Cardiovascular Disease

Medical Record Information:

HPI: RB is a 55 yo African American male marketing director referred to his family physician for evaluation of hypertension detected during a worksite BP screening. His BP reading was confirmed by repeat measurements over the course of one month. He relates no prior hx of elevated BP but had been warned to "watch his salt intake." He denies symptoms of chest pain, SOB, edema, or visual symptoms. He smoked one pack of cigarettes per day up until one month ago. Currently he is smoking e-cigarettes. RB has a desk job and goes to the gym at work during his lunch hour once or twice a week. His weight has been increasing by 2-4 pounds per year for the past ten years.

PMH: He had measles and chicken pox in childhood and an appendectomy at age 22. There is no hx of rheumatic fever, diabetes, or kidney disease.

FH: Father died at age 48 from an acute MI, and mother is being treated for essential hypertension and pre-diabetes.

Social Hx: Has two children, his husband works as an elementary school teacher.

ROS: Pt has no complaints except for occasional mild tension headaches.

PE:

General:	Somewhat overweight, black male; CW=192# ht=5'11", medium frame, UBW=165# (10 years ago), Waist circumference = 37.5"
Vitals:	T 98.5°F; P 76 & regular; R 15; BP=145/89
Lungs:	Lungs clear to P&A
Heart:	nl rhythm without murmurs
HEENT:	Neck without thyromegaly, venous distention, or bruits
Abdomen:	Abdomen soft, no tenderness, no liver enlargement
Genitalia:	nl
Extremities:	No edema
CNS:	Screening neurologic exam, including mental status exam, all WNL Currently being treated for mild depression.
Skin:	Smooth, warm, dry, no edema
Peripheral Vascular:	Pulse +4 bilaterally

Labs:

Hct	45%
Hgb	15.8 g/dL
FBG:	94 mg/dL
BUN:	14 mg/dL
Lipid panel: (fasting)	Total cholesterol 246 mg/dL, LDL 158 mg/dL, HDL 34 mg/dL, TG 214 mg/dL
U/A:	Negative for glucose, ketones, protein & blood
EKG:	nl sinus rhythm with rate of 80
Chest x-ray:	Unremarkable

Impression: Essential hypertension and elevated LDL cholesterol and TG, low HDL in a 55 yo overweight, otherwise healthy male with a positive family hx 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.

Rx: Lasix® 20 mg daily, Pravachol® 10 mg daily, Marplan® 40 mg daily

24 hr. Diet Recall:
Client reports that this pattern is fairly typical of his usual weekday intake.

Breakfast @ home	**Lunch @ work**	**Dinner @ home**
Milk, whole, 8 oz.	Veggie burger, 4 oz patty	Chicken fried steak, 8 oz
Instant oatmeal, 2 packets maple brown sugar flavor	Bun Lettuce, tomato – 1 slice each	Mashed potatoes with ¼ cup gravy
Toast, wheat, 2 slices, 1 Tbs butter	mayonnaise, ketchup, mustard (1 Tbs each)	Sautéed collard greens, ½ cup
4 oz grapefruit juice	French fries, small	Cornbread, 3x3x3" piece
10 oz coffee	1 Tbs ketchup	1 Tbs butter
1 oz whole milk	Diet Coke, 12 oz	Green salad, 1 cup
Snack	**Snack**	Ranch Dressing, 2 Tbs
10 oz coffee	Cupcake, red velvet	Sweet tea, 12 oz
1 oz whole milk		

QUESTIONS:

1. Conduct a nutrient analysis for 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 link. After you've input RB'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 "RB'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 RB'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:	3343.16kcals	
Total fat:	116.29 grams	% of kcals: 44.77
Saturated fat:	59.63 grams	% of kcals: 16.05
Monounsaturated Fat:	14.50 grams	% of kcals: 3.90
Polyunsaturated Fat:	16.08 grams	% of kcals: 4.33
Carbohydrate:	373.08 grams	% of kcals: 44.64
Fiber:	30.12 grams	
Protein:	95.13 grams	
Cholesterol:	288.41 mg	
Sodium:	6700.68 mg	
Potassium:	1674.20 mg	

Adequacy of RB's diet:

RB's current diet shows inadequate intake in a variety of areas related to hypertension and increased blood pressure. His kcal is at 200% of the daily recommendation and he is eating about 44% of these calories in fat as his total fat is at 300% of the recommendation. Specifically, his saturated fat is about 350% of the daily recommendation, 66% of total kcals, and these fats are one of the main contributors to high blood pressure. RB's sodium intake is about 515% of recommended allowance while his potassium intake is only at 35%. Low potassium and high sodium intake is correlated to increased blood pressure and progression of hypertension. RBS carbohydrate intake is less than 50% of his total calories but roughly 170% of his recommended intake. The same situation occurs with fiber as he is consuming 134% of his daily recommendation. This is mostly due to how he is consuming more overall calories than is recommended. Protein intake is slightly low at 11% for his current weight but his cholesterol level is a big high and should be reduced to below 200mg.Lastly, RB doesn't report high enough intake of fluids which may be a contributing cause to his headaches via dehydration. Also, because RB is taking a diuretic medication this may interfere with his ability to stay hydrated.

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 RB's modified diet. Please hand-write at the top "RB's 2500 kcal TLC Diet." Complete the table below and attach the data print-out at the end of the Case Study. (**Attach the data print-out; partial credit will be given for providing only daily totals without the print-out.) (5 pts)

Total calories:	2396.99	
Total fat:	65.94grams	% of kcals: 24.76
Saturated fat:	15.73grams	% of kcals: 5.91
Monounsaturated Fat:	26.04grams	% of kcals: 9.78
Polyunsaturated Fat:	13.70grams	% of kcals: 5.14
Carbohydrate:	346.49grams	% of kcals: 57.82
Fiber:	32.13grams	
Protein:	122.21grams	
Cholesterol:	221.65mg	
Sodium:	1582.13mg	
Potassium:	4549.12mg	

Summary of changes made:

RB's diet has been adjusted to fit a 2500kcal TLC diet. Overall, RB's diet now consists of less saturated fat and sodium-rich foods and the inclusion of other food options, such as nuts and salmon, to increase mono- and poly-unsaturated fats. Instead of processed instant flavored oatmeal, RB now has regular oatmeal and adds some brown sugar for flavor. The diet consists of other options for butter, like honey and substitutes for condiments with the inclusion of avocado. RB can still have his steak and potatoes for dinner, just a different cut of meat and a different way to prepare potatoes as a way to

decrease fat and sodium intake. RB is still able to enjoy a sweet snack with the substitution of an oatmeal cookie instead of a cupcake and overall, the diet includes more fruit than was originally present. Lastly, RB is encouraged to drink more water throughout the day to increase his fluid content.

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

	TLC Goal (% of kcals in diet or grams chol.)	***RB's Modified Diet*** *(% of kcals in diet or grams chol.)*	**TLC Target grams** *in 2,500 kcals/d*	***RB's Modified Diet*** *(grams)*
Total fat:	25-35%	24.76%	69.44-97.22g	65.94g
Saturated fat:	Less than 7%	5.91%	19.4g or less	15.73g
Monounsatd. fat:	Less than or equal to 20%	9.78%	55.56g or less	26.04g
Polyunsatd. fat:	Less than or equal to 10%	5.14%	27.78g or less	13.7g
Cholesterol:	Less than .200g	.22165g	Less than .200g	.22165g

4. Interpret the results of RB's lipid panel, identifying <u>which</u> of the lipids are elevated based on the NCEP ATP III Guidelines. List the desired therapeutic goal (TLC goal parameter) for LDL cholesterol for RB, based on the NCEP guidelines. (4 pts)
Found in NTP pg. 301

Parameter	**RB's Value in mg/dL**	**Interpretation based on NCEP classification**	**Therapeutic goal**
Total Cholesterol	246mg/dl	High	Less than 200mg/dl
LDL Cholesterol	158mg/dl	Borderline High	5-15% reduction with eventual goal of less than 100mg/dl
HDL Cholesterol	34mg/dl	Low	40-59mg/dl
Triglycerides	214mg/dl	High	Less than 150mg/dl

5. List & number RB's risk factors for CHD, based on the presentation data from his medical record. (3 pts)

1. Family history
2. Smoking
3. African American decent
4. Hyperlipidemia/Hypercholesterolemia (high LDL, TAGs, Total Cholesterol)and Hypolipidemia (low HDL)
5. Hypertension

6. What is metabolic syndrome & does RB meet the criteria? Why or why not? (3 pts)

A combination of medical issues that when combined lead to an increased risk of developing heart disease, stroke and type 2 diabetes. To be diagnosed one must have three or more of the following:
Waist circumference of greater than 102cm for men and greater than 88cm for women
Triglyceride levels of 150mg/dl or greater
HDL cholesterol levels of less than 40mg/dl for males and less than 50mg/dl for females
Blood pressure of 130/85mmHg or greater
Fasting blood glucose of 100mg/dl or greater
(NTP pg 303)

RB meets the criteria for metabolic syndrome because he has a triglyceride level of 214mg/dl, HDL cholesterol level of 34mg/dl and blood pressure of 145/89 meaning he has three risk factors occurring together.

7. How do each of the prescribed medications work? What effect will these medications have on his nutritional care? Refer to the medication information in the NTP or PG texts or http://www.pdr.net (online physician's Desk Reference). Cite the resource used for each drug. (6 pts)

Lasix®

Lasix is a diuretic which will decrease blood volume by increasing urinary output. This occurs by inhibiting renal sodium and water reabsorption. This medication is taken orally and is used to treat high blood pressure or hypertension.

When taken, Lasix may increase BUN, cause hyperlipidemia, hypertriglyceridemia, hypercholesterolemia and hypokalemia. As a result potassium supplementation may be recommended. Lasix may cause diarrhea which would lead to a decrease in nutrient absorption of foods consumed. It is important to monitor RB's fluid intake to avoid dehydration that may result from use of this medication. Dehydration could lead to headaches and may be escalated due to RB's coffee consumption. Dehydration also causes blood vessels to constrict which may increase blood pressure.

NTP pg. 291

Pravachol®

Pravachol is a Statin or HMG-CoA reductase inhibitor. It inhibits the creation of mevalonate in cholesterol synthesis which leads to a decrease in production VLDL cholesterol and TGs and an increase in HDL cholesterol. This medicine reduces the risk for myocardial infarction and in conjunction with diet works to treat hypercholesterolemia and hypertrigylceridemia.

The use of Pravachol may cause diarrhea and headaches which may lead to decreased nutrient absorption and be a possible cause for RB's occasional headaches.

http://www.pdr.net

Marplan®

Marplan is an antidepressant which works by inhibiting monoamine oxidase.

It is suggested that when using this medicine the user avoid cheese and other foods with high tyramine content as this combination may lead to increased blood pressure. It appears RB doesn't have a high tyramine diet but it is something to keep in mind when planning his meals. It is also suggested to restrain from consuming large quantities of caffeine so it may be advisable for RB to decrease his coffee consumption. The use of this medicine may cause an impaired liver function and decrease angina pain that serves as a warning for myocardial aschemia. Use of this medication may cause headaches. It is inadvisable for RB to be taking this medication because he has hypertension, occasionally occurring headaches and it also taking a diuretic medication. Potential side effect: weight gain

http://www.pdr.net

You assess RB'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 in the work cafeteria for lunch but is willing to bring his lunch to work 2 times/wk, he agrees to substitute fruit for 1or 2 high calorie foods each day, and he would like to make time to exercise >30 min 3 days/wk.

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

1. Teach RB how to read a food label, with emphasis on serving size and sodium content
2. Teach RB about processed foods so that he can learn to reduce these types of high sodium foods in his diet
3. Teach RB about substitution options such as herbs instead of salt or avocado as a spread instead of condiments high in fat and sodium like mayonnaise

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

1. Teach RB to identify foods with high saturated fat and how to reduce or substitute these foods to overall curve his intake to less than 7% of total kcals
2. Teach RB about foods with higher levels of monounsaturated fats and how to incorporate these foods into his diet to reach a level of closer to 20% of total kcals.
3. Teach RB how to increase servings of fruit, vegetable and whole grains in his diet in order to reach the recommended intake of 5 servings of fruits and vegetables per day and changing as many of his grain intake to whole grains as possible.

10. RB is Muslim and from the SF Bay Area. Describe and explain Islamic dietary laws and any dietary restrictions you would need to consider when counseling RB. (4 pts)

Because RB is Muslim there are certain food groups he cannot eat and are considered "haram" and some food have to be processed and prepared in a specific way and are therefore lawful and considered "halal". RB can eat all fruits and vegetables except intoxicating ones. Pork and its by-products are prohibited although he may consume other meats as long as they are Halal, therefore slaughtered according to Islamic requirements. These requirements include a sane Muslim slaughtering the animal and providing a prayer, therefore no animal that died before slaughtering may be consumed. The animal also needs to be completely drained of blood. RB may not consume fermented products such as alcohol, soy sauce, and vanilla extract to name a few (What Is In Our Food). By taking these dietary laws into consideration, RB is not limited in healthy, fresh foods and good sources of low fat and low sodium foods.

What Is In Our Food. (n.d.). Retrieved November 11, 2013, from Islamic Food and Nutrition Council of America: http://www.ifanca.org

11. RB 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 an ADIME 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 ADIME note and a separate sheet with all calculations as attachment. (12 points)

A: Pt is a 55yo African American male referred for hypertension. Diet order of 1500kcal restriction and 2g Na, NCEP diet. Pt ht is 180.3 cm and CBW is 87.3kg. BMI is 26.9kg/m^2, IBW is 78.2 +/- 10%, %IBW = 112%. UBW of 10 years ago was 75kg. BP is 145/89. Pt smoked one pack of cigarettes a day and now is smoking e-cigarettes, pt goes to the gym 1-2 times per week and reports occasional mild-tension headaches. Pt has a family history of essential hypertension via his mother and father died at age 48 from acute MI, positive family history of CHD. All labs within normal ranges except fasting lipid panel which shows total cholesterol 246mg/dl, LDL 158mg/dl, HDL 34mg/dl and TAG 214mg/dl. Pt REE = 1730kcal and kcal needs of 2768-2941kcal/day, fluid requirement of 2767-2941ml/day, protein needs of about 70g/day. Pt medications include 20mg Lasix, 10mg Provachol and 40mg Marplan per day.

D: Excessive mineral intake (NI – 5.10.2.7) of sodium R/T consumption of 6700mg of sodium from 24 hour recall analysis AEB stage 1 HTN BP 145/89.
Excessive fat intake (NI -5.6.2) R/T consumption of foods high in saturated fat AEB 44% of daily kcal from 24 hour recall analysis.

I: Modify PO referral diet to accommodate a TLC diet of 2500kcal, 2.4g sodium with goal of decreased total cholesterol, decreased BP and increased HDL cholesterol to within normal limits. Provide meal planning assistance and encourage whole, fresh foods to replace packaged food items. Provide family with educational material to assist with label reading and identifying low fat and low sodium food options.

M/E: Encourage use of a weekly food diary to be discussed at weekly counseling sessions with emphasis on identifying high sodium and fat foods and integration of increased fresh fruit and vegetable intake during snack time. Follow up on lipid panel in 6 weeks.