Cardiovascular Disease Management in Women

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Objectives
1. Epidemiology
2. Risk Stratification
3. Depression Screening in Women
4. Aspirin Use in Women
5. Summary

Epidemiology of CVD
• CVDs are the most common cause of mortality in men & women world wide (1)
• Cost annually for CVD for medical care and lost productivity in 2006: $503 Billion (2)

Who faces a higher mortality from cardiovascular related illness?
1. Men
2. Women
3. About the same in both genders
Gender Differences in CVD

- More women than men die of CVD annually (3)
- 38% of women die within a year after a first MI, 25% of men (4)
- Median age of first MI in men 66 years, 70 years in women (4)

Acute MI Mortality by Age & Sex

Mortality in Men and Women

Heart Disease and Stroke Statistics, 2010-AHA

Cardiovascular Disease Mortality: US Males and Females 1980-2004

Health Disparities In Primary and Secondary CVD Treatment

• Less cholesterol screening
• Less lipid-lowering therapies
• Less use of heparin, beta-blockers and aspirin during myocardial infarction
• Less anti-platelet therapy for secondary prevention
• Fewer referrals to cardiac rehabilitation
• Fewer pacemakers compared to men, despite same indications

Outline

Epidemiology

Risk Stratification

Depression Screening

Aspirin Use in Women

Major Risk Predictors of CVD in Women

• Smoking
• Obesity
• DM
• HTN
• HDL reduction
• LDL elevation

Female > Male
Female > Male
Female > Male
Female > Male
Male > Female

NHANES 1 Study. Archives of Internal Medicine 149:780-788, 1989

Relative Risk of Coronary Events in Smokers Versus Non-Smokers

Body Weight and CHD Mortality Among Women


Coronary Disease Morality In Diabetic Women


Cardiovascular Disease Prevention in Women: Current AHA Guidelines

- **Assess and stratify** women into high risk, at risk, and optimal risk categories
- **Lifestyle approaches** recommended for all women
- **Other treatments** of CVD risks: treatment of HTN, DM, lipid abnormalities
- **Highest priority** is for interventions in high risk patients
- **Avoid** therapies that have been shown to lack benefit
Risk Stratification

High Risk  >20% 10-year risk
At Risk     10-20% 10-year risk
Ideal Risk  <10% 10-year risk

High Risk
1. Established history of CVD
2. Peripheral Vascular Disease
3. Abdominal Aortic Aneurysm
4. Chronic Kidney Disease
5. Diabetes

At Risk

- >1 major risk factors for CVD, including:
  - Cigarette smoking
  - Hypertension
  - Dyslipidemia
  - Family history of premature CVD in 1st degree relative
    - < 55 years in males
    - < 65 years in females
  - Obesity, especially central obesity
  - Physical inactivity
  - Poor diet
  - Metabolic Syndrome

Framingham Risk Stratification

Framingham Cardiac Risk Score

Sex (validated only for male/female, no transgender/intersex)
Age (not validated for <35 or >74)
Total Chol (mg/dL)
HDL (mg/dL)
BP (mm Hg) to choose a category, use the highest category.
Pt a diabetic?
Pt a smoker?

10 Year CHD Risk:
Case: 65 yo woman with TC=167, HDL=43, & blood pressure 149/90 treated with HCTZ.

Framingham Risk Calculator
Sex: Female
Age: 65
Total Chol: 167 mg/dl
HDL Chol: 43 mg/dl
SBP: 149 mmHg
Diabetes: No
Smoker: No

TOTAL SCORE = 9%

Case: 70 yo woman with TC=167, HDL=43, blood pressure 149/90 treated with HCTZ & a smoker.

Framingham Risk Calculator
Sex: Female
Age: 65
Total Chol: 167 mg/dl
HDL Chol: 43 mg/dl
SBP: 149 mmHg
Diabetes: No
Smoker: Yes

TOTAL SCORE = 12%

Risk Stratification

<table>
<thead>
<tr>
<th>Category</th>
<th>10-year Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>&gt;20%</td>
</tr>
<tr>
<td>At Risk</td>
<td>10-20%</td>
</tr>
<tr>
<td>Ideal Risk</td>
<td>&lt;10%</td>
</tr>
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Implement Healthy Lifestyle Recommendations in All Women

1. Smoking Cessation
2. Heart Healthy Diet
3. Physical Activity
4. Weight Management
5. Omega-3-Fatty Acids
6. Depression Screening
7. Cardiac Rehabilitation

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ATP III-Cholesterol Goals by Risk Category

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>LDL Goal</th>
<th>LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC)</th>
<th>LDL Level at Which to Consider Drug Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHD or CHD Risk Equivalents (10-year risk &gt;20%)</td>
<td>&lt;100 mg/dL</td>
<td>≥100 mg/dL</td>
<td>≥130 mg/dL, (160-199 mg/dL: drug optional)*</td>
</tr>
<tr>
<td>2+ Risk Factors (10-year risk ≥20%)</td>
<td>&lt;130 mg/dL</td>
<td>≥130 mg/dL</td>
<td>10-year risk ≥20%: ≥130 mg/dL, 10-year risk &lt;10%: ≥160 mg/dL</td>
</tr>
<tr>
<td>0-1 Risk Factor†</td>
<td>&lt;160 mg/dL</td>
<td>≥160 mg/dL</td>
<td>≥190 mg/dL, (160-189 mg/dL: LDL-lowering drug optional)</td>
</tr>
</tbody>
</table>

JNC-7 Blood Pressure Goals

- Average CVD Risk:
  Goal Blood Pressure <140/90 mmHg
- DM or CKD (Elevated Risk):
  Goal Blood Pressure <130/80 mmHg

<table>
<thead>
<tr>
<th>Classification of Blood Pressure (BP)*</th>
<th>SBP mmHg</th>
<th>DBP mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-139</td>
<td>or 80-89</td>
</tr>
<tr>
<td>Hypertension, Stage 1</td>
<td>140-159</td>
<td>or 90-99</td>
</tr>
<tr>
<td>Hypertension, Stage 2</td>
<td>≥160</td>
<td>or ≥100</td>
</tr>
</tbody>
</table>

Classification of Blood Pressure (BP)*

*SBP, DBP = Systolic Blood Pressure, Diastolic Blood Pressure; †LDL; ‡HDL; ††Triglycerides; †‡Lipoprotein(a)
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Avoid Unproven Therapies in All Women

1. Antioxidants  
   e.g. Vitamin C & E
2. Folic Acid  
   - With or without Vit B6 or B12
3. Hormone Replacement
4. SERMs

Outline

- Epidemiology
- Risk Stratification
- Depression Screening in Women
- Aspirin Use in Women

Depression Screening

- WHI-Observational Study
- Sample Size 93,000 women
- Post menopausal women age 50-79 years
- Follow-up > 4 years
- Identified 15.8% of the study population with depression
- Prospective
Outcomes

- Depression is a key, independent risk factor for CVD
- Effect of depression on CAD outcomes significant and prolonged
- Must be a factor in risk stratification in women

Outline

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Aspirin as Primary Prevention

- Randomized clinical trial of aspirin use in women without CAD
- Sample Size 40,000 women
- Women were > 45 years with no CAD, stroke or other chronic illnesses
- ASA dose 100 mg every other day
- Follow-up 10 years
Cumulative Incidence of Major Cardiac Event


Cumulative Incidence Rates for MI and Hemorrhagic Stroke


Incidence and Relative Risk of Other Side Effects

<table>
<thead>
<tr>
<th>Side Effect</th>
<th>Aspirin (N=29,934)</th>
<th>Placebo (N=19,942)</th>
<th>Relative Risk (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>910 (4.6)</td>
<td>751 (3.8)</td>
<td>1.22 (1.10-1.34)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Requiring transfusion</td>
<td>127 (0.6)</td>
<td>91 (0.5)</td>
<td>1.40 (1.07-1.83)</td>
<td>0.02</td>
</tr>
<tr>
<td>Peptic ulcer</td>
<td>542 (2.7)</td>
<td>412 (2.1)</td>
<td>1.32 (1.16-1.50)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hematuria</td>
<td>3,039 (15.2)</td>
<td>2,879 (14.4)</td>
<td>1.04 (1.01-1.12)</td>
<td>0.02</td>
</tr>
<tr>
<td>Easy bruising</td>
<td>10,561 (53.0)</td>
<td>8,494 (42.6)</td>
<td>1.40 (1.37-1.45)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>3,801 (19.1)</td>
<td>3,321 (16.7)</td>
<td>1.14 (1.11-1.22)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Any report of gastric upset</td>
<td>11,856 (59.5)</td>
<td>11,915 (59.7)</td>
<td>0.99 (0.97-1.02)</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Sub-Group Analysis by Age

- Women ≥ 65 years (10% of study) particularly benefited from ASA
  - CVD events: RR 0.74 [0.59-0.92]
  - Ischemic Stroke: RR 0.70 [0.49-1.0]
  - MI events: RR 0.66 [0.44-0.97]
Summary

- All risk is not the same—stratify!
- Use depression as a part of CVD risk assessment in women
- Avoid use of ASA as primary prevention in women < 65 years of age
- Refer to key guidelines
  - ATP III - JNC-7 ...about to be 8.
  - NCEP - AHA

References

2. Heart Disease and Stroke Statistics, 2010- AHA.