

**NUT 116AL – CASE STUDY #2 - CVD**  
**Due 12/5/14**

**Instructions:**

Review the pt's medical record below. Answer each question and show your calculations for each, if required. Reference all calculation formulas with the text and page number from PR (i.e., PR p. \_\_\_\_). You must type your answers! If not, questions will not be graded and you will receive 0 points. CS #2 is worth 50 points.

**Medical Record Information:**

Present Illness: MW is a 42 yo engineering technician referred to his family physician for evaluation of arterial hypertension detected during a routine evaluation at an employment site wellness fair & health screening. The BP reading was confirmed by repeat measurements over the course of one month. Pt relates no prior history of elevated BP but had been warned to "watch his weight." Pt denies current symptoms of chest pain, SOB, edema, or visual symptoms. Pt smokes one pack of cigarettes a day; holds a desk job and plays tennis one or twice a week. Pt's body weight has been increasing by 2-3 pounds per year for the last ten years.

Past Medical History: Pt had measles, mumps, and chicken pox in childhood and an appendectomy approximately 20 years ago. No hx of rheumatic fever, DM, or kidney disease.

Family History: Father died at age 48 from an acute MI; mother is being treated for essential hypertension.

Social History: Married with two children; wife works as a legal secretary.

Review of Systems: Patient has no complaints except for C/O occasional mild tension headaches.

Physical Exam: Somewhat overweight white male; 5 ft. 10 in., 190 #, small frame, waist circumference 96 cm. UBW 170 (10 years ago). BP 155/103 right arm, sitting, without postural changes. P 76 and regular. R 15. Neck without thyromegaly, venous distention, or bruits. Lungs clear to P&A. Heart: regular rhythm without murmur or gallop. Abdomen slightly obese, soft and without bruit. Extremities revealed no edema. Screening neurologic exam, including mental status exam, is completely WNL.

Laboratory: Hct: 48%, Hgb 16 g/dL, FBG 96 mg/dL, BUN 15 mg/dL  
Lipid panel (fasting): T-chol 210 mg/dL, LDL 147 mg/dL, HDL 38 mg/dL, TG 150 mg/dL.  
U/A negative for glucose, protein and blood.  
EKG: normal sinus rhythm with rate of 80, normal intervals and no evidence of ischemia, strain, or hypertrophy. CXR unremarkable.

Rx: Lasix® 20 mg daily, Lipitor® 20 mg daily

Impression: Essential hypertension with elevated T-chol, LDL, and low HDL in a 42 yo overweight, otherwise healthy male with a positive family history of CHD.

Plan: Nutrition outpatient clinic referral for instruction in 1,500 kcal, 2 g Na, NCEP TLC diet. Encourage cessation of smoking and increase in exercise. RTC for BP and lipid panel check in 6 weeks.

**24 Hr. Diet Recall**

Client reports that this pattern is fairly typical of his usual weekday intake:

Breakfast

Milk, 2%, 8 oz.  
Eggs, 2 poached  
Toast, wheat, 2 slices  
Butter, 1 Tbsp.  
Table salt, 1/8 tsp.

McDonald's Lunch

Diet Coke  
Quarter Pounder, with cheese  
French fries, small

Dinner

Milk, 2%, 8 oz.  
Potato, baked, 1 med.  
Sour cream, 2 Tbsp.  
Chicken breast w/ skin, baked 6oz  
Broccoli, 1/2 cup  
Tossed salad, 1 cup  
    Lettuce, 1/2 tomato  
Ranch Dressing, 2 Tbsp.  
Roll, 1 small  
Butter, 1 Tbsp.  
Ice Cream, 10%, 1 cup  
Table salt, 1/8 tsp.

**Questions:**

- Conduct a nutrient analysis of the 24 hr. recall above, using the *Food Processor* program on the UC Davis website: <http://nutrition.ucdavis.edu/admin/remote/> Connect to the *Food Processor Remote Desktop Server* to access the database. For a review of how to use *Food Processor*, click on the *Nutrition 112 Lab* link. After you've input MW's 24 Hour Recall, select "Spreadsheet" from the "Reports" menu. Remember, to print all food items, select the "+" for the day and meals for them to show up on your spreadsheet report (all foods entered must be included in the print-out). The spreadsheet is what you will save on your desktop and print out and turn in (you may print 4 per page to save paper). Please hand-write at the top "MW's 24-Hour Recall." Complete the table below and attach the data print-out at the end of the Case Study. Briefly discuss the overall adequacy of MW's diet in the space below (partial credit will be given for providing only the daily totals without the print-out). (5 pts)

Total calories:	2484.7 kcal	
Total fat:	130.12 grams	% of kcals: 47.13%
Saturated fat:	53.27 grams	% of kcals: 19.3%
Monounsaturated Fat:	33.7 grams	% of kcals: 12.21%
Polyunsaturated Fat:	17.38 grams	% of kcals: 6.3%
Carbohydrate:	205.98 grams	% of kcals: 33.16%
Protein:	126.88 grams	% of kcals: 20.43%
Fiber:	18.51 grams	
Cholesterol:	776.86 mg	
Sodium:	3494.21 mg	
Potassium:	3058.02 mg	

Adequacy of MW's diet:

The amount of calories is consumed per day is approximately adequate, but some nutrients are either too high or low. Total fat, saturated fat, cholesterol, and sodium are too high in the diet. MW is not consuming enough fiber, potassium, and fluids (water) in his diet. In addition, he is consuming many simple carbohydrates instead of complex carbs. He is adding butter and salt to his diet, and the fat and sodium content are already too high.

2. Make changes in the diet in order to make it consistent with a 2500 kcal TLC dietary plan and summarize your changes below. **Highlight** the changes that you have made on the “Spreadsheet” print-out for MW’s modified diet. Please hand-write at the top “MW’s 2500 kcal TLC Diet.” Complete the table below and attach the data print-out at the end of the Case Study. Briefly summarize the changes you’ve made in MW’s diet in the space below (partial credit will be given for providing only daily totals without the print-out). (5 pts)

Total calories:	2009.08 kcal	
Total fat:	37.69 grams	% of kcals:16.88%
Saturated fat:	8.04 grams	% of kcals:3.6%
Monounsaturated Fat:	3.7 grams	% of kcals:1.7%
Polyunsaturated Fat:	0.55 grams	% of kcals:0.25%
Carbohydrate:	286.10 grams	% of kcals: 56.96%
Protein:	150.63grams	% of kcals: 29.99%
Fiber:	46.17 grams	
Cholesterol:	192.1 mg	
Sodium:	2458.65 mg	
Potassium:	4977.05 mg	

Summary of changes made:  
 Changes to MW's diet include adding fruit and vegetables (one serving at every meal). To reduce fat content, dairy items/salad dressings were changed to the non-fat versions and the ice cream was switched out with non-fat greek yogurt. Butter was removed from breakfast and dinner.  
 Lunch was changed to the McDonald's premium southwest salad.  
 To reduce sodium content, table salt was removed but instead replaced with Mrs. Dash salt substitute. The toast in the morning was replaced with whole wheat toast, and the roll at dinner was replaced with a whole wheat roll.  
 To reduce cholesterol, the eggs were replaced to just egg whites and the chicken breast was reduced in size and skinless.  
 Added water at several meals.  
 Added a morning snack to help curb any hunger, with water.

3. Compare the fat and cholesterol in your modified diet to the target goals based on a caloric intake of 2,500 kcals/day. (4 pts)

	<b>TLC Goal</b> (% of kcals in diet or grams chol.)	<b>MW’s Modified Diet</b> (% of kcals in diet or grams chol.)	<b>TLC Target grams</b> in 2,500 kcals/d	<b>MW’s Modified Diet</b> (grams)
Total fat:	25-35%	16.88%	625 - 875 kcal	37.68 g
Saturated fat:	<7%	3.6%	<175 kcal	8.04 g
Monounsatd. fat:	<20%	1.7%	<500 kcal	14 g
Polyunsatd. fat:	<10%	0.27%	<250 kcal	0.5 g
Cholesterol:	<200 mg	192.1 mg	<200 mg	192.1 mg

4. Interpret the results of MW's lipid panel, identifying which of the lipids are elevated based on the NCEP ATP III Guidelines. List the desired therapeutic goal (TLC goal parameter) for LDL cholesterol for MW, based on the NCEP guidelines. (3 pts)

Parameter	MW's Value in mg/dL	Interpretation based on NCEP classification	Therapeutic goal
Total Cholesterol	210	Borderline high	
LDL Cholesterol	147	Optimal	<100 mg/dl
HDL Cholesterol	38	Low	
Triglycerides	150	Borderline high	

5. List 3 food choices that together will provide 1600 mg of potassium and provide no more than a total of 300 kcals. The food choices should be reasonable foods and serving sizes that could be used to recommend to a client that needs to increase potassium intake due to use of a potassium wasting diuretic. (3 pts)

<i>Food</i>	<i>Portion size</i>	<i>mg K provided</i>	<i>kcal provided</i>
Butternut squash	1 cup	493 mg	63 kcal
Spinach (cooked)	1 cup	839 mg	41
Banana	1 medium	422 mg	105
		<b>Total = 1754 mg</b>	<b>Total = 209 kcal</b>

6. List & number MW's risk factors for CHD, based on the presentation data from his medical record. (2 pts)

<ol style="list-style-type: none"> <li>1. MW's family history of CHD</li> <li>2. Hypertension at 155/103 mmHg</li> <li>3. High cholesterol at 210 mm/dl</li> <li>4. Low HDL at 38 mg/dl</li> <li>5. Slightly overweight at BMI of 27.26</li> <li>6. Smoking 1 pack of cigarettes a day</li> <li>7. Not enough PA</li> </ol>
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7. What is metabolic syndrome & does MW meet the criteria? Why or why not? (2 pts)

<p>Metabolic syndrome is the name for a condition of risk factors that are associated with the development of cardiovascular diseases and type 2 diabetes. To be diagnosed with Metabolic syndrome, pt must have 3 of the 5 risk factors: abdominal obesity, high blood pressure, high fasting plasma glucose, high serum TG, and diabetes. MW has high blood pressure and borderline high TG levels, which only meet 2 of the risk factors. His waist circumference is 96 cm, which is &lt;102 cm (for cut off for men). He does not meet the criteria.</p> <p>Reference: NUT 116A CVD part 3 lecture notes</p>
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8. How do each of MW's prescribed medications work? What effect will these medications have on his nutritional care? Refer to the medication information in the NTP or PR texts or <http://www.pdr.net> (online Physician's Desk Reference). Cite the resource used for each drug. (4 pts)

**Lasix<sup>®</sup>**

Lasix is the brand name for Furosemide. Its purpose is to be a diuretic, increasing urinary excretion by inhibiting the absorption of Na and Cl in the proximal and distal tubules as well as the loop of Henle. Lasix should not be used if the pt has anuria because it may cause diuresis and electrolyte depletion. The patient should avoid alcohol, large amount of licorice, and laxatives because hypokalemia may develop. Lasix should be taken with a low sodium/high potassium diet if directed by a doctor. Side effects may include GI distress, dry mouth, and loss of appetite.

<http://www.pdr.net/drug-summary/lasix?druglabelid=2594>  
PRNA 9=09, page 73

**Lipitor<sup>®</sup>**

Lipitor, atoryastatin calcium/statin, is an HMG-CoA reductase inhibitor. This inhibits the rate-limiting enzyme during cholesterol synthesis. Its purpose is to lower total cholesterol, LDL, apo-B, and TG levels as well as increase HDL levels. Lipitor users should not take gemfibrozil or other fibric acid derivatives, and should avoid drinking large amounts of grape juice and avoid alcohol. Lipitor should be taken with a low cholesterol and low fat diet. Side effects include diarrhea, UTI, nausea, muscle spasms, and more.

<http://www.pdr.net/drug-summary/lipitor?druglabelid=2338&id=1088>  
PRNA 09 page 71

You assess MW's knowledge of a low-sodium, NCEP TLC diet as being limited to "just don't add any salt to food and avoid fried foods." He also tells you that he dislikes nonfat milk. He knows that he needs to make some changes, but did not feel like he knew what to do on his own. After discussion with you (the RD) using motivational interviewing techniques, the client is now verbalizing confidence to try to make some changes. Some mutually agreeable goals are set: he usually eats fast food for lunch but is willing to eat in the work cafeteria 2-3 times/wk, he agrees to substitute fruit for 1 or 2 high calorie foods each day, and he would like to make time to exercise >30 min 3 days/wk.

9. List and number 3 major teaching points (**dietary advice**) that you will need to discuss with MW in order for him to understand and follow a 2400 mg Na diet. (3 pts)

1. Sodium is naturally present in foods (e.g. eggs bread), so adding extra sodium and butter will provide too much sodium.
2. Turn to herbs and spices to flavor foods instead of salts. Many provide antioxidants as well!
3. Processed foods tend to have a lot of sodium, and fresh food (fruits and vegetables) tend to have a lot of potassium. Swapping the high calorie foods (processed, high fat, junk foods) with a fruit will help keep him on track to decreasing his sodium intake.

10. List and number 3 major teaching points (**dietary** advice) that you will need to discuss with MW in order for him to understand and follow the NCEP TLC diet. (3 pts)

1. Full -fat dairy, meats, and eggs contain high amounts of cholesterol. Cutting them to be non-fat, skinless, and taking yolk out of egg are small but simple ways to cut cholesterol from the diet.
2. Cutting back on saturated fat, like butter, is an easy way to reduce cholesterol. MW can try using olive oil or non-fat spreads on his bread/rolls as a better option.
3. Eating in the work cafeteria a few times a week is a healthier alternative to eating out at McDonald's or fast food joints. Fast foods have a lot of hidden saturated fats (e.g. fries fried in oil, greasy burgers) that have very little nutritional density but high calorie content, as well as sodium content.

11. MW is Jewish and resides in the SF Bay Area. Describe and explain Kosher dietary laws and any dietary restrictions you would need to consider when counseling MW. (4 pts)

Kosher meat means that the meat has been prepared (slaughtered) by a certified shochet in a humane way where the animal is not in any pain. The animal cannot be consumed if it died from natural causes, or if the organs had diseases or ailments at the time of slaughtering. The blood must be drained entirely before meat consumption. Certain animals are considered forbidden (e.g. rodents, reptiles, insects, etc) and the flesh, organs, eggs, nor milk are to be consumed.

12. MW has been referred to your Nutrition Clinic by his primary care physician for instruction on a 1,500 kcal, 2.4-g Na, TLC diet. Summarize your observations, assessment and plan of action in a SOAP note. Base your note on the pertinent information given in the presentation data, 24 hr recall, and questions above. It is important that you assess whether you feel that the current referral diet Rx (1,500 kcal, 2-g Na, NCEP TLC diet) is realistic and appropriate for your client's needs. Remember that this is an outpatient setting and the client is referred to you for counseling, which you will begin on this visit. Attach the SOAP note below and a separate sheet with all calculations as an attachment (the calculations may be hand-written). (12 points)

S:

- detected hypertension, but no previous elevated BP
- Pt denies symptoms of chest pain, SOB, edema, or visual symptoms
- No history of rheumatic fever, DM, or kidney disease
- Pt c/o mild tension headaches, smokes 1 pack of cigarettes per day, and has been gaining 2-3 lbs/year for the past 10 years.
- father died at age 48 from acute MI, mother is being treated for essential hypertension

O:

- 42 y/o male
- BMI of 27.26 (overweight) with waist circumference 96 cm, slightly obese abdomen
- Pt takes 20 mg/day of Lasix and Lipitor as medication
- HTN stage 2 at 155/103 mmHG
- Total cholesterol is high (210 mg/dl)
- HDL is low (38 mg/dl), LDL is low (147 mg/dl)
- from 24 hour recall, energy nutrients are met (2484.70 kcal) but total fat (47.13%), saturated fat (19.3%), and sodium intake (3494.21 mg) is too high while potassium (3058.02 mg), fiber (18.51 g), and fluid intake is too low (2 glasses of milk daily, soda).

A:

1. Pt is at stage 2 hypertension r/t family hx of CHD and heavy smoking aeb physical exam with BP at 155/103 mmHG.
2. Change in pt diet is required r/t high total fat, saturated fat, and cholesterol levels with poor diet choices aeb slightly obese abdomen, BMI calculation of 27.26 (overweight), low PA, 24 hour recall and physical.

P:

- Goal is to lower cholesterol levels (<200 mg/day) and decrease sodium intake (<2400 mg/day) by following the TLC diet and increasing PA
- New diet given based on 24 hour recall, education on importance of reducing sodium and cholesterol to help lower BP
- Play tennis 2 or more times a week for 20-30 minutes at a time
- Take walks after dinner
- Try to focus on diet and cholesterol and sodium intake - consume more fruits and vegetables, whole wheat/whole grain carbohydrates
- Work with primary care to continue monitoring weight, BP, lipid profile
- follow up in person appointment in 2 weeks

Jean Liu, RD  
12/5/14 7:00 AM