Women & Heart Disease

B K Singh, MD, FACC
BHHI Primary Care Symposium
February 26, 2016
DISCLOSURES

• None
Questions?

• Are there gender specific differences in heart disease?

• Does heart disease in women pose to be a bigger problem than in men?

• Is there a gap between perception and reality of heart disease in women?

• Are there specific types of Heart Disease that are unique to Women?

• Can we improve heart health in women?
Prevalence of CVD in women

• Note the post menopausal increase in CVD

• 8 million American women live with heart disease. Are there gender specific differences in heart disease?

• Does heart disease in women pose to be a bigger problem than in men?

• Is there a gap between perception and reality of heart disease in women?

• Are there specific types of Heart Disease that are unique to Women?

• Can we improve heart health in women?

• Women lag behind men by 10 yrs for Coronary events.
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
More women die of heart disease than men. 1/4 women die from heart disease.

In the year after MI, mortality in women is 28% higher.

Mortality in women is higher after MI in patients less than 65 yrs and also CABG

2008 AHA study only 8 percent of PCP and 17 percent of cardiologists knew that heart disease kill more women than men.
LEADING CAUSES OF DEATH FOR AMERICAN WOMEN (2008)

Of the women who died in 2008, one in four women dies from heart disease. It’s the #1 killer of women, regardless of race or ethnicity. It also strikes at younger ages than most people think, and the risk rises in middle age.

Gap between perception & reality
Clinical presentation of coronary heart disease in women. What's different?

- **Atypical presentation** of angina are more common in women than men.
- **Precipitating factors** - more of rest angina or precipitated by stress, Angina during sleep than exertion.
- **Atypical Symptoms** - more symptoms of dyspnea, indigestion, fatigue, diaphoresis, syncope, pain radiating to neck, jaw, back.
- **More silent MI** (42% vs 30%)
- **Disease symptoms missed** by patients and physicians.
- **More burden of risk factors**
- **Higher risk of CHF** with CHD
- **Higher risk of SCD** in the absence of overt CHD.
Risk Factors for coronary heart disease.

- **Age**: > 55, post menopause - risk increases 2-3x
- **Family history**: M <55, F < 65.
- **Smoking**: Risk 4-6x, 50% of MI in women linked to smoking
- **Smoking + Birth control pills**: Risk increases 30x
- **Obesity**: 1/3 women are obese and physical activity can decreased CAD risk by 50%. Criteria for metabolic syndrome is more liberal in women.
- **DM**: CHD Risk 3-7x, 2/3 DM patients die from heart or stroke. Smoking nearly doubles this risk
- **Hyperlipidemia**
- **Hypertension**
# Metabolic Syndrome

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal girth</td>
<td>&gt;40in</td>
<td>&gt;35in</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>&gt;150</td>
<td>&gt;150</td>
</tr>
<tr>
<td>HDL</td>
<td>&lt;40 mg/dl</td>
<td>&lt;50 mg/dl</td>
</tr>
<tr>
<td>BP</td>
<td>130/85 mmHg</td>
<td>130/85 mmHg</td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>&gt;100 mg/dl</td>
<td>&gt;100 mg/dl</td>
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</tbody>
</table>
71 year old white female with history of hypertension, BP 140/80, on Losartan 50 mg. She has no history of heart disease, stroke, PAD or DM and is not a smoker and has no symptoms.

Total cholesterol 180

HDL 40

LDL 80

• Does this patient need Statins?
Use guideline based approach to treat lipids
“I’ve always been a high achiever, always striving for bigger, faster, greater...and now suddenly I’m expected to settle for lower blood pressure and less cholesterol?!”
Limitations of cardiac testing in women

- **Treadmill test:** High false positive rate

- **Avoid coronary CTA/Nuclear stress** in young women

- In patients undergoing coronary angiogram for angina, prevalence of normal angiogram is higher in women (41%) vs men (8%).

- In ACS patients, absence of significant CAD is more common in women (17%) vs men (9%)

- **Is it vasospasm, clot lysis, or Microvascular Disease?**
Is there underutilization of standard of care?

- Aspirin
- Betablocker
- Statins
- ACEI/ ARB
- Thrombolysis

- Coronary angiogram
- PCI
- CABG
- ICD
- Cardiac rehabilitation
Coronary Heart Disease in young women (40-45)

- More common to see:
  - Premature family Hx
  - Smoking
  - Cocaine/ Birth control pills/ factor V Leiden mutation
  - Metabolic syndrome
  - High proportion of direct ACS presentation
  - SCAD or Kawasaki disease or normal coronary angiogram or mild disease or Takotsubo.
  - Acute MI: more common during Follicular phase of menstrual cycle.
Are there specific types of Heart Disease that are unique to Women?

- **Cardiac Syndrome X** or Micro vascular Disease
- **Fibromuscular Dysplasia (FMD)** or spontaneous coronary artery dissection (SCAD)
- **Broken Heart Syndrome**, **Takotsubo Cardiomyopathy**, **Stress Cardiomyopathy**
- **Peri-partum Cardiomyopathy** (Systolic / Diastolic CHF)
- **Atrial Fibrillation** in women
- **Hormone Replacement Treatment (HRT)**
  - Pregnancy in women with heart disease,
  - Primary Pulmonary Hypertension
  - Mechanical Heart Valve and pregnancy
Cardiac syndrome X
Microvascular angina, Angina with normal coronary.
(Inadequate vasodilatory Reserve)

- Disease of preponderantly younger women
- Angina or angina like chest pain with exercise
- ST depression on treadmill/ Normal Angiogram
- Risk factor modification and treat like Angina
- BB/ Calcium blocker/ Nitrates/ Aspirin/ Statins/ACEI
- L-Arginine: Nitric oxide precursor-
- Ranolazine, Imipiramime, Sildenafil, Metformin
Fibromuscular Dysplasia (FMD) or Spontaneous coronary artery dissection (SCAD) Non-atherosclerotic CAD of women.

- Younger patients mean age 43 / women (82%), no Risk Factors.
- Rare cause of MI: STEMI (49%), Non-STEMI (44%)
- STEMI in Peripartum period: think FMD or SCAD
- FMD of coronaries: Tear or bleed in vasavasorum or intramedial hemorrhage.
- Angiogram: coronary dissection or diffuse distal stenosis or sudden tapering (IVUS or OCT)
- Treatment: Medical, PCI, CABG.
- Prognosis: 10 yr : Recurrence rate: 29%.
- Death/MI/CHF/Dissection 47%
CAD: FMD, SCAD
Fibromuscular Dysplasia
& Spontaneous coronary artery dissection
Can stress cause heart attack?

Broken Heart Syndrome
(Takotsubo Syndrome, Stress Cardiomyopathy.

- Mimics MI: STEMI/Non-STEMI.CP/Abnormal EKG/Elevated troponin/ Abnormal LV systolic function/ Apical Ballooning Syndrome/ Basal Hyperkinesis.

- No obstructive CAD on angiogram

- 1-2% of suspected STEMI have Broken Heart.

- Wall motion abnormality extends beyond coronary territory.

- Preponderantly disease of women (80-100%), mean age 66.

- First described in Japan 1990. (Takotsubo-Octopus trap)
Apical Ballooning of LV

Broken Heart Syndrome
(Takotsubo Syndrome, Stress Cardiomyopathy.)
Broken Heart Syndrome  
(Takotsubo Syndrome, Stress Cardiomyopathy)

- Pathogenesis: catecholamine excess, vasospasm, microvascular dysfunction.

- Triggers: intense emotional/physical stress, arguments, bad news e.g. death of a relative; financial loss, domestic abuse, acute medical illness, surgery, accidents,

- Treatment similar to MI: shock, CHF, Arrhythmias, LV clot

- Prognosis: most recover 1-4 weeks, 4% hospital mortality, 2% annual risk of recurrence
What's the diagnosis?

- 25 F readmitted 6 days after normal delivery with cough, dyspnea, PND. Initially treated with antibiotics for suspected pneumonia. Negative CT, PE protocol prior to admission. H/H 8/27, cr 0.6. BNP 1599.

- LVEF < 25%

Diagnosis: Peripartum Cardiomyopathy with Acute systolic CHF
Peripartum Cardiomyopathy

- New onset cardiomyopathy /CHF. Low LVEF. (6wks -6 mos. Peripartum).
- Complete recovery: in 20-60%. (6 mos.-5 years)
- Mortality: 10% in 2 years.
- Recurrence rate: Higher if LVEF < 30 or persistent LV dysfunction.
- ACEI/ARB/Aldactone: contraindicated during pregnancy
- CHF Treatment: Standard. if no breast feeding.
- Role of Bromocriptine: (Reduces Prolactin): to treat PPCM
What's the diagnosis?

- 41 F, readmitted 4 days post Caesarian section with dyspnea, Orthoptera, PND, weight gain and severe edema.
- BP 160/90, H/H 12/36, Cr 0.9.

- Day 1
  - BNP 450
  - Wt. 181 lbs

- Day 5
  - BNP 45
  - Wt. 142 lbs

- Diagnosis: Post-partum Acute Diastolic Heart Failure.
- Treatment: Aggressive Diuresis.
Atrial Fibrillation in women.

Would you anticoagulate a 65 F with paroxysmal AFib with no CHF, DM, HTN, TIA, stroke or vascular disease?

Stroke and thromboembolism event rate at 1 year follow-up (\%)\(^b\)

3.71
A fib and stroke risk in men vs women

<table>
<thead>
<tr>
<th>Factor</th>
<th>Male (0)</th>
<th>Female (1)</th>
</tr>
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<td>No (0)</td>
<td>Yes (1)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Yes (1)</td>
<td></td>
</tr>
<tr>
<td>Age ≥ 75</td>
<td>Yes (2)</td>
<td></td>
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<tr>
<td>Diabetes mellitus</td>
<td>Yes (1)</td>
<td></td>
</tr>
<tr>
<td>Stroke/TIA/TE</td>
<td>Yes (2)</td>
<td></td>
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<tr>
<td>Vascular diseasea</td>
<td>Yes (1)</td>
<td></td>
</tr>
<tr>
<td>Age 65-74</td>
<td>Yes (1)</td>
<td></td>
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<tr>
<td>Sex</td>
<td>Male (0)</td>
<td>Female (1)</td>
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Score: 4

Stroke and thromboembolism event rate at 1 year follow-up (%)\(^b\)

9.27

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Stroke and thromboembolism event rate at 1 year follow-up (%)\(^b\)

15.26
The diagnosis of atrial fibrillation carries worse prognosis in women compared to men. Meta analysis of 30 studies. 1966-2015. (4.4 million patients.)

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<th>Events</th>
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<tbody>
<tr>
<td>Stroke</td>
<td>100%</td>
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<tr>
<td>CV Mortality</td>
<td>93%</td>
</tr>
<tr>
<td>MI</td>
<td>55%</td>
</tr>
<tr>
<td>CHF</td>
<td>16%</td>
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<tr>
<td>All cause Mortality</td>
<td>12%</td>
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Hormone Replacement Therapy (HRT) & Heart Disease

• HRT does not prevent heart disease in post-menopausal women.

• HRT is not recommended for neither primary or secondary prevention (WHI & HERS trial).

• Consider the difference between Estrogen alone vs Estrogen/Progestin combination.

• Weigh the risk and benefit based on age, duration, intensity of treatment, risk factors and patient preferences.

• When needed: Use short duration treatment & smaller dose.
Conclusions

- Heart Disease kill more women than men

- Atypical symptoms in women and the gap between perception and reality amongst both patients and physicians lead to delayed, missed or underdiagnosis leading to inadequate prevention, treatment and poor outcome

- **Cardiac syndrome X,** **Broken Heart Syndrome,** **Fibromuscular Dysplasia of coronary arteries &** **Peripartum Cardiomyopathy , Atrial Fibrillation pose additional disease burden in women**

- Aggressive risk factor modifications, healthy lifestyle and appropriate timely treatment will help improve heart health in women.