Cardiovascular Disease Risk and Women

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Disclosures

- No conflicts of interest
- Presentation given as part of the CV Research team I am affiliated with

- St Vincent's Hospital, Melbourne
- Australian Catholic University
- St Vincent Cardiovascular Nursing Research Centre
Objectives

- State current statistics of cardiovascular disease and women
- Compare and contrast cardiovascular risk factors for men and women
- Describe cardiovascular risk stratification for women
The facts

• Cardiovascular disease (CVD) continues to kill more women than men annually in the United States
• CVD rates have decreased in older women but increased in young women
• Women constitute more than 1/2 of all CVD deaths, but only 1/3 of the CHD and MI burden

AHA: Heart Disease and Stroke Statistics--2014 Update
CVD causes 1 in 3 deaths each year.
That’s approximately one woman every minute!

AHA: Heart Disease and Stroke Statistics--2014 Update
By the end of this presentation 60 women would have died from CVD.
## Cardiovascular Risk Factors

<table>
<thead>
<tr>
<th>Personal history of CVD</th>
<th>Hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age over 55</td>
<td>Peripheral vascular disease</td>
</tr>
<tr>
<td>Inactivity</td>
<td>Family history of CVD</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
</tr>
</tbody>
</table>

90% of all cardiac events occur with only one elevated risk factor

Uncontrolled high blood pressure among adults with hypertension

NOTE: Uncontrolled high blood pressure is a measured systolic blood pressure of at least 140 mm Hg or a measured diastolic blood pressure of at least 90 mm Hg, among those with measured high blood pressure or who reported taking antihypertensive medication.

SOURCE: CDC/NCHS, Health, United States, 2013, Figure 9. Data from the National Health and Nutrition Examination Survey.
### Prevalence of Obesity in U.S. Adults

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of State Obese (BMI &gt; 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>No Data</td>
</tr>
<tr>
<td>1996</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>2006</td>
<td>0–14%</td>
</tr>
<tr>
<td>2008</td>
<td>5–19%</td>
</tr>
</tbody>
</table>

**Source:** CDC Overweight and Obesity

### Maps of Prevalence of Obesity in U.S. Adults

- **1991**: No data available.
- **1996**: States ranging from <10% to >30% obesity.
- **2006**: States ranging from 0–14% to >30% obesity.
- **2008**: States ranging from 5–19% to >30% obesity.

Legend:
- No Data
- <10%
- 0–14%
- 5–19%
- 20–24%
- 25–29%
- >30%

**Source:** CDC Overweight and Obesity
Heart Disease Death Rates, 2008-2010
Adults, Ages 35+, by County

Heart Disease Death Rates

Rate data have been spatially smoothed to enhance the stability of rates in counties with small populations.

Data Source:
National Vital Statistics System
National Center for Health Statistics
Heart Disease Death Rates, 2008-2010
Women Ages 35+, by County

Rates are spatially smoothed to enhance the stability of rates in counties with small populations.

ICD-10 codes for heart disease: I00-I09, I11, I13, I20-I51

Data Source: National Vital Statistics System and the U.S. Census Bureau
Trends in awareness that heart disease is the leading cause of death in women.

Men and Women
Women are different from men

- Women at coronary angiography have less obstructive coronary artery disease
- In men the plaque forms in clumps, in women it is distributed evenly in the microvasculature of the artery
- Angiography “normal arteries” in women - due to this
- Women delay seeking treatment longer than men
• Women are roughly 10 yrs older than men when they present, and have more co-morbidities

• Most common symptoms of MI in women
  – Dyspnea
  – Weakness
  – Fatigue

• Prodromal symptoms more common in women

• Majority of women do not have chest pain
• Higher in-hospital mortality in women
• Younger women without chest pain are at the highest risk
• 64% of women who die suddenly from cardiac disease have no previous symptoms of the disease

Canto JG et al. JAMA 2012;307:813; Heart Disease and Stroke Statistics--2014 Update: A Report From the American Heart Association
EKG Differences

- ECG abnormalities are less likely to be diagnostic for obstructive coronary artery disease in women than in men
- Women have a longer corrected QT interval and greater sensitivity to QT-prolonging medications
- Women with left bundle branch block benefit from cardiac resynchronization therapy at a shorter QRS duration than men
• HOWEVER
  – existing diagnostic MI and coronary heart disease strategies developed in men, for men, and by men fail to diagnose approximately 20% to 30% of women with ischemic heart disease
  AND
  Women comprise only 25% of participants in all heart-related research studies.

Secondary Risk

• The number of women dying within a few weeks after a MI are double that of men
• 38% of women and 25% of men will die within one year of a MI
• Heart failure within 6 years after a MI- 46% (F), 22% (M)
• Bleeding after a percutaneous coronary intervention is more likely in women than men

The female predisposition to bleeding after a PCI

Risk Factors/Prevention

• The Multiplier Effect
  – 1 risk factor doubles your risk
  – 2 risk factors quadruple your risk
  – 3 or more risk factors can increase your risk more than tenfold

• KNOW your risk of CVD
# Classification of CVD Risk in Women

(Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women-2011 Update: AHA)

<table>
<thead>
<tr>
<th>Risk Status</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk &gt;1</td>
<td>Clinical manifest CHD</td>
</tr>
<tr>
<td></td>
<td>Clinical manifest cerebral vascular disease</td>
</tr>
<tr>
<td></td>
<td>Clinical manifest PAD</td>
</tr>
<tr>
<td></td>
<td>AAA</td>
</tr>
<tr>
<td></td>
<td>ESRD or CKD</td>
</tr>
<tr>
<td></td>
<td>DM</td>
</tr>
<tr>
<td></td>
<td>10 year predicted CVD risk &gt;10%</td>
</tr>
<tr>
<td>Risk Status</td>
<td>Criteria</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>At risk &gt; 1 major risk factor</td>
<td>Smoking, inactivity, Cholesterol 200 mg/dL or above/HDL-c &lt; 50 mg/dL, Obesity, poor dietary habits, family history, Metabolic syndrome, systemic autoimmune vascular disease (SLE, rheumatoid arthritis)</td>
</tr>
<tr>
<td></td>
<td>Poor exercise tolerance on treadmill test</td>
</tr>
<tr>
<td></td>
<td>History of preeclampsia, gestational diabetes or pregnancy induced hypertension</td>
</tr>
<tr>
<td></td>
<td>Evidence of subclinical atherosclerosis</td>
</tr>
</tbody>
</table>
How to reduce your CVD risk
( Maybe not)
## Ideal Cardiovascular Health for Women

<table>
<thead>
<tr>
<th>All of these</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total cholesterol &lt;200 mg/dL untreated</td>
</tr>
<tr>
<td>2. BP &lt;120/&lt;80 mm Hg untreated</td>
</tr>
<tr>
<td>3. BMI &lt;25 kg/m²</td>
</tr>
<tr>
<td>4. No smoking</td>
</tr>
<tr>
<td>5. Activity ≥ 150 minutes per week- moderate intensity / ≥ 75 minutes week vigorous intensity or combination of both</td>
</tr>
<tr>
<td>6. Health DASH like diet ( Dietary approaches to stop hypertension)</td>
</tr>
<tr>
<td>7. FBG &lt; 100 mg /dL</td>
</tr>
</tbody>
</table>
Diet Evidence: Making Smart Food Choices

- Helps consumers make better food choices
- Reminds individuals to eat healthfully
- Illustrates the 5 food groups using a mealtime visual
- Selected messages include:
  - Balancing calories
  - Foods to increase
  - Foods to reduce

Food portions should be about the size of your palm
## Specific Dietary Intake Recommendations for Women

(Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women-2011 Update: AHA)

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Serving</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits and vegetables</td>
<td>≥4.5 cups/d</td>
<td>1 cup raw leafy vegetable, 1/2 cup cut-up raw or cooked vegetable, 1/2 cup vegetable juice; 1 medium fruit, 1/4 cup dried fruit, 1/2 cup fresh, frozen, or canned fruit, 1/2 cup fruit juice</td>
</tr>
<tr>
<td>Fish</td>
<td>2/wk</td>
<td>3.5 oz, cooked (preferably oily types of fish)</td>
</tr>
<tr>
<td>Fiber</td>
<td>30 g/d (1.1 g/10 g carbohydrate)</td>
<td>Bran cereal, berries, avocado, etc</td>
</tr>
<tr>
<td>Whole grains</td>
<td>3/d</td>
<td>1 slice bread, 1 oz dry cereal, 1/2 cup cooked rice, pasta, or cereal (all whole-grain products)</td>
</tr>
<tr>
<td>Sugar</td>
<td>≤5/wk (≤450 kcal/wk from sugar-sweetened beverages)</td>
<td>1 tablespoon sugar, 1 tablespoon jelly or jam, 1/2 cup sorbet, 1 cup lemonade</td>
</tr>
<tr>
<td>Nuts, legumes, and seeds</td>
<td>≥4/wk</td>
<td>1/3 cup or 1 1/2 oz nuts (avoid macadamia nuts and salted nuts), 2 tablespoons peanut butter, 2 tablespoon or 1/2 oz seeds, 1/2 cup cooked legumes (dry beans and peas)</td>
</tr>
<tr>
<td>Saturated fat</td>
<td>&lt;7%/total energy intake</td>
<td>Found in fried foods, fat on meat or chicken skin, packaged desserts, butter, cheese, sour cream, etc</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>&lt;150 mg/d</td>
<td>Found in animal meats, organ meats, eggs, etc</td>
</tr>
<tr>
<td>Alcohol</td>
<td>≤1/d</td>
<td>4 oz wine, 12 oz beer, 1.5 oz of 80-proof spirits, or 1 oz of 100-proof spirits</td>
</tr>
<tr>
<td>Sodium</td>
<td>&lt;1500 mg/d</td>
<td>0</td>
</tr>
<tr>
<td>Trans-fatty acids</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: The recommended serving amounts are based on a 2000-kcal diet, and recommendations vary according to individual preference and needs.  

Note for Vitamin D: It is expected that ongoing research regarding the role of vitamin D supplementation in the prevention of cardiovascular disease will shed further light on this issue for future versions of this guideline.
Summary

• For all women
  • Manage your weight
  • Get up and move- exercise every day
  • CEASE smoking
  • Know your risk (present and future)
  • Change your diet- small modifications to begin with
  • Treat depression
  • Women’s symptoms of a MI are different- know the differences- it could save your life