Prevention of Cardiovascular Disease

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Objectives

- Be able to identify the signs of a heart attack or stoke
- Identify what puts you at a higher risk for cardiovascular disease, heart attack, or stroke
- Understand what you can do to reduce your risk

Statistics

- Coronary Heart Disease
  - This year about 1.2 million Americans will have a first or recurrent coronary attack. About 452,000 of these people will die. Coronary heart disease is the nation's single leading cause of death.
  - About 7.9 million Americans age 20 and older have survived a myocardial infarction. About 8.9 million Americans have angina pectoris.
- Sudden Cardiac Death
  - Approximately 325,000 coronary heart disease deaths occur out-of-hospital or in hospital emergency departments annually.
- Stroke
  - Each year about 700,000 people suffer a new or recurrent stroke in the United States. Over 150,000 of these people die, making stroke the third leading cause of death.
  - About 5.7 million U.S. stroke survivors are alive today, many of them with permanent stroke-related disabilities.

Heart Attack

- What happens when you have a heart attack?
- What are the symptoms of a heart attack?
  - Angina (chest/heart pain)
    - Usually felt as a pressure, ache, tightness, squeezing, or burning sensation under the breast bone
    - Often extends to the neck, jaw, shoulders, or down the arm (most commonly the left arm)
  - Nausea
  - Shortness of breath
  - Sweating
- For reasons not completely understood, people who have diabetes don't feel angina in the same way, therefore they have a greater risk of experiencing an unrecognized heart attack.

Stroke

- What happens when you have stroke?
  - A stroke is when a blood clot blocks an artery or a blood vessel breaks, interrupting blood flow to an area of the brain, causing brain cells to begin to die and to brain damage occur
  - When brain cells die during a stroke, abilities controlled by the affected area of the brain are lost. These abilities may include speech, movement and memory depending on where the stroke occurs in the brain and how much damage occurs

Stroke

- Symptoms
  - **F**acial weakness
  - **A**rm weakness
 - **S**peech difficulty
  - **T**ime to act

Risk Factors

- Major modifiable
  - Cholesterol *
    - Elevated Total &/or LDL
    - Low HDL
  - Hypertension*
  - Smoker (any smoking in past month)
- Major non-modifiable
  - Age
    - Men > 45 years old
    - Women > 55 years old
  - Family history of premature cardiovascular disease
    - 1st degree male relative < 55 years old
    - 1st degree female relative < 65 years old

Risk Factors

- Lifestyle factors*
  - Obesity
  - Physical Inactivity
  - Diet
  - Metabolic Syndrome

Cholesterol
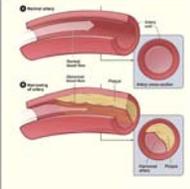
- What is cholesterol?
  - Cholesterol is wax-like substance that serves as a building block within the cell membrane
  - Cholesterol is used to make bile acids that help break down fat in the intestines
  - Cholesterol is also used to make hormones, especially those related to reproduction (estrogen, testosterone)

Cholesterol

Why is cholesterol harmful?
- Fatty streaks in the arteries start to develop in the first decade of life as a result of lipids moving into the cell wall of the artery
- These fatty streaks may become more advanced (atherosclerotic lesions) and may then progress to plaque
- Plaque restricts the flow of blood through the artery and increases pressure within the artery.

Cholesterol Goals

HDL Levels	Recommendation
Low (< 40)	Lifestyle modifications: • smoking cessation • increase physical activity • dietary modifications Drug therapy might be considered
Average (40-60)	Lifestyle modifications
Elevated (> 60)	Protective against CVD! Continue lifestyle modifications

Triglycerides	Recommendation
Normal (< 150)	n/a
Borderline high (150-199)	Lifestyle modifications • weight reduction • increase physical activity • blood glucose control
High (200-499)	Lifestyle modifications Drug therapy might be considered
Very high (> 499)	Refer to ER for treatment

Cholesterol Goals

Risk Category	LDL Goal	LDL level to start lifestyle modifications	LDL level to start drug therapy	
High Risk CHD or CHD Risk Equivalent OR 10 yr risk > 20%	< 100 (maybe < 70)	> 100	> 100 (might start regardless of LDL)	**CHD and CHD Risk Equivalents** Angina (stable or unstable) Previous MI Previous PCI Previous CABG CAD PAD AAA Carotid artery disease Diabetes
Moderate High Risk ≥ 2 risk factors AND 10 yr risk 10-20%	< 130	> 130	> 130	
Moderate Low Risk ≥ 2 risk factors AND 10 yr risk < 10%	< 130	> 130	> 160	**Major Risk Factors** Hypertension Low HDL (<40) Smoking Age > 45 for men Age > 55 for women Family history of premature CV disease (male < 55yrs, female < 65 yrs) * Neg. risk factor: HDL > 60
Low Risk 0-1 risk factor	< 160	> 160	> 190 (maybe > 160)	

Blood Pressure

- Prevalence
  - In the United States, 6.5 million people have hypertension. In about 36% of the affected, it is uncontrolled.
  - Its onset most commonly occurs in the 3rd to 5th decades of life.
  - The lifetime risk of hypertension is 90% for those surviving to age 80
  - PREVALENCE BY ETHNIC GROUP

Ethnic Group	Male	Female
Caucasian	24	19
African American	35	34
Mexican American	25	22
Asian American	13	13

Blood Pressure

- Systolic blood pressure (the top number)
  - Blood comes out of the heart in one big thrust
  - The artery expands to handle the amount of blood forced out of the heart
  - The amount of pressure put on the expanded artery in what we call systolic blood pressure
- Diastolic blood pressure (the bottom number)
  - After the artery expands during systole, it relaxes back to its normal size
  - The normal pressure on the artery wall during this relaxation is called diastolic pressure

Blood Pressure

- Complications
  - Cardiovascular effects
    - Left ventricular hypertrophy, congestive heart failure, peripheral arterial disease, angina pectoris, myocardial infarction, sudden death
  - Renal effects
    - Nephropathy, renal failure, requirement for dialysis
  - Cerebrovascular effects
    - Transient ischemic attack, stroke
  - Ophthalmologic effects
    - Retinal hemorrhage, retinopathy, blindness

Blood Pressure

- Etiology
  - Primary Hypertension
    - Unknown cause (~90% of cases)
  - Secondary Hypertension
    - Renovascular disease, primary aldosteronism, cushing's syndrome, pheochromocytoma, aortic coarctation
    - Drug-induced: steroids, estrogens, pseudoephedrine, alcohol, amphetamines, MAOIs, tricyclic antidepressants, NSAIDs

Blood Pressure

- Blood pressure reduction from lifestyle modifications

Modification	Recommendation	Approximate SBP Reduction
Weight reduction	Maintain normal body weight (BMI 18-25)	5-20 mmHg per 22 lbs
DASH eating plan *(see handout)*	Diet rich in fruits, vegetables, lowfat dairy, reduced saturated fat and total fat	8-14 mmHg
Dietary sodium reduction	Reduce dietary sodium to 1500mg	2-8 mmHg
Physical activity	Aerobic activity ≥ 30 min/day most days of the week	4-9 mmHg
Moderation of alcohol consumption	No more than 2 drinks per day for men or 1 drink per day for women	2-4 mmHg

Blood Pressure

- Classification and management

Classification	SBP		DBP	Lifestyle Modifications	Drug Therapy
Normal	< 120	and	< 80	Encouraged	None
Prehypertension	120-139	or	80-89	Yes	Only in special cases
Stage 1 HTN	140-159	or	90-99	Yes	Yes
Stage 2 HTN	≥ 160	or	≥ 100	Yes	Yes

Obesity

- Body Mass Index $\text{BMI} = \frac{\text{mass (lb)} \times 703}{(\text{height(in)})^2}$
  - Very general estimate of how much fat you carry on your body
  - When interpreting this score, keep in mind that BMI has some limits, including:
    - Your BMI score may overestimate body fat in athletes and those with a muscular build
    - Your BMI score may underestimate body fat in older person or persons who have loss muscle mass
    - BMI is not appropriate for pregnant or breastfeeding women

Category	BMI Range
Underweight	< 18.5
Normal	18.5-24.9
Overweight	25-29.9
Obese	≥ 30

Metabolic Syndrome

- Effects 1 in 4 Americans and 2 in 5 Americans over the age of 60
- Individuals who have at least 3 of the following 5 criteria are considered to have metabolic syndrome:
  - Abdominal obesity
  - Elevated triglycerides
  - Low HDL-cholesterol
  - High blood pressure
  - Fasting blood glucose levels greater than 100 mg/dL
- Having metabolic syndrome means you are at an increased risk for heart attack, stroke, and death.

Metabolic Syndrome

Diagnostic Criteria	Cutpoint
Abdominal obesity	> 40 inches for men > 35 inches for women
Elevated triglycerides	> 150 mg/dL OR on drug treatment for elevated triglycerides
Low HDL cholesterol	< 40 mg/dL for men < 50 mg/dL for women
Elevated blood pressure	> 130/85 OR on drug treatment for high blood pressure
Elevated fasting blood glucose	> 100 mg/dL OR on drug treatment for diabetes

Physical Activity

- Moderate intensity aerobic physical activity 5 days/week for 30 minutes OR
- Vigorous intensity aerobic physical activity 3 days/week for 20 minutes

- Muscle strengthening exercises 2 days/week
  - Weight training program
  - Weight bearing calisthenics
  - Resistance exercises

Physical Activity

- Benefits
  - Decreases your risk of developing risk factors for cardiovascular disease
  - Decreases you risk of developing cardiovascular disease
  - Risk of mortality is decreased

- Greater physical activity is associated with greater benefits in risk reduction

Diet

General Recommendations
- Consume a diet rich in fruits and vegetables
- Choose whole grain, high fiber foods
- Limit cholesterol, trans fat, & saturated fat
- Consume oily fish (salmon, tuna, mackerel, etc.)
- Choose and prepare foods with little or no salt
- Reduce intake of beverage that contain added sugar
- If you consume alcohol, do so in moderation

Diet

○ Saturated fat: < 7%
  • Should not consume more than 7% of calories as saturated fat
  • Example: for an 1800 calorie diet you should not consume more than 14g of saturated fat
○ Cholesterol: < 300mg
  • If you have high cholesterol or have previously had a CV event goal is < 200mg
○ Sodium: < 1500mg
  • The average American diet contains about 3500mg

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Chobani - Greek Yogurt-Vanilla Nonfat, 6 oz.	120	13g	0g	16g	0mg	75mg	13g	0g
Bananas - Raw, 1 medium (7" to 7-7/8" long)	105	27g	0g	1g	0mg	1mg	14g	3g
Kashi Go Lean Crisp - Cinnamon Crumble, 1.5 cup (51g)	380	68g	9g	20g	0mg	260mg	20g	18g
Lunch								
Chicken - Breast, meat only, cooked, roasted, 1 cup, chopped or diced	231	0g	5g	43g	119mg	104mg	0g	0g
Jif - Creamy Peanut Butter-to Go Cup, 1 cup (1.5 oz.)	250	9g	22g	9g	0mg	200mg	4g	3g
Chiquita - Juicy, Red Apple Bites, 1 package	30	8g	0g	0g	0mg	0mg	5g	2g
Lettuce - Green leaf, raw, 1 leaf outer	4	1g	0g	0g	0mg	7mg	0g	0g
Koop's - Honey Mustard, 1 tsp	10	2g	0g	0g	0mg	25mg	1g	0g
Kraft - Deli Fresh Extra Thin Swiss Slices, 1 slice	60	0g	5g	6g	25mg	45mg	0g	0g
Latortilla Factory - Smart & Delicious Tortillas High Fiber 12g, Low Carb, Whole Wheat 9", 1 tortilla	80	18g	3g	8g	0mg	300mg	1g	12g
Dinner								
Sweet potato - Cooked, baked in skin, without salt (Sweetpotato), 1.25 large	203	47g	0g	5g	0mg	81mg	19g	7g
Asparagus - Raw, 10 spear, large (7-1/4" to 8-1/2")	40	8g	0g	4g	0mg	4mg	4g	4g
Daily Chef - Mesquite Grilled Chicken Breast, 3 oz.	110	2g	3g	20g	45mg	390mg	1g	0g
TOTAL:	1,623	203g	46g	132g	189mg	1,487mg	82g	49g

EXERCISES	Calories	Minutes	Sets	Reps	Weight
Cardiovascular					
Walking, 3.0 mph, mod.pace, walking dog	109	30			
C25K	250	31			
TOTALS:	359	61	0	0	0

Summary

- What you can start doing today to lower your risk of cardiovascular disease:
  - Lose weight
  - Increase physical activity
  - Improve diet
    - Reduce sodium
    - Reduce saturated fat and cholesterol intake

How can University Pharmacy help YOU?

University Pharmacy Services

- Vaccinations
- Medication Therapy Management
- Diabetes Management
- Lipid Management
- Hypertension Management
- Smoking Cessation
- Prescription filling and delivery

Medication Therapy Management

- What is MTM?
  - MTM is a group of services designed to improve health and wellbeing, as well as optimize your medication use.
- Who can benefit from MTM?
  - Anyone! It is especially beneficial to those on multiple medications, have multiple health conditions, or have medication related questions.
- How does MTM work?
  - A pharmacist will review all your medications to check for interactions, make sure they are all appropriate for you and your conditions, and check for any side effects.

Diabetes Management

- Who can benefit from Diabetes Management?
  - Anyone who has been diagnosed with diabetes, whether newly diagnosed or those who have had diabetes for many years.
- How does it work?
  - You will have the opportunity to gain a better understanding of your disease, the medications you take to control diabetes, and lifestyle modifications that will help control diabetes.

Lipid Management

- Who can benefit from lipid management?
  - Anyone on medication for high cholesterol
- How does it work?
  - You will meet with a pharmacist and discuss your cholesterol values and what they mean. The pharmacist will help you with lifestyle modifications as well as discuss your medications.

Hypertension Management

- Who can benefit from hypertension management?
  - Anyone on high blood pressure medication
- How does it work?
  - You will meet with a pharmacist and discuss your blood pressure and what it means. The pharmacist will help you with lifestyle modifications as well as discuss your medications.

Smoking Cessation

- Who can benefit from Smoking Cessation?

Time after quitting	Benefit
20 minutes	Heart rate and blood pressure begin to return to normal
24 hours	Change of heart attack decreases
2-3 weeks	Circulation improves and lung function increases up to 30%
1 year	The risk of heart disease is half that of a smoker

- How does it work?
  - You can schedule a meeting with one of our certified smoking cessation pharmacists. They will discuss the many aspects of quitting including the different types of products that can increase your chances of quitting for good!

Prescription Filling & Delivery

- Co-pay discounts
  - WSU Human Resources has partnered with University Pharmacy to offer discounted co-pays on prescriptions to WSU employees and their dependents enrolled in Health Alliance Plan, Total Health Care or DMC Care
  - Save $2 on your generic co-pay & $3 on your brand co-pay
- I have my prescriptions at another pharmacy, how do I move them to University Pharmacy?
  - Give us a call and let us know where you currently get your prescriptions filled and we will transfer them to University Pharmacy.
- What if I am unable to pick up my prescriptions at University Pharmacy?
  - We will deliver them to you on campus, at no additional charge!

QUESTIONS?

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