Disparities and Complexities in Women’s Cardiovascular Care: Benefits and Risks

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Disparities in Women’s Cardiovascular Care

• Research in the last 20 years ... excluded women entirely or included only limited numbers of women and minorities

• Findings specific to women were often NOT provided

• Many tests and therapies used clinically are based on studies conducted predominantly in men
Limited Numbers of Women in Research on Noninvasive Testing

Even with Comparable diagnosis and risk profile, women are undertreated as compared to men.

Bischoff et al, Clin Res Card 2006
Cardiac Interventions are often underutilized in women as well
Disparities in Women’s Cardiovascular Care

- Disparities in use of preventive medications
  - Aspirin

- Disparities in application of preventive strategies
  - Hypertension control
The Benefits
**Benefit Risk Evaluation**

- Estimates of benefits and harm of aspirin given for 5 years to 1,000 persons with various levels of baseline risk for coronary heart disease*

<table>
<thead>
<tr>
<th>Benefits and Harms</th>
<th>Baseline Risk for CHD over 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mortality</td>
<td>2%</td>
</tr>
<tr>
<td>Coronary heart disease events</td>
<td>No effect</td>
</tr>
<tr>
<td>Hemorrhagic strokes</td>
<td>0-2 caused</td>
</tr>
<tr>
<td>Major gastrointestinal bleeding events</td>
<td>2-4 caused</td>
</tr>
</tbody>
</table>

Aspirin use in a representative US sample

• Stafford et al wanted to investigate aspirin use in a representative US sample
• They used 1993–2003 US National Ambulatory Medical Care Survey data to evaluate aspirin use by cardiovascular risk level.
  ▪ ~50,000 visits
• Visit-Specific Information gathered about:
  ▪ Patient demographics and diagnoses
  ▪ Physician activities (tests, advice, referrals)
  ▪ New or continuing medications

The Likelihood of Aspirin Use by Cardiovascular Risk

Factors Independently Associated with Aspirin Use

<table>
<thead>
<tr>
<th>Significant Factors</th>
<th>Odds Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiovascular Risk</strong> <em>(ref: Low)</em></td>
<td></td>
</tr>
<tr>
<td>Multiple risk factors</td>
<td>2.2 (1.7 3.0)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.3 (1.8 5.9)</td>
</tr>
<tr>
<td>High</td>
<td>9.0 (6.4 12.7)</td>
</tr>
<tr>
<td><strong>Patient Age (years)</strong> <em>(ref: 20-44)</em></td>
<td></td>
</tr>
<tr>
<td>45-64</td>
<td>1.9 (1.4 2.7)</td>
</tr>
<tr>
<td>65-79</td>
<td>2.5 (1.8 3.6)</td>
</tr>
<tr>
<td>≥ 80</td>
<td>3.2 (2.1 5.0)</td>
</tr>
<tr>
<td><strong>Patient Sex</strong> <em>(ref: Male)</em></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.8 (0.7 0.9)</td>
</tr>
</tbody>
</table>

The Complexities
Aspirin Evidence: Primary Prevention in Men

Physicians’ Health Study (PHS)

22,071 men randomized to aspirin (325mg every other day)

<table>
<thead>
<tr>
<th>End point</th>
<th>Relative Risk (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myocardial infarction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatal</td>
<td>0.34 (0.15-0.75)</td>
<td>0.007</td>
</tr>
<tr>
<td>Nonfatal</td>
<td>0.59 (0.47-0.74)</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>Total</td>
<td>0.56 (0.45-0.70)</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatal</td>
<td>1.51 (0.54-4.28)</td>
<td>0.43</td>
</tr>
<tr>
<td>Nonfatal</td>
<td>1.20 (0.91-1.59)</td>
<td>0.20</td>
</tr>
<tr>
<td>Total</td>
<td>1.22 (0.93-1.60)</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Aspirin significantly reduces the risk of MI in men

End points (mean, 10.1 yrs):

- Combined end point of nonfatal MI, nonfatal stroke, or total cardiovascular death
- Incidence of total malignant neoplasms of epithelial cell origin

Aspirin: Primary Prevention in Women

Womens’ Health Study (WHS)

39,876 women randomized to aspirin (100 mg every other day) or placebo for an average of 10 years

Low dose aspirin did not reduce the risk of MI in low risk women.

## Womens’ Health Study (WHS)

<table>
<thead>
<tr>
<th>Smoking status:</th>
<th>Aspirin</th>
<th>Placebo</th>
<th>RR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current (n = 5235)</td>
<td>157</td>
<td>127</td>
<td>1.30</td>
<td>1.03-1.64</td>
<td>.03</td>
</tr>
<tr>
<td>Past/never (n = 34,605)</td>
<td>319</td>
<td>392</td>
<td>0.80</td>
<td>0.69-0.93</td>
<td>.003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary endpoints:</th>
<th>Aspirin</th>
<th>Placebo</th>
<th>RR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>221</td>
<td>206</td>
<td>0.83</td>
<td>0.69-0.99</td>
<td>.04</td>
</tr>
<tr>
<td>Ischemic</td>
<td>170</td>
<td>221</td>
<td>0.76</td>
<td>0.63-0.93</td>
<td>.009</td>
</tr>
<tr>
<td>TIA</td>
<td>186</td>
<td>238</td>
<td>0.78</td>
<td>0.64-0.94</td>
<td>.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (yrs):</th>
<th>Aspirin</th>
<th>Placebo</th>
<th>RR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-54 (n = 24,025)</td>
<td>163</td>
<td>161</td>
<td>1.01</td>
<td>0.81-1.26</td>
<td>.92</td>
</tr>
<tr>
<td>55-64 (n = 11,754)</td>
<td>183</td>
<td>186</td>
<td>0.98</td>
<td>0.80-1.20</td>
<td>.84</td>
</tr>
<tr>
<td>65+ (n = 4097)</td>
<td>131</td>
<td>175</td>
<td>0.74</td>
<td>0.59-0.92</td>
<td>.008</td>
</tr>
</tbody>
</table>

Aspirin reduces the risk of stroke in women and MI in men

Source: Berger JS et al. JAMA. 2006;295:306-313

* p<0.05

AC=All cause, CV=Cardiovascular, MCE=Major cardiovascular events, MI=Myocardial infarction

Source: Berger JS et al. JAMA. 2006;295:306-313
Disparities in Women’s Cardiovascular Care

- Disparities in use of preventive medications
  - Aspirin
- Disparities in application of preventive strategies
  - Hypertension control
Hypertension Prevalence (1999 - 2002)

CDC/NCHS and NHLBI. NHANES 2002
The Benefits
Antihypertensive Therapy Decreases Cardiovascular Events

Average reduction in events (%)

Stroke: 35%-40%
Myocardial infarction: 20%-25%
Heart failure: >50%

N = 201,566

Preventable CHD Events from Control of Hypertension in US Adults

PAR% = proportion of CHD events preventable, NNT = number needed to treat to prevent 1 CHD event

Wong et al., Am Heart J 2003; 145: 888-95

PAR% = proportion of CHD events preventable, NNT = number needed to treat to prevent 1 CHD event

Treatment to <140/90 mmHg

Treatment to <120/80 mmHg
Impact of Discussing Coronary Risk with Patients Receiving BP Treatment

Blood pressure drop (mmHg)

- Usual treatment
- Risk counselling

- Blood pressure fall
- % of patients with intensified Rx

The Complexities
Risk of Adverse Outcomes Among Elderly CAD Patients by Age and BP

Postural Changes in Blood Pressure are more common as we Age

SBP (mm Hg)

ELDERLY

YOUNG
Antihypertensive Use Linked to Serious Fall Risk in Elderly Patients

- 4961 Medicare enrollees with hypertension interviewed about number and dose of antihypertensive medications
- Followed for 3 years, using claims data to track fall injuries
- 446 (9%) had a serious fall
- In multivariate analysis, patients who used more antihypertensive medication had more serious falls
  - hazard ratio 1.4 for high intensity antihypertensive therapy
  - hazard ratio 1.28 for moderate intensity antihypertensive therapy
  - Among the 503 participants with a prior serious fall, the hazard ratios was 2.31

Disparities in Women’s Cardiovascular Care

- Gender disparities in cardiovascular care exist
- Underutilization of appropriate medications, interventions and strategies contributes to excess cardiovascular morbidity and mortality
- Benefits of appropriate care must be balanced against risks