Erin McNamara
Case Study #2 – Myocardial Infarction

1. **Mr. Klosterman had a myocardial infarction. Explain what happened to his heart.**
   Myocardial infarction (MI), a heart attack, happens when the blood flow that carries oxygen to the heart is greatly reduced or cut off completely. This occurs due to atherosclerosis, a buildup of plaque in the arteries. The plaque consists of fat, cholesterol and other substances. Plaque can break in the arteries, which causes a blood clot to form around the plaque. This blood clot blocks the blood flow causing the heart to become starved for oxygen and nutrients (ischemia). MI occurs when damage is done to the heart muscle because of ischemia.

2. **Mr. Klosterman was treated with an angioplasty and stent placement. Explain this medical procedure and its purpose.**
   Angioplasty is a procedure where a tube with an attached balloon is laced into the coronary artery that has been cut off or reduced. Once placed in the artery, the balloon is inflated to widen the blocked areas. The stent placement helps prop open the artery to help decrease the chance of another blockage.

3. **What risk factors indicated in this medical record can be addressed through nutrition therapy?**
   The risk factors that can addresses are his weight, amount of physical activity, diet, and smoking.

4. **Mr. Klosterman and his wife are concerned about the future of his heart health. What role does cardiac rehabilitation play in his return to normal activities and in determining his future heart health?**
   Cardiac rehabilitation is a supervised program usually designed to provide education and counseling to patients who are recovering from MI's, heart surgeries, and procedures such as angioplasty. The goal of the program is to increase physical fitness, reduce cardiac symptoms and risk of future heart problems, and improve overall health. This rehabilitation plays in important role in the future of his heart. Physical activity will help his heart heal and make it stronger. Counseling will help him quit smoking. Nutrition education will teach him how to choose the right foods to lose weight, reduce cholesterol and blood pressure.

5. **Are there any current recommendations for nutritional intake during a hospitalization following a myocardial infarction?**
   Mr. Klosterman is on NPO until after his angioplasty. After his procedure, he should then be on a liquid diet, without caffeine, for the next 24 hours. He will then transition to soft foods, avoiding foods that produce gas. He should

consume small meals spread throughout the day. Depending on his current blood pressure and fluid status, sodium may need to be restricted.

6. **What is the healthy weight range for an individual of Mr. Klosterman's height?**
   Healthy weight range for an individual of Mr. Klosterman's height:
   The Hamwi Method:
   HT: 5'10" (70 inches) WT: 185#
   106# for first 60 inches + 6# for every inch over
   106 + (6*10) = 106 + 60 = 166#

   A healthy weight range based on the BMI chart is approximately 131# to 174#.

7. **This patient in a Lutheran minister. He does get some exercise daily. He walks his dog outside for about a 15-minute walk at a leisurely pace. Calculate his energy needs.**
   Miflin-St. Jeor equation
   REE = 10 (WT kg) + 6.25 (HT cm) – 5 (age yrs) + 5
   REE = 10 (84.09 kg) + 6.25 (177.8 cm) – 5(61) + 5
   REE = 840.9 + 1111.25 – 305 + 5
   REE = 1652 kcal

   Activity factor = 1.5 (ADLs)
   Surgery = 1.1 (minor)

   TEE = REE (activity factor) x (injury factor)
   TEE = 1652 (1.5) = 826
   TEE = 1652 (1.1) = 165
   TEE = 1652 + 826 + 165 = 2641 kcal

   Mr. Klosterman's approximate energy needs is 2641 kcal / daily

   How many grams of protein should he have daily?
   From RD411.com:
   Protein requirement, > 50 years old
   0.8 g /kg/day to 1.0 g/kg/day
   0.8 g (83.9 kg) = 67 g, 1.0 g (83.9 kg) = 83.9 g
   Mr. Klosterman approximate protein need is 67 g – 84 g/ daily.

8. **Using Mr. Klosterman's 24-hour recall, calculate the total number of calories, carbohydrate, and fat using the exchange system.**
   SuperTracker Exchange System via My Plate
   Mr. Klosterman ate approximately 2429 calories; 344 g of carbohydrates and 25% of his total calories came from fat with 21 grams being saturated fat.

9. **From the information gathered within the intake domain, list possible nutrition problems using the diagnostic term.**
   NI – 5.6.3 Inappropriate fat intake (saturated fat)
   NI – 5.8.2 Excessive carbohydrate intake

10. **Examine the chemistry results for Mr. Klosterman. Which labs are consistent with the MI diagnosis? Explain.**
    Higher than normal levels of cardiac enzymes indicates tissue damage. Mr. Klosterman's levels of Troponin I and T are high on day one and day two. An increase in these levels mean there is damage to the heart and the level of his results indicates an MI has occurred. On day two, CPK and CPK-MB are elevated. CPK-MB is checked when CPK is elevated to assess whether an MI occurred.

11. **Why are levels higher on day 2?**
    Cardiac enzymes continue to increase following heart damage. Troponin levels are at their peak 10 to 24 hours after an MI and can continue to remain high for one to two weeks after a heart attack. CPK levels rise and are at their peak 12 to 24 hours after an MI. CK-MB can remain elevated for up to 48 hours. AST levels, used to track tissue damage and the healing process, can rise in response surgery.

12. **What is abnormal about his lipid profile? Indicate the abnormal levels.**
    Mr. Klosterman's abnormal levels:
    Total cholesterol is 235 = borderline high level.
    LDL cholesterol is 160 = high level
    HDL cholesterol is 30 = low level.
    The high levels of total cholesterol and LDL, and low levels of HDL put him at a higher risk for CVD.

    A desirable lipoprotein profile:
    Total cholesterol of less than 200 mg/dL
    LDL cholesterol less than 130 mg/dL
    HDL cholesterol greater than 40 mg/dL

    Maintaining desirable levels lowers your risk for CVD.

13. **Mr. Klosterman was prescribed the following medications on discharge. What are the food-medication interactions for this list of medications?**
    Lopressor 50 mg daily – Avoid natural licorice, reduce sodium intake
    Lisinopril 10 mg daily – Avoid salt rubs & natural licorice, reduce sodium intake, limit high fat foods & alcohol, caution with vitamin D & Ca

supplement, monitor vitamin K and Mg supplement and insure adequate fluid intake
Nitro-Bid 9.0 mg twice daily – Avoid alcohol
NTG 0.4 mg sl prn chest pain – Avoid alcohol
ASA 81 mg daily – Avoid/limit natural foods that affect coagulation (garlic, ginger, ginseng), avoid alcohol, limit caffeine, increase foods high in vitamin C & folate and insure adequate fluid intake

14. **From the information gathered with the clinical domain, list possible nutrition problems using the diagnostic term.**
    NC-2.4 Predicted Food-Medication Interaction
    NC – 3.3 Overweight / Obesity

15. **You talk with Mr. Klosterman and his wife, a math teacher at the local high school. They are friendly and seem cooperative. They are both anxious to learn what they can do to prevent another heart attack. What questions will you ask them to assess how to best help them?**
    What types of foods do you like to eat?
    How often do you go out to eat?
    Who does the grocery shopping?
    Who does the cooking?
    What do you like to do in your free time?
    How much free time do you typically have?
    Do you frequently feel stressed?

16. **What other issues might you consider to support the success of his lifestyle changes?**
    Suggest a program to help Mr. Klosterman stop smoking.
    Suggest a program to help Mr. Klosterman increase his physical activity and lose weight.
    Suggest a healthy diet that will decrease his cholesterol and glucose levels and help him lose weight.

17. **From the information gathered within the behavioral- environmental domain, list possible nutrition problems using the diagnostic term.**
    NB – 1.7 Undesirable food choices
    NB – 2.1 Physical Inactivity

18. **Select two high-priority nutrition problems and complete PES statement for each.**
    NI – 5.6.3: Inappropriate intake of fats (high intake of saturated fats) RT food and nutrition-related knowledge deficit AEB borderline high TC, high LDL levels and low HDL levels.

NC – 3.3: Overweight RT physical inactivity AEB current weight of 185# (outside of healthy weight range), BMI of 26.5 (overwt) and no physical activity beyond ADLs.

19. **For each of the PES statements that you have written, establish an ideal goal (based on the signs and symptoms) and an appropriate intervention (based on etiology).**
    E – 1.1: Purpose of the nutrition education: Increase knowledge of healthy fats to decrease LDL and TC levels and raise HDL levels.
    E – 1.5 Recommended modifications: Increase physical activity tailored to patient's needs for rehabilitation of heart and weight loss.

20. **Mr. Klosterman and his wife ask about supplements. "My roommate here in the hospital told me I should take vitamin E and – I think it was folate along with omega – 3 fatty acid supplements." What does research say about vitamin E, folate, and omega -3 fatty acid supplements for this patient?**
    Research indicates intake of omega – 3 fatty acids decreases risk of CVD. It is recommended to get omega – 3 from food sources first such as fish, then from capsules. Dietary sources of vitamin E are encouraged. However research shows that taking a vitamin E supplement provide no protection for CVD. It is also encouraged to get adequate intake of folate from dietary sources, but research has shown that supplemental folate does not decrease risk of CVD.

21. **What would you want to assess in 3 to 4 weeks when he and his wife return for additional counseling?**
    I would want to evaluate his weight, daily activity and his implementation of the therapeutic lifestyle change diet. A 3-day food record should be reviewed to assess his intake of fat and caloric intake. His total cholesterol, LDL and HDL should be checked again. Diet modification may be necessary if the changed made did not have a significant impact. I would also inquire about his efforts to stop smoking.

ADIME

A: Patient states he experienced sudden, severe pain while driving home from work. Reports pain as pressure-like, radiating from his jaw down his left arm. No history of previous pain or palpitations but admits feeling nauseous. Admits to smoking 1 pack of cigarettes/day but denies DM, HTN, high cholesterol or SOB.
Family Hx: Father - CAD & MI (age 59), Maternal grandmother - cancer
61 year old male
Admit Dx: Myocardial infarction
Admitted with severe unrelenting precordial pain for the past 1.5 hours.
Ht: 70" wt: 185# BMI: 26.5 (overwt)

Labs: CHOL – 235, HDL – 30, LDL – 160
EER: 2641 kcal/daily (based on current status)
Est. protein 67g – 84 g / daily (based on current status)
Meds: None Allergies: Sulfa drugs
Current Diet Order: NPO
Pt appears mildly overweight in distress from chest pain. States he's had good appetite and trying to change diet by restricting fried foods and using corn oil instead of butter. Maintains low level of physical activity with 15 minutes of leisurely walking daily.

D: NI – 5.6.3: Inappropriate intake of fats (high intake of saturated fats) RT food and nutrition-related knowledge deficit AEB borderline high TC, high LDL levels and low HDL levels and intake level of ~22 g SFA vs. recommended intake <18 g SFA.
NC – 3.3: Overweight RT lifestyle choices AEB current weight of 185#, BMI 26.5, and lack of regular exercise program.

I: E – 1.1: Purpose of the nutrition education: Increase knowledge of healthy fats to decrease LDL and TC levels and raise HDL levels.
E – 1.5 Recommended modifications: Increase physical activity tailored to patient's needs for rehabilitation of heart and weight loss.
Recommend adapting TLC.

M/E: Monitor: BD – 1.7.1 Cholesterol, serum; BD 1.7.2 Cholesterol, HDL; BD1.7.3 Cholesterol, LDL
AD – 1.1.2 weight, goal to get within healthy weight range
FH – 1.5.1.2 Saturated Fat, goal to reduce SAT intake <18g
FH – 7.3.6 Type of Physical Activity, assess incorporation into lifestyle

Signature,
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References

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