WOMEN’S HEALTH:
CARDIOVASCULAR DISEASE

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CARDIOLOGY AND MEDICINE CLINIC
WOMEN'S HEALTH

DISCLOSURES: NONE
OVERVIEW

• DEFINITION

• EPIDEMIOLOGY

• SIGNS & SYMPTOMS

• DIAGNOSIS

• TREATMENT
DEFINITION

Coronary heart disease
- Angina (dull/heavy to sharp chest pain or discomfort)
- Pain in neck, jaw, throat, upper abdomen or back

Heart attack
- Chest pain or discomfort
- Upper back or neck pain
- Indigestion
- Heartburn
- Nausea and vomiting
- Extreme fatigue
- Upper body discomfort
- Shortness of breath

Arrhythmia
- Fluttering feelings (palpitations)

Heart failure
- Shortness of breath
- Fatigue
- Swelling in feet, ankles, legs, and abdomen.
Percentage breakdown of deaths attributable to cardiovascular disease (United States: 2009).

- Coronary Heart Disease, 49.0%
- Stroke, 16.4%
- Other, 16.2%
- High Blood Pressure, 7.8%
- Heart Failure*, 7.2%
- Diseases of the Arteries, 3.4%
EPIDEMIOLOGY

• # 1 KILLER OF ALL WOMEN

• 1 IN 3 WOMEN > AGE 20

• CLAIMS OVER 500,000 WOMEN’S LIVES PER YEAR

• HIGHER RISK IN AFRO-AMERICAN AND HISPANIC WOMEN

• PRESENTS ON THE AVERAGE, 10 YEARS LATER IN WOMEN THAN MEN
Cardiovascular disease and other major causes of death for all males and females (United States: 2009).
MODIFIABLE RISK FACTORS

- SMOKING
- DYSLIPIDEMIA
- HYPERTENSION
- DIABETES & PRE-EXISTING DIABETES
- OVERWEIGHT & OBESITY
- METABOLIC SYNDROME
- BIRTH CONTROL PILLS
- PHYSICAL INACTIVITY
- UNHEALTHY DIET
- STRESS OR DEPRESSION
- SLEEP APNEA
NON - MODIFIABLE RISK FACTORS

• AGE & MENOPAUSE
• FAMILY HISTORY
• PREECLAMPSIA
• EMERGING RISK FACTORS
• INFLAMMATION
• MIGRAINES
• LOW BONE DENSITY AND LOW INTAKE OF FOLATE AND B6
• BROKEN HEART SYNDROME
SIGNS AND SYMPTOMS

CLASSIC:
CHEST PAIN OR DISCOMFORT
HEAVINESS, FULLNESS, DULL, TIGHTNESS, PRESSURE, ACHING
SHARP PAIN, MISERY
DYSPNEA
ATYPICAL PAIN: NECK, THROAT, JAW, BACK, ABDOMEN…..

<<<<<<<<<<<< NO SYMPTOMS>>>>>>>>>>>>>
DIAGNOSIS

- HISTORY (PERSONAL & FAMILY)
- PHYSICAL EXAM
- EKG
- ECHO (WHEN APPROPRIATE)
- STRESS TEST
  - STRESS ECHO
  - STRESS CARDIO LITE
- CARDIAC CATHETERIZATION
**CABG Mortality Rates**

*(after adjusting for 21 core variables & BSA & Perfusion Clamp Time)*

<table>
<thead>
<tr>
<th></th>
<th>Observed Mortality</th>
<th>Predicted Mortality</th>
<th>Observed/Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Patients</strong></td>
<td>2.88%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td>2.23%</td>
<td>2.47%</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td>4.24%</td>
<td>3.73%</td>
<td>1.14</td>
</tr>
</tbody>
</table>

\[
\frac{4.24}{2.23} = 1.90
\]

\[
\frac{1.14}{0.91} = 1.25
\]

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**CABG IN WOMEN**

Circ.2005;112:1-323-1-327
CAD
TREATMENT

• MEDICAL TX.
• ASA
• BETA-BLOCKERS
• NITRATES
• CA CHANNEL BLOCKERS
• STATINS
TREATMENT

PRIMARY AND SECONDARY PREVENTION
- TOBACCO CESSATION
- INCREASE PHYSICAL ACTIVITY
- WEIGHT CONTROL
- HEALTHIER DIETS LOW IN SATURATED FATS
- PREVENTIVE SCREENING
TREATMENT

• RE-VASCULARIZATION
  PERCUTANEOUS CORONARY INTERVENTION (PCI)
  CORONARY ARTERY BYPASS SURGERY (CABG)
  EXTERNAL ENHANCED COUNTER PULSATION (EECP)
The Disparity in Diverse Populations

- More likely not to be tx. To goal for chronic diseases such as HTN and Dyslipidemia
- Less likely to receive reperfusion tx. For AMI
- Less likely to have revascularization Tx i.e: PCI or CABG
- Less likely to have an AICD, or Resynchronization tx.
- More likely to have a lower extremity amputation
- More likely to be underinsured and less educated
Figure 1. In-hospital and late mortality rates in women versus men after mostly elective PCI. WHC indicates Washington Hospital Center; NHLBI, National Heart, Lung, and Blood Institute; NCN, National Cardiovascular Network; and NACI, New Approaches to Coron...

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>% Women</th>
<th>Women vs. Men (%)</th>
<th>P-Value</th>
<th>Adjusted OR (95% CI)</th>
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<tbody>
<tr>
<td>Watanabe20</td>
<td>82783</td>
<td>35</td>
<td>1.1</td>
<td>0.5</td>
<td>&lt;0.0001</td>
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<tr>
<td>Alfonso19</td>
<td>981</td>
<td>16</td>
<td>6.0</td>
<td>2.0</td>
<td>0.01</td>
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<tr>
<td>WHC18</td>
<td>7372</td>
<td>28</td>
<td>1.39</td>
<td>0.66</td>
<td>&lt;0.0002</td>
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<tr>
<td>Malenka24</td>
<td>12232</td>
<td>NA</td>
<td>1.64</td>
<td>0.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bell24</td>
<td>3557</td>
<td>27</td>
<td>4.2</td>
<td>2.7</td>
<td>0.005</td>
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<tr>
<td>NHLBI22</td>
<td>2136</td>
<td>26</td>
<td>2.6</td>
<td>0.3</td>
<td>&lt;0.001</td>
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<tr>
<td>NCN*21</td>
<td>150918</td>
<td>33</td>
<td>1.8</td>
<td>1.0</td>
<td>–</td>
</tr>
<tr>
<td>Mehilli**23</td>
<td>4264</td>
<td>24</td>
<td>3.1</td>
<td>1.9</td>
<td>0.02</td>
</tr>
<tr>
<td>Welty23</td>
<td>5989</td>
<td>35</td>
<td>1.2</td>
<td>0.52</td>
<td>0.017</td>
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<tr>
<td>Malenka15</td>
<td>33666</td>
<td>33</td>
<td>1.2</td>
<td>1.1</td>
<td>0.1</td>
</tr>
<tr>
<td>NHLBI13</td>
<td>2524</td>
<td>35</td>
<td>2.2</td>
<td>1.3</td>
<td>–</td>
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<tr>
<td>NCN22</td>
<td>109708</td>
<td>33</td>
<td>1.8</td>
<td>1.0</td>
<td>&lt;0.001</td>
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<tr>
<td>Arnold31</td>
<td>5000</td>
<td>25</td>
<td>1.1</td>
<td>0.3</td>
<td>0.001</td>
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<tr>
<td>NACI30</td>
<td>2855</td>
<td>34</td>
<td>1.4</td>
<td>1.1</td>
<td>NS</td>
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<tr>
<td>Weintraub39</td>
<td>10785</td>
<td>26</td>
<td>0.7</td>
<td>0.1</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Adjusted OR is for women <50 years.
** In-hospital figures are for Death/MI.
PCI IN WOMEN

- MORBIDITY AND MORTALITY HAVE DECREASED WITH CONVENTIONAL INTERVENTIONAL THERAPIES

- IE: WT. ADJUSTED HEPARIN, SMALLER VASCULAR SHEATHS, D.E.S. STENTS FOR SMALLER VESSELS
MORBIDITY MORTALITY

- HIGHER RISK PROFILE
- DELAYED ONSET OF DISEASE
- OLDER AGE
- SMALLER SURFACE AREA
- COMORBIDITIES AT THE TIME OF PRESENTATION

AMJ. CARDIOL. PETERSON 2001;88:359-364
CIRC. LANSKY 2005; 111:940-953
THE TOOLS

• A VALUABLE HEALTHY AND AFFORDABLE FOOD CHOICES ENSURING A HEALTHY FOOD INTAKE

• APPROPRIATE FACILITIES TO ACCOMMODATE THE PHYSICAL EXERCISE NEEDS OF ALL

• APPROPRIATE RISK STRATIFICATION SO THAT PROVIDERS ARE NOT PENALIZED FOR CARING FOR THE “SICKER PATIENTS”
Go Red for Women is a major International awareness campaign dedicated to prevention diagnosis and control of heart disease and stroke in women.

The American Heart Association created the Go Red for Women campaign in 2004.

The campaign focuses on the symbol of a red dress; the dress as a universal image and red as the color of health, life of vibrancy, but also of warning.
THE TOOLS

• EDUCATION
  Women do not perceive CVD as the greatest threat to their health. Know your numbers—blood pressure, cholesterol and glucose levels checked regularly.

• HIGH LEVELS= GREATER RISK

• EXECUTION OF THE MESSAGE WHERE IT’S NOT BEEN EXPLAINED BEFORE.
  Young women still feel more threatened by cancer than they do CVD.

• PERSONALIZATION OF THE MESSAGE
  Educating women greatly increases their willingness and ability to take heart-protective action.
THE NOBEL PEACE PRIZE FOR MEDICINE

- EDUCATION
- @ PHYSICIANS and HEALTH CARE PROVIDERS about the strong relationship between poverty and environment
- @ PATIENTS about the need for life style changes and preventive care. (PT. guide to living long and living strong)
THE TOOLS

• IMPLEMENTATION OF THE CURRENT AND FUTURE GUIDE LINES
• RESEARCH INCLUSIVE OF ALL DIVERSE GROUPS
• AN ENHANCED DIVERSE GROUP OF PRIMARY CARE PROVIDERS
• EQUAL AVAILABILITY OF SUBSPECIALIST, AS WELL AS AFFORDABLE WELL-STOCKED PHARMACIES.
Million Hearts™

Preventing 1 million heart attacks and strokes in five years

THE GOAL
**Definition of Cardiovascular Health**

In order to accurately measure Americans' cardiovascular health and monitor progress toward the 2020 goal, the American Heart Association for the first time defined "ideal cardiovascular health." We define it as the absence of disease and the presence of seven key health factors and behaviors that we call “Life's Simple 7.” Below are the measurements we use to determine whether someone is in ideal, intermediate or poor cardiovascular health.

<table>
<thead>
<tr>
<th>Life's Simple 7</th>
<th>Poor</th>
<th>Intermediate</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure</td>
<td>SBP ≥140 or DBP ≥90 mm Hg or treated to goal</td>
<td>SBP 120-139 or DBP 80-89 mm Hg or treated to goal</td>
<td>&lt;120/80 mm Hg</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>&gt;95th percentile</td>
<td>90th-95th percentile or SBP ≥120 or DBP ≥80 mm Hg</td>
<td>&lt;90th percentile</td>
</tr>
<tr>
<td>Children 8-19 years of age</td>
<td>None</td>
<td>1-149 min/wk mod or 1-74 min/wk vig or 1-149 min/wk mod + vig</td>
<td>150+ min/wk mod or 75+ min/wk vig or 150+ min/wk mod + vig</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>None</td>
<td>&gt;0 and &lt;60 min of mod or vig every day</td>
<td>60+ min of mod or vig every day</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>≥240 mg/dL</td>
<td>200-239 mg/dL or treated to goal</td>
<td>&lt;170 mg/dL</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>≥220 mg/dL</td>
<td>170-199 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Children 6-19 years of age</td>
<td>None</td>
<td>4-5 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Healthy Diet</td>
<td>0-1 components</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>0-1 components</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Children 5-19 years of age</td>
<td>None</td>
<td>4-5 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Healthy Weight</td>
<td>≥25 kg/m² or &gt;95th percentile</td>
<td>25-29.9 kg/m² or 85th-95th percentile</td>
<td>&lt;25 kg/m² or &lt;85th percentile</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>≥230 kg/m²</td>
<td>25-29.9 kg/m² or 85th-95th percentile</td>
<td>&lt;25 kg/m² or &lt;85th percentile</td>
</tr>
<tr>
<td>Children 2-19 years of age</td>
<td>None</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Smoking Status</td>
<td>Current Smoker</td>
<td>Former ≤12 mos</td>
<td>Never / quit ≥12 mos</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>Tried prior 30 days</td>
<td>Former ≤12 mos</td>
<td>Never / quit ≥12 mos</td>
</tr>
<tr>
<td>Children (12–19)</td>
<td>None</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Blood Glucose</td>
<td>126 mg/dL or more</td>
<td>100-125 mg/dL or treated to goal</td>
<td>Less than 100 mg/dL</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>126 mg/dL or more</td>
<td>100-125 mg/dL or treated to goal</td>
<td>Less than 100 mg/dL</td>
</tr>
<tr>
<td>Children 12-19 years of age</td>
<td>None</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
</tbody>
</table>

DBP indicates diastolic blood pressure; mod, moderate; mos, months; SBP, systolic blood pressure; vig, vigorous.

• American Heart Association,” Women and Heart Disease” Red Dress Campaign.www.heart.org
• Canto JG., Rogers WJ., Goldberg RJ.,”Association of age and sex with myocardial infarction symptom presentation and in hospital mortality.”JAMA” Journal of the American Medical Association, Feb 2012;307 (8)
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• Shaw LJ. Bugiardini R. “ Women and Ischemic Heart Disease, Evolving Knowledge.” Journal of the American College of Cardiology. OCT. 2009 ; 54 (17) 1561 – 1575
• World Heart Federation, “Cardiovascular disease in women” www.world-heart-federation.org