at the VA Medical Center. The 1.5 kcal/mL formula is Nestle’s Nutren 1.5 which runs at $16.91 for a case of 6 – 1 liter ready-to-hang bags. This equates to $2.82 per 1 liter. The 2 kcal/mL formula is Abbott’s TwoCal HN which runs at $20.40/ 1 case and a case includes 24 – 8 ounce cans. It is important to note that these prices are specific to the Department of Veterans Affairs and the Veterans Health Administration (VHA) for contracted formulary items. Any formulas/products that are specialty items and not on the contracted formulary can still be brought in and used, but at a much greater cost for the facility.

Using the nursing flow sheets from June 29th to July 2nd, I calculated the Veteran’s total amount received of the 1.5 kcal/mL formula to be 770 mL. This equates to $2.17. If the Veteran had received the 2 kcal/mL formula, the total cost would have been $2.80. These costs would be paid by the facility as the Veteran was 100% service connected.

I did some research to determine the economic impact of diseases often associated with malnutrition. One study I looked at stated nutrition interventions could potentially reduce hospital length of stay of an average patient by 1.9 days and 3.2 days for a malnourished patient.18 It was also found that nutrition interventions in the acutely ill elderly population could reduce the overall number of non-elective hospital returns within the 6 month time frame following initial discharge.18

1. **HEALTH CARE TEAM**

When the consult to see this Veteran was initially generated, I was in my first week of working with the critical care/CNSC RD. She thought this consult would be a good one to take on since he would have been the most critical patient I had assessed and worked with on my own. As the Veteran moved from CICU to the floor and then back to MICU, I realized he could benefit from nutrition intervention. I quickly notified my preceptors that I would be taking over his nutrition-related care.

The critical care RD continued to serve as a mentor in helping me better my critical care nutrition assessments and perfect my nutrition interventions for this Veteran. Each day that I would visit the Veteran, I would obtain copies of the nursing flow sheets and personally ask his nurses clarification questions about the flow sheets. The nurses proved to be very helpful in providing me with information regarding how long the tube feeding had been placed on hold and whether or not the Veteran was tolerating the formula.

I also had the opportunity to attend the daily MICU huddles to discuss my case study patient with other members of the interdisciplinary team including the physician (Critical Care/Pulmonology Fellow), physical therapy, respiratory therapy, case management, and social work. It was exciting to report on my patient and voice my recommendations using evidence-based resources about tube feeding initiation to the Fellow, even though my exact recommendations were never carried out. If I were an actual registered dietitian, I think I would have sent the Fellow a copy of the newest ASPEN guidelines, highlighting the main points from which I derived my nutrition interventions. Maybe he would then realize that these guidelines came about through interdisciplinary teamwork much like how the MICU Huddles are carried out to provide better Veteran-centered care.

I am very lucky to have had the opportunity to conduct a case study at the VA Medical Center because interdisciplinary team work is a priority here. I know at other hospitals, this is unfortunately not the case. Even though I could not save the Veteran through my exact nutrition interventions, I am grateful the other health care team members acknowledged my recommendations and placed a tube. My only hope is these interdisciplinary team interactions continue to grow and are implemented at other hospitals in order to provide exceptional patient care.

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Appendix A – Typical Food and Nutrient Intake Pre-Admittance

|  |  |
| --- | --- |
| **Typical Meal Regimen Per Provided Menus and Subjective Information from Veteran’s Family** | **Total Food and Nutrient Intake (Approximate Values)**  **via Foodworks Software** |
| Breakfast   * 50% of Chocolate Atkins Shake   Lunch   * BLT Sandwich with Potato Chips – No Intake; Current habit of giving lunch away to son   Dinner   * 50% of Country Fried Steak * 50% of Baked Potato * 50% of Fruit Salad * 50% of Green Beans   Dessert   * 100% of Homemade Chocolate Ice Cream Milkshake   Snack   * 2-4 Ritz Crackers with Peanut Butter | * Calories: 1250 kcal * Carbohydrate: 148 g * Sugar: 88 g * Fiber: 8 g * Protein: 52 g * Fat: 53 g * Saturated Fat: 18 g * Sodium: 1260 mg * Phosphorus: 949 mg * Potassium: 2176 mg * Calcium: 617 mg * Vitamin D: 3 mcg * Iron: 10 mg |

Appendix B – Food and Nutrient Intake Prior to Nutrition Interventions

\* Note this table depicts the Veteran’s intake prior to and right after his first dialysis treatment on 6/24/16. This table does not reflect any of my nutrition interventions which had yet to be initiated. Based on this 24 hour food recall, I realized this Veteran would serve as an excellent case study patient and could benefit from nutrition intervention.

|  |  |
| --- | --- |
| **24 Hour Food Recall Per Veteran’s Family** | **Total Food and Nutrient Intake (Approximate Values)**  **via Foodworks Software** |
| 6/23 Noon Meal   * Veteran was undergoing central venous dual lumen dialysis catheter placement and did not eat lunch.   6/23 Evening Meal   * Veteran does not receive evening meal tray due to undergoing first dialysis treatment.   6/23 Snack – Veteran receives the following from unit stock   * ½ cup Applesauce * ½ cup Fat-Free Vanilla Pudding   6/24 Breakfast   * 50% of Scrambled Eggs * 50% of Potatoes * 50% of Mandarin Oranges * 50% of Coffee | * Calories: 328 kcal * Carbohydrate: 58 g * Sugar: 23 g * Fiber: 3 g * Protein: 9 g * Fat: 7 g * Saturated Fat: 2 g * Sodium: 367 mg * Phosphorus: 237 mg * Potassium: 404 mg * Calcium: 136 mg * Vitamin D: 1 mcg * Iron: 1 mg |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Evaluation of Written Case Study – OUHSC Form 205** | | | | |
| OUHSC Dietetic Student: Allison Fassler Facility: VA Medical Center | | | | |
|  | | | | |
| Directions for Evaluation:  For each criterion (sub question) below the competency, mark "Yes" or "No" to indicate if it has been met.   * If all yes – student passes and should receive level 4 or 3 on that competency. * If there are a significant number of “No” answers, student fails competency and should receive score of 1 or 2 score and must repeat assignment. | 4 - Outstanding (pass) | | | |
| 3 - Good (pass) | | | |
| 2 - Needs Improvement (fail) | | | |
| 1 - Poor (fail) | | | |
| ***COMPETENCIES*** | **Level of Performance** | | | |
| ***CRD 1.2 Apply evidence-based guidelines, systematic reviews and scientific literature (such as the ADA Evidence Analysis Library and Evidence-based Nutrition Practice Guidelines, the Cochrane Database of Systematic Reviews and the U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, National Guideline Clearinghouse Web sites) in the nutrition care process and model and other areas of dietetics practice*** | 4 | 3 | 2 | 1 |
| Demonstrated adequate knowledge of patient's disease state | Yes ⁪ No | | | |
| Applied evidence-based guidelines throughout the patient intervention | Yes ⁪ No | | | |
| Completed case study utilizing appropriate literature references (relevant to case report; not more than 5 years old) | Yes ⁪ No | | | |
| ***CRD 1.3 Justify programs, products, services and care using appropriate evidence or data*** | 4 | 3 | 2 | 1 |
| Assessment data effectively supported recommended MNT | Yes ⁪ No | | | |
| ***CRD 1.4 Evaluate emerging research for application in dietetics practice*** | 4 | 3 | 2 | 1 |
| Used appropriate scientific literature in making MNT recommendations | Yes ⁪ No | | | |
| ***CRD 2.2 Demonstrate professional writing skills in preparing professional communications (e.g. research manuscripts, project proposals, education materials, policies and procedures)*** | 4 | 3 | 2 | 1 |
| Wrote report in a professional format | Yes ⁪ No | | | |
| ***CRD 2.10 Establish collaborative relationships with other health professionals and support personnel to deliver effective nutrition services.*** | 4 | 3 | 2 | 1 |
| Documented collaboration with other health professionals and support personnel. | Yes ⁪ No | | | |
| ***CRD 3.1. Assess the nutritional status of individuals, groups and population in a variety of settings where nutrition care is or can be delivered*** | 4 | 3 | 2 | 1 |
| Reported only patient information as allowed by HIPAA | Yes ⁪ No | | | |
| Obtained medical history and status | Yes ⁪ No | | | |
| Identified medical diagnoses/disorders and gave etiology, pathophysiology, and current medical and nutritional treatments. | Yes ⁪ No | | | |
| Lists diagnosis/disorders and lists correct ICD-9 codes | Yes ⁪ No | | | |
| Identified accurate and thorough relationship between each disease state and nutritional status | Yes ⁪ No | | | |
| Listed medications, dosage; gave indications and food/medication interactions. | Yes ⁪ No | | | |
| Identified surgery and/or additional treatment modalities and any relationship to nutritional status | Yes ⁪ No | | | |
|  |  | | | |
| ***CRD 3.1.A Assess the nutritional status of individuals, groups and population in a variety of settings where nutrition care is or can be delivered*** | 4 | 3 | 2 | 1 |
| Gave thorough food and nutrition related history | Yes ⁪ No | | | |
| Listed medications, purpose, possible drug-nutrient interactions | Yes ⁪ No | | | |
| Reported anthropometric measures and made tables/graphs as appropriate to show changes | Yes ⁪ No | | | |
| Reported biochemical data, medical tests and procedures with tables/graphs as appropriate to show changes | Yes ⁪ No | | | |
| Described nutrition-focused physical findings nutritional implications and potential interventions if warranted | Yes ⁪ No | | | |
| Described pertinent personal and family medical health history as applicable to present illness | Yes ⁪ No | | | |
| Appropriately estimated predicted nutritional needs for energy, macronutrients (fats, protein, carbohydrates), fiber and fluid | Yes ⁪ No | | | |
| Gave information about actual nutritional intake | Yes ⁪ No | | | |
| Compared nutrition assessment findings to appropriate standards | Yes ⁪ No | | | |
| Gives history of diet orders and evaluates appropriateness of diets during hospitalization | Yes ⁪ No | | | |
| Assesses need for nutrition education | Yes ⁪ No | | | |
| Summarizes nutrition assessment; identifies standards used for comparison and justifies reasoning for assessment of nutrition risk status. | ⁪ Yes ⁪ No | | | |
| ***CRD 3.1.B Diagnose nutrition problems and create problem, etiology, signs and symptoms (PES) statements*** | 4 | 3 | 2 | 1 |
| Identifies primary nutrition problem | Yes ⁪ No | | | |
| Writes appropriate PES statement(s) | Yes ⁪ No | | | |
| ***CRD 3.1.C Plan and implement nutrition interventions to include prioritizing the nutrition diagnosis, formulating a nutrition prescription, establishing goals and selecting and managing intervention*** | 4 | 3 | 2 | 1 |
| Recommended appropriate MNT intervention and provides rationale for products and feeding route (if applicable) | Yes ⁪ No | | | |
| Identified appropriate goals for MNT with expected outcomes | Yes ⁪ No | | | |
| Nutrition education (if applicable) was provided appropriately and in a timely manner | Yes ⁪ No | | | |
| ***CRD 3.1.D Monitor and evaluate problems, etiologies, signs, symptoms and the impact of interventions on the nutrition diagnosis*** | 4 | 3 | 2 | 1 |
| Provided a minimum of three patient contacts | Yes ⁪ No | | | |
| Information provided indicated sufficient time and effort expended in patient care activities | Yes ⁪ No | | | |
| Discussed possible economic outcomes/costs of MNT | Yes ⁪ No | | | |
| Acknowledged health care team | Yes ⁪ No | | | |
| Adequate bibliography and citations | Yes ⁪ No | | | |
| **Note:** the IP Director will provide feedback to student with requests for revisions. The student must revise the written report until it is deemed satisfactory and the student has successfully scored ≥3 on each competency. If the student appears to need more practice, he or she will be required to complete another case study. After the written report has been approved, the student may provide a copy of the report to the preceptors. The preceptors do not evaluate the written case study. They evaluate the PowerPoint (PP) presentation. The IP Director must also review and approve the PP slides before the student gives the oral report. The preceptor evaluates CRD 3.1.E. in oral report. | | | | |
| **IP Director Signature/Date:** | | | | |
| **Student Signature/Date: Allison K Fassler 7/28/16** | | | | |