**Case 7: Gastroesophageal Reflux Disease**

Sam Ballard & Megan Beyer

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1. **Understanding the Disease and Pathophysiology**
2. *How is acid produced and controlled within the gastrointestinal tract?*

Gastric acid and pepsin are the two main components of the acid that is produced in the gastrointestinal tract. Gastric acid is secreted from gastric parietal cells. Pepsinogen is released from the parietal cells within the stomach. Hydrochloric acid is produced in the parietal cells of the oxyntic glands within the stomach, which activates pepsinogen to become pepsin. The role of hydrochloric acid is to denature proteins, release necessary nutrients and act as a bactericide agent within the stomach. Overall, all of the acid within the gastrointestinal tract is controlled during the cephalic phase when hydrochloric acid and pepsinogen are released when food is seen, smelt or tasted (Gropper & Smith, 43).

*2. What role does lower esophageal sphincter (LES) pressure play in the etiology of gastroesophageal reflux disease? What factors affect LES pressure?*

The lower esophageal sphincter is a sphincter muscle at the end of the esophagus that “controls release of the bolus from the esophagus into the stomach” (Nelms, 346). This sphincter opens only during swallowing in order to prevent stomach contents from moving up the esophagus, causing damage to the esophageal mucosa due to the acidic chyme. The pressure in the lower esophageal sphincter should remain higher than that in the stomach in order to prevent stomach contents from entering back into the esophagus. Lower esophageal sphincter pressure is lowered by a variety of foods including chocolate, spearmint, peppermint, alcohol, caffeine, and high fat foods. If the LES pressure is lower than that in the stomach, the gastric contents of the stomach will enter into the esophagus causing discomfort (Nelms, 355).

*3. What are the complications of gastroesophageal reflux disease?*

“Complications of untreated or unresponsive GERD may include impaired swallowing, aspiration of gastric contents into the lungs, ulceration, [and] perforation or stricture of the esophagus” or Barrett’s esophagus (Nelms, 355). Difficulty swallowing, also known as **dysphagia**, can affect any of the four phases of swallowing: oral preparatory, oral, pharyngeal, and esophageal (Nelms, 359). GERD patients would most likely have difficulty with the fourth stage of swallowing, the esophageal phase. **Aspiration** is “the accidental inhalation of food particles or fluids into the lungs” (Nelms, 343). This complication can result in aspiration pneumonia and its accompanying infections. Aspiration “is the most common reason enteral nutrition support is recommended” (Nelms, 359). Ulceration, perforation, or stricture of the esophagus in a GERD patient would be the result of highly acidic gastric contents entering the esophagus from the stomach and damaging the protective mucosal walls of the esophagus. Any holes worn in the esophageal walls could result in discomfort, infection, and inflammation. All of these complications can be detected with the use of a barium esophagram. Barrett’s esophagus, also known as Barrett’s metaplasia, describes when there is “a change in the epithelial cells of the esophageal mucosa” (Nelms, 357). The esophagus is usually lined with squamous cell epithelium and with this condition, those squamous cells change to metaplastic columnar cell epithelium. This cellular change in the esophagus puts patients at an increased risk of developing adenocarcinoma, a malignant tumor, of the esophagus (Nelms, 357).

*4. The physician biopsied for H. pylori. What is this?*

*Helicobacter pylori* is a bacteria “that is spiral-shaped, flagellated, Gram-negative rod that lives under the mucous layer of the stomach and attaches to mucus-secreting cells lining the stomach” (Nelms, 365). It has been shows that many individuals who are positive for *H. pylori* but do not necessarily develop peptic ulcer disease. “It is estimated that 92% of duodenal ulcers and 70% of gastric ulcers are caused by *H. pylori*” (Nelms, 365). This bacteria has shown to be the most common cause of a chronic gastritis and peptic ulcer disease (Gropper & Smith, 42). This type of bacteria can reduce the protective mucus coating in the stomach. These *H. pylori* are able to survive in the acidic environment by producing ammonia from the breakdown of urea. When a biopsy for H. pylori is completed the physician would be able to properly diagnose that the patient had a peptic ulcer or GERD (Nelms, 69).

*5. Identify the patient’s signs and symptoms that could suggest the diagnosis of gastroesophageal reflux disease.*

Signs and symptoms that could suggest the diagnosis of gastroesophageal reflux disease is that the patient stated he was experiencing increased indigestion over the course of a the last year progressing from at night, to now almost constantly. The patient stated he has been taking Tums medication several times a day. Additionally, the patient's physical and lifestyle factors could be a component of his diagnosis for GERD due to his lack of exercise, and regular consumption of alcohol: 1-2 beers for 3-4 times per week. The patient has gained 35 pounds in the last 5 years since his knee surgery, and does not watch his diet. Also, Mr. Nelson claims he is worried about his family history of heart disease, which is why he takes an aspirin each day (Nelms, 72).

*6. Describe the diagnostic tests performed for this patient.*

In addition to the routine hematology and chem 24 panel, there were three diagnostic tests performed on Mr. Nelson, which include an ambulatory 48-hour pH monitoring with Bravo pH monitoring system, an endoscopy with a biopsy to rule out *H. pylori* infection, and a barium esophagram. An **ambulatory 48-hour pH monitoring** test measures and records a patient’s esophageal pH to diagnose GERD as well as “determine the effectiveness of medications or surgical treatment for GERD” (Cleveland Clinic, 2012). This test is done by attaching a small capsule, that measures and transmits pH levels in the esophagus, to the wall of the esophagus during an endoscopy. This, along with a detailed activities and food diary, will record GERD symptoms (Cleveland Clinic, 2012). An **endoscopy** uses an endoscope, which is a camera attached to tube, to see images of the inside of the body (MedlinePlus, 2015). Mr. Nelson’s endoscopy was used to view the interior of his upper gastrointestinal tract in order to biopsy tissue to rule out an *H. pylori* infection. A **barium esophagram**, also known as a barium swallow, is used to “diagnose structural or functional abnormalities of the pharynx and esophagus,” (Johns Hopkins Medicine, n.d.) such as GERD. For this test, patients must prepare the night before by not eating or drinking a certain amount of time prior to the procedure. A thickened barium drink is given to the patient once they are ready for the test to begin. Then, the radiologist will take pictures, video, or a series of x-rays to track the flow of barium through the gastrointestinal tract. This process may be repeated with a thinner barium test. If the barium drinks do not flow through the GI tract as they should, a structural or functional abnormality may be detected (Johns Hopkins Medicine, n.d.).

*7. What risk factors does the patient present with that might contribute to his diagnosis? (Be sure to consider lifestyle, medical, and nutritional factors.)*

Mr. Nelson has multiple risk factors that may be contributing to his diagnosis of gastroesophageal reflux disease. As evidenced by his usual dietary intake and 24-hour recall, his diet includes high fat foods, alcohol, and caffeine. His family’s busy schedule prompts them to eat out 1-2 times per week and he has a tendency of eating fried foods, which both contribute to his fat intake being higher. Mr. Nelson also reports drinking 1-2 beers 3-4 times per week and 5-6 12 ounce diet sodas daily. These three food items are known to lower the pressure in his lower esophageal sphincter, resulting in reflux of gastric contents from the stomach into the esophagus. Caffeine and alcohol are also known to increase gastric acid secretion, which would increase the amount of gastric content entering the esophagus when the LES pressure is low (Nelms, 357). His obesity also puts him at a greater risk for GERD (Nelms, 355). His weight gain is most likely due to his decreased physical activity since knee surgery as well as his increased consumption of foods and beverages due to stress. Also, due to the patient worrying about his family history of heart disease, he takes 1 aspirin each day. Aspirin is classified as an NSAID, which worsen the patient's symptoms by interfering with control of gastric secretions (Gropper & Smith, 42).

*8. The MD has decreased the patient’s dose of daily aspirin and recommended discontinuing his ibuprofen. Why? How do aspirin and NSAIDs affect gastroesophageal disease?*

The MD decreased the patient’s dose of daily aspirin from 325 mg daily to 75 mg daily and recommended discontinuing his ibuprofen. The MD decided to discontinue Mr. Nelson’s ibuprofen use because taking ibuprofen regularly can interfere with aspirin (Mayo Clinic, 2015). The MD most likely chose to discontinue ibuprofen rather than aspirin because of the patient’s family history of heart disease. Aspirin and ibuprofen, which are nonsteroidal anti-inflammatory drugs (NSAIDs), are medications to relieve GERD symptoms, but excessive use can make symptoms worse. NSAIDs interfere with control of gastric secretions by blocking several of those regulatory pathways (Nelms, 356). These medications “disrupt the mucus and bicarbonate rich lining of the mucosa of the gastrointestinal tract, which ultimately can cause a peptic ulcer” (Gropper & Smith, 42). Therefore, aspirin and NSAIDs affect the gastroesophageal disease by making it worse because they can irritate the esophagus and cause heartburn and overall make the symptoms of GERD worse (Mayo Clinic, 2015).

*9. The MD has prescribed omeprazole. What class of medication is this? What is the basic mechanism of the drug? What other drugs are available in this class? What other groups of medications are used to treat GERD?*

Omeprazole falls under the medication class of a proton pump inhibitor (PPI), which in general suppresses the molecules that are responsible for the release of stomach acid (University of Maryland Medical Center, 2013). The basic mechanism of this drug is that it blocks the hydrogen (H+), potassium (K+) and ATPase enzyme, which are components in the production of hydrochloric acid (HCl) (Nelms, 356). In general, omeprazole is used to treat the symptoms of GERD, allow the esophagus to heal, and then prevent further damage to the esophagus. Omeprazole is used to treat a condition when too much acid is produced in the stomach and to help heal ulcers and prevent the return of ulcers due to *H. pylori* bacteria (MedlinePlus, 2014). Other drugs that are available in this class are lansoprazole, pantoprazole, rabeprazole, and esomeprazole. Other groups of medications that are used to treat GERD include antacids, foaming agents, H2 antagonist and prokinetics. Antacids use three basic salts to help neutralize the HCl within the stomach. Next, foaming agents are combinations of aluminum, magnesium and sodium bicarbonate to reduce the symptoms associated with reflux. H2 antagonists block histamine receptors that are a component of one of the stimulatory paths of acid secretion. Lastly, prokinetics help strengthen the pyloric sphincter and increase the speed of gastric emptying to therefore reduce gastroesophageal reflux (Nelms, 356).

1. **Understanding the Nutrition Therapy**

*10. Summarize the current recommendations for nutrition therapy for GERD.*

The current recommendations for nutrition therapy for GERD include reducing gastric acidity through a trial of food restriction and excluding foods that may lower the LES pressure (Nelms, 355). In general, certain foods that lower LES pressure include chocolate, coffee, high-fat foods, alcohol, pepper, carminatives such as peppermint and spearmint should be avoided. If Mr. Nelson is able to identify specific foods that make his symptoms worse, he should decrease the intake of those specific foods. Some foods that commonly aggravate GERD symptoms include caffeinated beverages, milk products, eggs, high-fat cereals, meat such as bacon, sausage, pepperoni and salami, vegetables, and high fat desserts (Nelms, 357). Additionally, Mr. Nelson should have smaller more frequent meals as this will lower the LES pressure. As the patient is mildly obese, weight loss is recommended to improve the overall symptoms of GERD (Nelms, 357).

1. **Nutrition Assessment**

*11. Calculate the patient’s %UBW and BMI. What does this assessment of weight tell you? In what ways may this contribute to his diagnosis?*

Ht: 5’9”; Wt: 215 lbs.

BMI = wt. (kg) / ht. (cm)2

BMI = [(215 lbs. / 2.2 kg) / (69 in. x 2.54 cm)2]

BMI = 97.7 kg / (175.26 cm)2

BMI = 97.7 kg / (1.75)2

**BMI = 31.9**

%UBW = (Current Body Weight / UBW) x 100

%UBW = (215 lbs. / (215 lbs. - 35 lbs.)) x 100

%UBW = (215 lbs. / 180 lbs.) x 100

**%UBW = 119%**

(Fine)

The use of body mass index, or BMI, as an assessment of body weight gives us an idea of what weight category he belongs to, in relation to his height and weight. With a BMI of 31.9, Mr. Nelson is considered to be mildly obese. The use of percent usually body weight, or %UBW, as an assessment of body weight tells us what percentage a patient is over or under their usual body weight. There are designated percent ranges that determine if a patient is mildly, moderately, or severely malnourished or overnourished. For example, mild malnutrition is 85-95% of UBW, moderate malnutrition is 75-84% of UBW, and severe malnutrition is 0-74% of UBW (Fine). Mr. Nelson’s %UBW is 119%. This indicates that he has 19% more weight than his UBW. This coincides with the fact that his BMI of 31.9 considers him to be obese. Obesity may contribute to his diagnosis of GERD because eating large meals, especially ones that contain foods that lower LES pressure or contain acid, increases the amount of acid produced in the stomach, delay gastric emptying, and put individuals at a higher risk of acid refluxing into the esophagus (Nelms, 357). A lack of physical activity may also promote reflux of these acids from the stomach into the esophagus.

*12. Calculate energy and protein requirements for Mr. Nelson. How would this recommendation be modified to support a gradual weight loss?*

Hamwi Method:

IDB = 106 lbs. + (6 lbs. x in. over 5 ft.)

IDB = 106 lbs. + (6 lbs. x 9 in.)

**IDB = 160 lbs.**

**IDB =** 160 lbs. / 2.2 kg = **72.7 kg**

Adjusted Body Weight:

ABW = IBW + 0.25 (UBW - IBW)

ABW = 160 lbs. + 0.25 (180 lbs. - 160 lbs.)

ABW = 160 lbs. + (0.25 x 20 lbs.)

ABW = 160 lbs. + 5 lbs.

**ABW = 165 lbs.**

**ABW =** 165 lbs. / 2.2 kg = **75 kg**

Mifflin St. Jeor:

EER = [10 x ABW (kg) + 6.25 x ht (cm) - 5 x age (yrs) + 5] x PAL

EER = [10 x 75 kg + 6.25 x 175.26 cm - 5 x 48 + 5] x 1.6

EER = [750 + 1095.375 - 240 + 5] x 1.6

EER = [1610.375] x 1.6

EER = 2,576.6 kcal

**EER Range = 2,500 - 2,600 kcal**

Protein Requirements:

PRO = Factor x ABW

PRO = 1.0 g/kg/day x 75 kg PRO = 1.5 g/kg/day x 75 kg

PRO = 75 g/kg/day PRO = 112.5 g/kg/day

**PRO = 75 g/kg/day - 112.5 g/kg/day**

This recommendation of 2,500 to 2,600 kcal/day would be considered a recommendation to support a gradual weight loss. As evidenced by his usual intake recall, his usual intake of calories is 3,000 to 3,100 kcal/day. It is recommended that individuals safely lose 1 lb. per week, which is equivalent to 3,500 kcal per week. This means that he must consume 500 kcal less per day. If his usual intake is 3,000 to 3,100 kcal/day and he consumes 500 kcal less per day, he will be consuming 2,500 to 2,600 kcal per day to lose 1 lb. per week. These gradual weight loss recommendations are the same as his estimated energy requirements (EER), which were calculated based on his adjusted body weight of 75 kg (165 lbs.). According to Mr. Nelson’s usual intake recall, his quality of foods is not necessarily the reason for his weight gain, it is the amount of each food he is consuming. By simply reducing his portion sizes, this goal of 500 kcal less per day should be easy to achieve.

*13. Complete a computerized nutrient analysis for this patient’s usual intake and 24-hour recall. How does his caloric intake compare to your calculated requirements?*

**Usual Intake**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Meal** | **Food Item** | **kcal**  | **CHO (g)** | **FAT (g)** | **PRO (g)** |
| AM | 1 ½ - **2** c. dry cereal (Cheerios, bran flakes, Crispix) | 214 | 50.4 | 0.64 | 3.31 |
| ½ - **¾** c. skim milk | 65 | 8.98 | 0.33 | 6.30 |
| 16-**32** oz orange juice | 488 | 114.85 | 1.19 | 6.77 |
| Lunch | 1 ½ oz ham | 32 | 0.82 | 0.31 | 6.31 |
| 1 whole wheat bagel | 245 | 47.91 | 1.5 | 10 |
| 1 **apple** or other fruit | 95 | 25.13 | 0.31 | 0.47 |
| 1 c. chips | 130 | 13 | 9 | 2 |
| Diet soda | 0 | 0 | 0 | 0 |
| Snack | Handful of crackers, **cookies (4 small)**, or chips | 137 | 16 | 8 | 2 |
| 1-**2**, 16 oz beers | 409 | 33.75 | 0 | 4.37 |
| PM | 6-**9** oz of meat (grilled, baked) | 385 | 0 | 8.08 | 77.88 |
| Pasta, rice, or **potatoes (medium baked)** | 131 | 28 | 0 | 3 |
| 1-**2** c. fresh fruit (strawberry halves) | 106 | 25.5 | 1 | 2.22 |
| **Garden Salad** or vegetable | 22 | 5 | 0 | 1 |
| Bread (regular slice) | 125 | 22 | 3 | 3 |
| Iced tea | 343 | 36.27 | 0 | 0 |
| Late PM | **Ice cream**, popcorn, or crackers | 137 | 16 | 7 | 2 |
| **Totals:** |  | **3,064** | **443.61** | **40.36** | **130.63** |

(USDA, 2011) (Supertracker, 2015)

**\*\***Mr. Nelson also reports drinking 5-6, 12 oz diet sodas daily as well as iced tea. Relates his family’s schedule has been increasingly busy, so they order pizza or stop for fast food 1-2 times per week instead of cooking.

**24-Hour Recall**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Meal** | **Food Item** | **kcal** | **CHO (g)** | **FAT (g)** | **PRO (g)** |
| At home  | 2 c. Crispix | 214 | 50.4 | 0.64 | 3.31 |
| 1 c. skim milk | 86 | 11.98 | 0.44 | 8.4 |
| 16 oz orange juice | 244 | 57.42 | 0.6 | 3.38 |
| At work | 3, 12 oz Diet Pepsis | 0 | 0 | 0 | 0 |
| Lunch | Fried chicken sandwich from McDonald’s | 524 | 58.56 | 19.96 | 27.78 |
| Small french fries | 229 | 30.23 | 10.98 | 2.42 |
| 32 oz iced tea | 343 | 36.27 | 0 | 0 |
| Late afternoon | 2 c. chips | 260 | 26 | 17 | 4 |
| 1 beer | 153 | 12.65 | 0 | 1.64 |
| Dinner | 1 fried chicken breast from KFC | 490 | 13.31 | 27.79 | 46.51 |
| 1 ½ c. potato salad | 488 | 57.9 | 25.8 | 6.55 |
| ¼ c. green bean casserole | 77 | 8 | 4 | 2 |
| ½ c. fruit salad | 73 | 19.08 | 0.09 | 0.43 |
| 1 c. baked beans | 239 | 53.7 | 0.94 | 12.06 |
| Iced tea | 343 | 36.27 | 0 | 0 |
| Bedtime | 2 c. ice cream  | 546 | 62.3 | 29.04 | 9.24 |
| 1 c. skim milk | 86 | 11.98 | 0.44 | 8.4 |
| **Totals:** |  | **4,395** | **546.05** | **137.72** | **136.12** |

(USDA, 2011) (Supertracker, 2015)

Mr. Nelson’s caloric intake for his usual intake recall (3,064 kcal) exceeds his recommended caloric intake of 2,500 to 2,600 kcal by about **500 kcal**. This difference in amount of kcal is the target for Mr. Nelson’s gradual weight loss of consuming 500 kcal less per day. His caloric intake for his 24-hour recall (4,395 kcal) exceeds his recommended caloric intake of 2,500 to 2,600 kcal by about **1,800 kcal**. The difference between his usual intake and 24-hour recall is most likely due to the fact that his types and amounts of food are more accurate for his 24-hour recall. He could be underreporting his usual caloric intake or the day he reported for his 24-hour recall may have been a special day where he consumed more kcal than he usually would have. Although our calculated estimated energy requirement is 2,500 to 2,600 kcal/day and we think this would be the appropriate caloric range for his gradual weight loss, we would ease Mr. Nelson into this reduced calorie amount at a pace he is comfortable and realistic for him.

*14. Are there any other abnormal labs that should be addressed to improve Mr. Nelson’s overall health? Explain.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Abnormal Lab**  | **Ref. Range (Male)** | **Lab Value** | **High or Low** |
| Cholesterol (mg/dL) | 120 - 199 | 220 | High |
| HDL-C (mg/dL) | >45 | 20 | Low |
| LDL (mg/dL) | <130 | 165 | High |
| LDL/HDL ratio | <3.55 | 8.25 | High |
| Triglycerides (mg/dL) | 40-160 | 178 | High |

These five labs are the only abnormal labs in Mr. Nelson’s medical chart. These abnormal labs describe his lipid profile, which indicates that he is consuming too much saturated and trans fats and too little mono/polyunsaturated fats. Mr. Nelson’s diet history reflects he is eating high fat foods, such as fried chicken. These high fat foods affect his lipid profile as well as contribute to GERD symptoms. Restriction of high fat foods will also decrease his calorie intake. This will allow him to lose weight, which will improve his overall health.

*15. What other components of lifestyle modification would you address in order to help in treating his disorder?*

Mr. Nelson must first adhere to his new nutrition restrictions. He will have to adapt to decreasing his caloric intake through controlled portion sizes, and decrease his alcohol and caffeine consumption in order to avoid decreasing LES pressure and triggering reflux. He will also need to plan out and try to prepare his own meals at home in order to avoid eating out as much. If this becomes difficult for him to implement when he is busy at work, he should practice meal planning so he can pre-prepare his lunch and bring it with him to work, rather than eating at a fast food restaurant because it is quick and easy. His diet histories reveal that he often purchases fried foods when eating out. Mr. Nelson must also implement activities to make him more physically active. This may include finding activities that are comfortable for him to perform when keeping his previous knee surgery in mind. He may also benefit from activities that aim to reduce stress. He seems to be stressed about his family history of heart disease, among other things, and this stress is causing him to over-consume foods and beverages. These modification will allow him to better control his calorie intake and that, along with increased physical activity, will promote weight loss and decrease signs and symptoms of GERD.

1. **Nutrition Diagnosis**

*16. Identify pertinent nutrition problems and corresponding nutrition diagnoses and write at least two PES statements for them.*

* Excessive calorie intake (NI-1.3) related to decreased ability to run due to previous knee surgery, inability to find a consistent replacement for exercise, and increased stress as evidenced by a BMI of 31.9, a usual caloric intake of 3,064 kcal/day, and a 24-hour recall of 4,395 kcal/day.
* Intake of types of fats inconsistent with needs (NI-5.6.3) related to lack of nutrition education as evidenced by lab values indicating high intake of cholesterol (220 mg/dL), LDL cholesterol (165 mg/dL), LDL/HDL ratio (8.25) and triglycerides (178 mg/dL) as well as low intake of HDL-C (20 mg/dL).
* Altered gastrointestinal (GI) function (NC-1.4) related to consumption of foods that lower LES pressure as evidenced by reflux, endoscopic gastroesophageal examination, and patient reports of increased indigestion over the past year.
1. **Nutrition Intervention**

*17. Determine the appropriate intervention for each nutrition diagnosis.*

* **Nutrition Education:** Prior to beginning nutrition counseling, Mr. Nelson will participate in one nutrition education session for his excessive calorie intake, types of fats that he needs to consume more or less of, and foods that lower LES pressure. His education will focus on portion sizes, eating smaller, more frequent meals, decreasing saturated fats according to his likes and dislikes, and identifying foods that lower LES pressure and cause signs and symptoms of GERD. He will be provided with handouts that will make it easy for him to visualize portion sizes, identify sources of mono/polyunsaturated and saturated/trans fats, and list foods that increase gastric acid secretion and lower LES pressure causing gastroesophageal reflux. He will also be educated on the anatomy of the esophagus and gastrointestinal tract so he has a solid understanding of how and why GERD occurs.
* **Nutrition Counseling:** In addition to nutrition education that gives him the *knowledge* to improve his nutrition decisions, Mr. Nelson will participate in nutrition counseling once a week for the first month, twice a week for the next five months, and once a month after that to give him the *support* and *self-efficacy* to do so as well. Some of the topics he will be counseled on include reducing intake frequency and amount of sugary beverages, decreasing alcohol consumption to 1 beer 1-2 times per week and caffeine consumption to 2-3 diet sodas per day, meal planning for breakfast, snacks, lunch, and dinner, and addressing size and frequency of meals he plans. His wife will be asked to accompany him to his counseling sessions so that she can be involved in meal planning, meal preparation, and supporting his nutrition decisions. As part of the counseling, Mr. Nelson will be asked to keep a food, beverage, and activity log. He will also be asked to reflect on any activities or events that trigger his stress so those can be addressed at the following counseling sessions. This is important because those activities or events that trigger his stress, will also trigger his desire to over consume. At the first counseling session, Mr. Nelson’s goals will be established, which may include a weight loss goal, physical activity goal, and/or accomplishment of a nutrition related achievement (i.e. cooking a new recipe or going grocery shopping). Interactions between Mr. Nelson and a nutrition counselor will help determine an appropriate coordination of care plan or help to revise the current care plan in place.
* **Coordination of Nutrition Care:** It is evident from Mr. Nelson’s patient history that he has a decreased ability to run, due to his knee surgery 5 years ago, and he is unable to find a consistent replacement for exercise. He should be referred to a physical therapist who can work with him to find exercise activities that are appropriate for his age, physical ability, busy schedule, and person likes and dislikes. He would be able to set a physical activity goal with the physical therapist, which will assist in his efforts to lose weight. Once cleared by the physical therapist for exercise, it would worth it for Mr. Nelson to inquire at his workplace if there are any employee benefits he can take advantage of to improve his overall health, such as a free membership to the local gym. He may also be put in contact with a pharmacist who would be able to discuss with him the possible drug interactions that may occur with medications he has previously taken or will continue to take. This connection may be necessary due to his inability to identify that aspirin and ibuprofen interact with each other. Lastly, his care will be coordinated with his family. They should provide a supportive home environment for Mr. Nelson to try new foods and reduce foods that may irritate his GERD symptoms. Mr. Nelson’s nutrition plans will be less effective and his goals will not be reached if other family members are consuming or preparing foods that tempt him to relapse.

*18. Using Mr. Nelson’s 24-hour recall, outline necessary modifications you could use as a teaching tool.*

|  |  |  |
| --- | --- | --- |
| **Food Item** | **Modification** | **Rationale** |
| Crispix | Eat Crispix in 1 cup servings and not the entire box. Possibly try a cereal with more than 2 grams of protein.  | Crispix has 110 kcal per 1 cup serving with 4 grams of sugar (Kellogg’s, 2015). This cereal option is not a bad choice if Mr. Nelson really enjoys it. The improvement that could be made is to try a cereal or other breakfast item with more protein to keep him feeling fuller longer.  |
| Skim milk | Continuing drinking milk each day. | Skim milk is a great option to receive necessary calcium and does not have the fat and extra calories like whole milk does. |
| Orange juice | Eat an orange or piece of fruit.  | One 8 oz cup of orange juice has 21 grams of sugar. This is a lot of sugar and excess calories that Mr. Nelson can easily cut back on. He can eat an orange to receive the same serving of fruit. |
| Diet Pepsi | It is important to decrease the amount of Diet Pepsi that Mr. Nelson is consuming to 2-3 cans each day. Another alternative to Diet Pepsi is to try Crystal Light Sweetened Drinks such as the ones that can be added to a bottle of water, so Mr. Nelson is still enjoying flavors in his drink.  | A 12 oz can of Diet Pepsi contains 35 mg of caffeine (Pepsico, 2015). If Mr. Nelson is drinking 5-6 of these cans each day, he is consuming 175-210 mg of caffeine just from beverages. Caffeine should be limited in GERD patients because it is one of the foods known to decrease lower esophageal sphincter pressure, causing a reflux of gastric content from the stomach into the esophagus. |
| Fried chicken sandwich | Mr. Nelson should try to pack a sandwich from home instead of stopping for fast food when he is on the road. As reflected by his busy lifestyle, Mr. Nelson can easily plan his meals ahead and not have to pick up fast food because it is quick and easy.  | One fried chicken sandwich from a fast food chain, such as McDonalds, has about 36 grams of fat and 7 grams of saturated fat (USDA, 2015). Fried foods are one of the food items that are known to decrease the lower esophageal sphincter pressure, which causes GERD. Mr. Nelson should cut fried foods out of his diet, and eating less fried foods will also help him lose weight.  |
| French fries | A better option to french fries would be baked potato chips in moderation, if Mr. Nelson wanted a snack that he was used to eating.  | One medium order of fast food french fries has 21 grams of fat and 5 grams of saturated fat. Fried foods are one of the food items that are known to decrease the lower esophageal sphincter pressure, which causes GERD. (USDA, 2015) Mr. Nelson should cut fried foods out of his diet and eating less fried foods will also help him lose weight.  |
| Iced Tea | Fruit/vegetable infused water (lemon, strawberries or cucumbers) | Iced tea is a source of caffeine and sugar. A 20 oz Lipton Lemon Iced Tea contains 25 mg of caffeine and 31 g of sugar (Lipton, 2015). Caffeine is one of the food items that is known to decrease lower esophageal sphincter pressure, which allows gastroesophageal reflux to occur. The added sugars in iced tea would promote weight gain and make it difficult for Mr. Nelson to lose weight and lower his BMI out of the “obese” classification. |
| Chips | Try carrot sticks or celery while driving or on the go at work instead of getting a bag of chips from the vending machine because they have the same texture.  | There is nothing wrong with eating potato chips, but we would be more concerned about the portion size that Mr. Nelson is consuming.  |
| Beer | Try non-alcoholic beer products or at least limit alcohol consumption to 1 beer 1-2 times/week rather than his usual 1-2 beers 3-4 times/week | Mr. Nelson should avoid alcoholic beverages because alcohol is another one of the food items known to lower esophageal sphincter pressure. |
| Fried chicken | Mr. Nelson should try baked, sauteed, broiled, or grilled chicken, which are significantly lower in saturated fat and higher in mono and polyunsaturated fats.  | An 8 oz serving of fried chicken has about 30 grams of fat and 6 grams of saturated fat. Fried foods are one of the food items that are known to decrease the lower esophageal sphincter pressure, which causes GERD to occur. Mr. Nelson should cut fried foods out of his diet and eating less fried foods will also help him lose weight.  |
| Potato salad | A fresh green salad or vegetable side salad. | Potato salad can be prepared in a variety of ways and, depending on the preparation technique, could be very high in fat. A preparation method with mayonnaise and eggs has 218 calories with 7 grams of fat in a 1 cup serving compared to the preparation technique of German potato salad with 154 calories and 2 grams of fat (USDA, 2015). Depending on the type of potato salad Mr. Nelson chooses, it could be a good option. There are other great vegetables sides that Mr. Nelson should consider trying that are even lower in calories and fat.  |
| Green bean casserole | Sauteed green beans with seasonings and garlic.  | A green bean casserole has a lot of extra calories and fat added to it that Mr. Nelson is supposed to be cutting from his diet.  |
| Fruit salad | Mr. Nelson should continue eating his fruit salad (preferably fresh).  | Fruit salad is an excellent choice especially if it is fresh fruit and not in a heavy syrup for example. Additionally, fruit salad can be prepared ahead of time and brought on the go or to work with Mr. Nelson.  |
| Baked beans | A three bean salad.  | One ¾ cup of baked beans has 292 calories with 10 grams of fat and 12 grams of sugar (USDA, 2015). As baked beans are not a bad option, there are better alternatives that are lower in calories and fat.  |
| Milkshake | Using ice cream that is reduced fat and skim milk, and only consuming every once in awhile and not on a regular basis.  | A milkshake is not a bad option as long as Mr. Nelson is not having one every day. Assuming he is having skim milk that would be a good option, but regular ice cream is high in fat and added calories that he could easily avoid.  |

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