

Case Study # 6 Hypertension and Cardiovascular Disease

7. What risk factors does Mrs. Anderson currently have?

Currently, the biggest risk factor that is present with Mrs. Anderson and her connection to Cardiovascular Disease is her hypertension and her overweight status. This refers to her chronic elevation of blood pressure. After careful examination of her history, it is indicative that most of the risk factors pertaining to Hypertension and Cardiovascular Disease that are present with Mrs. Anderson, mostly have to do with her lifestyle and dietary choices that she makes on a daily basis.

Mrs. Anderson has a diet that is rich in saturated fats and salts specially. Though she quit smoking recently, she has been doing it for a number of years which has contributed to her diagnoses of hypertension. There may also be a link with her family history, as her mother was also diagnosed with Hypertension and consequently died from the complications that it brought about. Lab values indicate that she has a Blood Pressure of 160/100 mmHg which can be described as stage 2 Hypertension.

14. What are the most recent recommendations for nutrition therapy in hypertension? Explain the history and the rationale for the DASH diet.

Nutritional treatment of hypertension includes both lifestyle modifications and nutrition therapy. Some strategies may include: increased physical activity, quit smoking, weight loss, reduction of alcohol and sodium intake. Clinical studies have shown that increased intakes of potassium, magnesium, calcium, and fiber accompanied by reduced intake of saturated fats can help reduce and maintain a lower level of blood pressure. The controlled intake of these nutrients are the basis for the DASH diet (Dietary Approaches to Stop Hypertension).

The DASH diet was developed in the 90's and was promoted by the U.S. National Heart, Lung, and Blood Institute. The diet was developed based on two trials. One diet was low in potassium, calcium, magnesium, and fiber and featured a fat and protein profile that was considered to typical in American diet. The second diet consisted of fruits and vegetables and low-fat dairy products, and low in overall saturated fats. Evidence has shown that strict adherence to this type of diet can help lower and manage blood pressure. Also, evidence showed that there is an inverse relationship between the minerals that the DASH diet focused on (potassium, calcium, and magnesium) and hypertension.

16. What are the Therapeutic Lifestyle Changes? Outline the major components of the nutrition therapy interventions.

Therapeutic Lifestyle Changes (TLC), are plans made to modify diet and nutrition intake to help prevent the development of atherosclerosis.

Major Components of Therapeutic Lifestyle Changes:

- Low LDL cholesterol levels
- Treatment of metabolic syndrome
- Consumption of healthier food choices.
- Increased Physical Activity
- Increased consumption of soluble fiber
- <2400 Na intake/day
- increased consumption of stenol esters

Lowering of LDL cholesterol levels requires that consumption of cholesterol in foods should be lowered and limited to less than 200 mg per day. Also, saturated fat should make up less than seven percent of total kcal consumption each day. Sodium intake should be less than 2,400 mg/day. TLC also recommends the increase in consumption of viscous fibers and plant sterols can also help lower LDL

Treatment and management of metabolic syndrome focuses on changes made the level of physical activity that an individual engages in and the maintenance of triglyceride and cholesterol levels. All of this, coupled with a healthier eating habit can significantly help lower risks for developing hypertension and consequently help lower chances of getting cardiovascular disease.

18. Calculate Mrs. Anderson's body mass index (BMI).

Height = 1.68 m

Weight = 73 kg

BMI = weight (kg)/height (m)²

BMI = 73 kg/(1.68)² = 26 (may be considered overweight)

19. What are the health implications of this number?

Mrs. Anderson has a BMI of about 28 which puts her in the overweight category. This is a major risk factor for hypertension and she has a high risk for developing cardiovascular disease and diabetes.

20. Calculate Mrs. Anderson's resting and total energy needs. Identify the formula used.

Women = $655 + (9.6 \times \text{weight kg}) + (1.8 \times \text{height in cm}) - (4.7 \times \text{age in years})$

$655 + (9.6 \times 73\text{kg}) + (1.8 \times 167.6 \text{ cm}) - (4.7 \times 54) = 1403.68 \text{ REE} \times (1.3) \text{ activity factor} = 1824.784 \text{ calories}$

To calculate Mrs. Anderson's total kcal needs the Harris-Benedict Equation was used. A 1.3 activity factor was used to account for lifestyle.

21. How many calories per day would you recommend for Mrs. Anderson?

Weight reduction is a standard component of nutrition therapy for treatment of hypertension. Studies indicate that losing more than 5 kg has shown significant lowering in systolic and diastolic pressures. I would recommend a calorie intake that would promote weight loss. Since she is not dealing with any pre-existing conditions that would otherwise order for higher calorie intake, a lower calorie intake that incorporates the DASH Diet would prove to be beneficial.

Couple with the DASH diet, I would recommend that Mrs. Anderson consumer no more than 1300 cals per day. This diet restriction would provide about 2 lbs of safe weight loss for women per week.

23. Using calorieking.com to estimate calories, sodium, total fat, saturated fat intake.

24-hour recall:

AM: 1 c coffee (black), hot (oatmeal—1 instant packet with 1 tsp margarine and 2 tsp sugar) or cold (Frosted Mini-Wheats) cereal (10 pieces), $\frac{1}{2}$ c 2% milk, 1 c orange juice

Snack: 2 c coffee (black), 1 glazed donut

Lunch: 1 can Campbell's tomato bisque soup prepared with milk, 10 saltines, 1 can diet cola

PM: 6 oz baked chicken (white meat, no skin) (seasoned with salt, pepper, garlic), 1 large baked potato with 1 tbsp butter, salt, and pepper, 1 c glazed carrots (1 tsp sugar, 1 tsp butter), dinner salad with ranch-style dressing (3 tbsp)—lettuce, spinach, croutons, sliced cucumber; 2 regular beers

HS snack: 2 c butter pecan ice cream

1 c. black coffee – 0 cal/0 Na/ 0 tot fat./ 0 g sat. fat
1 instant oatmeal packet – 120 cal/87 mg Na/2.4 g tot. fat/.5 g sat. fat
1 tsp. margarine – 35 cal/125 mg Na/8 g tot. fat/1.5 g sat fat
2 tsp sugar – 46 cal/0 mg Na/0 g tot. fat/0 g sat fat
Total AM = 201 cal / 212 mg Na / 10.4 g tot. fat / 2 g sat. fat

2 c. black coffee – 0 cal/0 g Na/ 0 tot. fat/ 0 g sat fat
1 glazed donut – 260 cal/330 mg Na/14 g tot. fat/6 g sat. fat
Total Snack = 260 cal/330 mg Na/14 g. tot. fat/6 g sat. fat

1 can Campbell's tomato bisque soup – 325 cal/2200 mg Na/8.75 g tot fat/3.75 g sat fat.
10 saltines – 42 cal/112 mg Na/.9 g tot. fat/.2 g sat. fat
1 can diet cola – 1 cal/28 mg Na/0 g tot. fat/0 g sat. fat
Total Lunch = 368 cal/2340 mg Na/9.65 g tot. fat/3.95 sat. fat

6 oz backed chicken (no skin) – 220 cal/670 mg Na/8 g tot. fat/3 g. sat fat
1 large baked potato – 278 cal/30 mg Na/.4 g tot. fat/.1 g sat fat
1 tbsp butter – 102 cal/82 mg Na/11.5 tot fat/7.3 sat. fat
3 tbsp ranch dressing – 218 cal/367 mg Na/23.1 g tot fat/3.6 fat. fat
2 regular beers – 305 cal/28 mg Na/0 g tot fat/0 g sat. fat
Total PM = 1123 cal/1177 mg Na/ 43 g tot fat/ 14 g sat fat

2 c. butter pecan ice cream – 1080 cal/240 mg Na/56g tot fat/32 sat. fat

Total = 3032 total cal / 4299 mg Na / 133.05 g tot fat / 57.95 sat fat

25. From the information gathered within the intake domain, list possible nutrition problems using the diagnostic term.

- **Excessive Energy Intake**
- **Excessive mineral sodium Intake**
- **Nutrient Imbalance**
- **Excessive saturated fat intake**

27. Interpret Mrs. Anderson's risk of CAD based on her lipid profile.

Examining her Lipid profile, it seems that she high levels of total cholesterol, low HDL, high LDL cholesterol, and triglycerides. This puts her at major risk for developing some kind of heart disease. She has a total of 270 mg/dL for her total cholesterol level. This is very much higher than the normal levels. Triglyceride level 150 mg/dL > recommendation range 35-135 mg/dL. Her high values of LDL and low HDL with all the other of her lipid profile puts her at major risk for CAD.

38. Select two high-priority nutrition problems and complete PES statements for each.

(P)Does not follow recommended DASH diet (E) due to unwillingness to cut down sodium in diet (S) as evidenced by sodium mineral analysis of her 24-hour recall diet.

(P)Excessive saturated fat intake(E) due to consumption of highly energy dense foods that are poor in nutrient value and foods high in saturated fats(S) as evidenced by a BMI of 26, analysis of 24 recall diet showed a high 3032 cal diet, and an LDL/HDL ratio that is out of normal range for women.

40. When you ask Mrs. Anderson how much weight she would like to lose, she tell you she would like to weigh 125, which is what she weighed most of her adult life. Is this reasonable? What would you suggest as a goal for weight loss for Mrs. Anderson?

Analysis of her IBW = 130 lbs.
100 lbs for ft. + 5 lbs for every inch over 5 ft.
IBW = 130 lbs.

This goal is not ideal for someone of her age and health status. The goal that she wants to attain may be too steep to achieve in a 6-month period (which is a good measure of the efficacy treatment). She may not see rapid weight loss and thus she may abandon her goal. It is much better to stick to a much less steep weight goal.

41. How quickly should Mrs. Anderson lose weight?

Since Mrs. Anderson is overweight, she should set her weight loss goals for the span of about six months. Recommended weight loss rate = 1-2 lbs. per week.

42. For each of the PES statements that you have written, establish an ideal goal and an appropriate intervention (based on etiology).

- Excessive Sodium intake

Goal – gradually reduce sodium intake (over the course of time) to less than 2,400 mg/day.

Intervention – educate her on portion control, education on recognition on sodium dense foods, and education of other ways for her to flavor her food (naturally).

- Excessive Energy Intake

Goal - reduce daily calorie intake to about 1800 cal

Intervention – Education for the patient about nutrient dense foods as opposed to energy rich and nutrient poor foods that she currently consumes.

43. Identify the major sources of saturated fat and cholesterol in Mrs. Anderson's diet. What suggestions would you make for substitution and/or other changes that would help Mrs. Anderson reach her medical nutrition therapy goals.

The major sources for saturated fat in Mrs. Douglas's diet are her consumption of processed snacks and foods. I would suggest healthier snack options for her.