WOMEN’S HEART HEALTH ACROSS THE LIFESPAN
Health Education Roundtable
Agenda

- Welcome & Housekeeping
- Keynote Presentation
- Young Women and Heart Disease: From Birth Control to Giving Birth
- Managing Midlife: Heart Attacks, Chronic Diseases and Lifestyle During the Middle Years
- Working Lunch: Patient Panel
- Getting Older: How Menopause and Aging Affect the Heart
- Wrap-up: Messages for Patients and Health Care Providers at Every Stage of Life
Welcome

◆ Beth Battaglino, RN-C
  › CEO, HealthyWomen
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American Medical Women’s Association
Preeclampsia Foundation
Preventive Cardiovascular Nurses Association
Three Tomatoes
WomenHeart
HealthyWomen’s Women’s Health Advisory Council
Keynote Presentation

◆ Nieca Goldberg, MD
  ▪ Medical Director, NYU Women’s Heart Program
  ▪ Senior Advisor for Women’s Health Strategy, NYU Langone Medical Center
Women Are Still Not Small Men
Women’s Heart Health Across the Lifespan

Nieca Goldberg, MD
Medical Director
Joan H. Tisch Center for Women’s Health
NYU Langone Medical Center
Clinical Associate Professor of Medicine
NYU School of Medicine
Percentage Breakdown on Deaths due to Cardiovascular Diseases

- Coronary Heart Disease: 42.6%
- Stroke: 17.0%
- Heart Failure*: 9.4%
- High Blood Pressure: 10.5%
- Diseases of the Arteries: 2.9%
- Other: 17.6%
Cardiovascular Mortality Trends in Men and Women

Women are not Small Men 2002
AHA NHBI 2004

Heart and Stroke Statistical Update 2020
Have we improved awareness of cardiovascular risk in women?

Circulation.2020:141
Heart Attack Symptoms

• Chest, Back, Arm, Shoulder and or Stomach discomfort
• Shortness of Breath
• Weakness
• Nausea, lightheadedness, Cold Sweat
Expansion of Cardiac Risk Factors in Women of All Ages

Emerging Risk Factors

- SLE: 3-fold higher risk of IHD events [18]
- Rheumatoid arthritis: elevates IHD risk as much as DM [18]
- Gestational diabetes:
  - 4-fold higher risk of DM
  - 59% higher risk of MI [17]
- Hypertension in pregnancy:
  - Gestational HTN and preclampsia:
    - 3-fold higher risk of IHD [18]
- Early menopause confers 4.5 times higher risk of IHD [99]
- Depression is more prevalent in women
doubles the risk of IHD [16]

Traditional Risk Factors

- Menopause results in ↑TG, ↑LDL, ↓HDL
  - Women are less likely to achieve lipid goals (OR 0.50) [97]
- 80% of women ≥75 have HTN
  - Only 29% have adequate BP control (22,98)
- Diabetes confers a 45% higher risk of IHD [18]
- Smoking confers a 25% higher risk of IHD [96]
- Obesity confers a higher risk of IHD in women
  - (64% vs 46%) [94]
- Women have a higher prevalence of inactivity
  - 25% of US women get no regular physical activity [95]

Family History of premature atherosclerosis confers a 2 fold higher risk of IHD in men and women [100]
Blood Pressure Changes in Women and Men

![Graph showing blood pressure changes in women and men over age.](image)
Additional considerations when caring for women

- In a Survey of 9000 Women
  - 77% don’t do what they need to do to stay healthy because they lack the time
  - 53% believed the best place to get health information is online yet only 31% trust the information
  - 78% don’t trust their health insurer
  - 83% don’t trust pharmaceutical companies
  - 35% don’t trust their doctor
Why do patients need health literacy skills?

• Find information and services
• Communicate their needs and preferences and respond to information and services
• Process the meaning and usefulness of the information and services
• Understand the choices, consequences and context of the information and services
• Decide which information and services match their needs and preferences so they can act
Impact of Health Literacy on Heart Failure Outcomes

Why do providers need health literacy skills?

• Help people find information and services
• Communicate about health and healthcare
• Process what people are explicitly and implicitly asking for
• Understand how to provide useful information and services
• Decide which information and services work best for different situations and people so they can make a shared decision.
Why is Aspirin Therapy so confusing?

39,876 women ≥45 years

Considerations for the Future

• Cultural Appropriate Awareness Programs
• Research focused on women and cardiovascular disease
• Better collaboration with all stakeholders
• Trust and transparency
• Improved health literacy
<table>
<thead>
<tr>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>At every visit</td>
</tr>
<tr>
<td>At most visits</td>
</tr>
<tr>
<td>At a few visits</td>
</tr>
<tr>
<td>Rarely or never</td>
</tr>
</tbody>
</table>
Agree or disagree: Women don't need to worry about their heart health until after age 40 years old.
Young Women and Heart Disease: From Birth Control to Pregnancy

◆ Nieca Goldberg, MD
  ▶ Medical Director, NYU Women’s Heart Program
  ▶ Senior Advisor for Women’s Health Strategy, NYU Langone Medical Center
◆ Lina Malha, MD, MS
  ▶ Nephrologist, The Hypertension Center, Weill Cornell Medical Center
◆ Malissa J. Wood, MD
  ▶ Co-Director, Corrigan Women’s Heart Health Program, Massachusetts General Hospital
Choosing Wisely: Contraception in Women with Cardiometabolic Risk

Nieca Goldberg, MD
Medical Director
NYU Women’s Heart Program
Senior Advisor Women’s Health Strategy
NYU Langone Health
Clinical Associate Professor of Medicine
NYU Grossman School of Medicine
The Metabolic Syndrome and Hormonal Contraception: The Topics We’ll Cover

• Metabolic syndrome in reproductive-aged women: scope and impact
• Hormonal contraception use, and effect on metabolic syndrome components
• When women with metabolic syndrome need reliable contraception: a practical and evidence-based approach
Defining the Metabolic Syndrome

“The metabolic syndrome” means different things to different clinicians. For today’s discussion, we’ll use the definition agreed upon by the AHA, International Diabetes Association, NHLBI, and others¹

Any ≥3 of

1. Fasting plasma glucose ≥100 mg/dL or receiving drug therapy for elevated glucose
2. HDL-C <40 mg/dL in males or <50 mg/dL in females or undergoing drug treatment for reduced HDL-C
3. Triglycerides ≥150 mg/dL or undergoing drug treatment for elevated triglycerides
4. Waist circumference >102 cm in males or >88 cm in females for people of most ancestries living in the US
5. SBP≥130 mm Hg or DBP ≥85 mm Hg or undergoing drug treatment for hypertension, or antihypertensive drug treatment in a patient with a history of hypertension

AHA, American Heart Association; DBP, diastolic blood pressure; HDL-C, high-density lipoprotein cholesterol; NHLBI, National Heart, Lung, and Blood Institute; SBP, systolic blood pressure.
The Prevalence of Metabolic Syndrome in US Women of All Ages Is Increasing

- 25.3% 1988-1994
- 25.0% 1999-2008
- 34.2% 2007-2012

What percentage would you estimate for 2020?

Metabolic Syndrome Is Common in the Reproductive Years, Not Just Later in Life

Percentages of women with metabolic syndrome, by population group and NHANES study period

NHANES, National Health and Nutrition Examination Survey.
Elevated Waist Circumference Is the Most Common Component of the Syndrome in Women

Percentages of women with various components of the metabolic syndrome, 2007-2012

<table>
<thead>
<tr>
<th>Population</th>
<th>Elevated Waist Circumference</th>
<th>Elevated Triglycerides</th>
<th>Reduced HDL-C</th>
<th>Elevated Blood Pressure</th>
<th>Elevated Fasting Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>58.8</td>
<td>29.2</td>
<td>46.2</td>
<td>40.8</td>
<td>22.2</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>68.3</td>
<td>20.9</td>
<td>43.1</td>
<td>50.1</td>
<td>24.5</td>
</tr>
<tr>
<td>Mexican American</td>
<td>66.8</td>
<td>21.6</td>
<td>51.6</td>
<td>27.2</td>
<td>23.2</td>
</tr>
<tr>
<td>ALL</td>
<td>60.9</td>
<td>27.4</td>
<td>46.2</td>
<td>41.0</td>
<td>22.6</td>
</tr>
</tbody>
</table>

Note: Terminology used to describe patient populations is that of the CDC’s National Health and Nutrition Examination Survey (NHANES), which did not report data for Asian Americans or other groups in paper cited.

Metabolic Syndrome and CVD in Women: What Are the Odds?

- 2.63: relative risk for developing CVD relative to women without metabolic syndrome

- 3.09: hazard ratio for mortality with combination of central obesity, elevated blood pressure and hyperglycemia

- Risk: for atrial fibrillation, peripheral arterial disease, heart failure, and cognitive decline
The Metabolic Syndrome and Hormonal Contraception: The Topics We’ll Cover

- Metabolic syndrome in reproductive-aged women: scope and impact
- **Hormonal contraception use, and effect on metabolic syndrome components**
- When women with metabolic syndrome need reliable contraception: a practical and evidence-based approach
Almost Half of Women Using Contraception Employ a Hormonal Method


<table>
<thead>
<tr>
<th>Method</th>
<th>No. of women</th>
<th>% of women aged 15-44</th>
<th>% of women at risk of unintended pregnancy</th>
<th>% of contraceptive users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral contraceptives</td>
<td>5,572,477</td>
<td>15.6</td>
<td>22.7</td>
<td>25.3</td>
</tr>
<tr>
<td>IUD</td>
<td>6,482,344</td>
<td>7.2</td>
<td>10.6</td>
<td>11.8</td>
</tr>
<tr>
<td>Injectable</td>
<td>1,481,902</td>
<td>2.4</td>
<td>3.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Implant</td>
<td>965,539</td>
<td>1.4</td>
<td>2.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Vaginal ring</td>
<td>901,896</td>
<td>1.5</td>
<td>2.1</td>
<td>2.4</td>
</tr>
<tr>
<td>Emergency contraception</td>
<td>69,967</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Patch</td>
<td>69,106</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Tubal sterilization</td>
<td>8,225,149</td>
<td>13.4</td>
<td>19.5</td>
<td>21.8</td>
</tr>
<tr>
<td>Vasectomy</td>
<td>2,461,049</td>
<td>6.0</td>
<td>5.8</td>
<td>6.5</td>
</tr>
<tr>
<td>Male condom</td>
<td>5,469,205</td>
<td>8.9</td>
<td>13.0</td>
<td>14.6</td>
</tr>
<tr>
<td>Fertility awareness-based methods</td>
<td>832,216</td>
<td>1.3</td>
<td>2.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>3,042,724</td>
<td>5.0</td>
<td>7.2</td>
<td>8.1</td>
</tr>
<tr>
<td>Other</td>
<td>234,859</td>
<td>0.4</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>No method, at risk of unintended pregnancy</td>
<td>4,408,474</td>
<td>7.2</td>
<td>10.5</td>
<td>Not applicable (NA)</td>
</tr>
<tr>
<td>No method, not at risk of unintended pregnancy</td>
<td>19,302,067</td>
<td>31.4</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>TOTAL</td>
<td>61,491,766</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The Number of Women Using Hormonal Contraception Who Have Metabolic Syndrome Is Unknown . . .

...but it’s probably safe to say that all of us have many such patients in our practices

- ~17.5 million women using hormonal contraception^1
- ~10.7 million women aged 18-49 years with metabolic syndrome^2,3^a

^a^Estimate based on extrapolation of data from Moore, et al and U.S. Census Bureau sources cited below.
There is a torrent of evidence and steady stream of guidance on managing these patients . . . creating the potential for information overload. Let’s focus on a few key points.
Hormonal Contraception and Obesity: Key Points

- Impact of obesity on PK of systemic hormonal contraceptives is not fully understood\(^1\)
  - *Main CV safety concern is apparent association between obesity and lower levels of sex hormone-binding globulin (SHBG), which could affect circulating levels of exogenous estrogen introduced by systemic hormonal contraception*\(^1\)

- Obesity and combined hormonal contraception (CHC) use each are risk factors for VTE\(^1\)
  - *Obese women using combined oral contraceptives have a 5- to 8-fold higher risk of VTE compared to obese non-users, and a 10-fold higher risk relative to normal-weight non-users*\(^2\)

- Conflicting evidence on whether obese CHC users are at elevated risk of AMI vs. obese non-users and non-obese users\(^2\)

- Limited evidence suggests risk of stroke in CHC users does not vary by BMI\(^3\)

- The CDC and WHO consider combined hormonal contraception (CHC) category 2 for obesity (advantages generally outweigh risks), and say unrestricted use of progestin-only methods is warranted in obese adults\(^4,5\)

AMI, acute myocardial infarction; BMI, body mass index; PK, pharmacokinetics; VTE, venous thromboembolism; WHO, World Health Organization.
Hormonal Contraception and Lipids: Key Points

A recent study assessed 75 metabolic measures and 37 cytokines in >5,800 aged 24-49 years, including 869 who were re-assessed after 6 years. Key findings:

• Combination oral contraceptive pills (COCPs) increased circulating HDL-C, but also increased triglycerides, apolipoprotein B and A-1, insulin, and C-reactive protein, with most alterations associated with higher cardiometabolic risk

• Metabolic changes are reversed upon discontinuing COCPs

• Progestin-only contraceptives had little effect on systemic metabolism and inflammation

Hormonal Contraception and Blood Pressure: Key Points

- Early epidemiological research showing that oral contraceptives raised SBP 3-6 mm Hg and DBP 2-5 mm Hg involved formulations with higher doses of estrogen than are used today\(^1\)
- However, current formulations still can increase blood pressure\(^2\)
  - *Primary mechanism appears to be activation of renin-angiotensin system (RAS) by estrogen, with most synthetic progestins unable to antagonize effect*\(^2\)
  - *Effect typically resolves following discontinuance*\(^2\)
  - *This effect creates a need for additional options for women with hypertension*

Hormonal Contraception and Blood Pressure: Key Points (cont’d)

CDC Medical Eligibility Criteria for Contraceptive Use – Hypertension

<table>
<thead>
<tr>
<th>Category</th>
<th>Cu-IUD</th>
<th>LNG-IUD</th>
<th>Implants</th>
<th>DMPA</th>
<th>POP</th>
<th>CHCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequately controlled hypertension</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>SBP 140-159 mm Hg or DBP 90-99 mm Hg</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>SBP ≥160 mmHg or DBP ≥100 mmHg</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Vascular disease</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Categories of medical eligibility criteria for contraceptive use
1 = A condition for which there is no restriction for the use of the contraceptive method.  
2 = A condition for which the advantages of using the method generally outweigh the theoretical or proven risks.  
3 = A condition for which the theoretical or proven risks usually outweigh the advantages of using the method.  
4 = A condition that represents an unacceptable health risk if the contraceptive method is used.

CHCs, combination hormonal contraceptives; Cu-IUD, copper-containing intrauterine device; DMPA, depot medroxyprogesterone acetate; LNG-IUD, levonorgestrel-releasing intrauterine device; POP, progestin-only pill. Curtis KM, Tepper NK, Jatlaoui TC. MMWR. 2016;65:1-108.
Hormonal Contraception and Elevated Glucose: Key Points

• No consistent evidence that use of COCPs significantly influences risk of developing diabetes, even in women with a history of gestational diabetes¹

• A systematic literature review found that only high-dose COCPs and 30 ug ethinyl estradiol + 75 ug gestodene slightly impaired glucose homeostasis²

• A study of 703 women found that depot medroxyprogesterone acetate (DMPA) led to slightly higher fasting glucose and insulin levels, but low-dose oral contraceptives with 20 mcg ethinyl estradiol and 0.15 mg desogestrel did not³

Hormonal Contraception and Elevated Glucose: Key Points (cont’d)

- An analysis of 146,080 women with diabetes who had 3,012 thromboembolic events found that rates of thromboembolism were highest among those who used the contraceptive patch, and lowest among those who used intrauterine and subdermal contraceptives.

<table>
<thead>
<tr>
<th>Contraception</th>
<th>Women</th>
<th>Woman-years</th>
<th>N with TE</th>
<th>Thrombosis per 1,000 woman-years of use</th>
<th>Adjusted HR* (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any COC</td>
<td>35,360</td>
<td>45,787</td>
<td>486</td>
<td>10.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estrogen doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 30 μg</td>
<td>33,992</td>
<td>43,856</td>
<td>460</td>
<td>10.5</td>
<td>0.71 (0.48–1.05)</td>
<td>0.09</td>
</tr>
<tr>
<td>&lt;30 μg</td>
<td>2,109</td>
<td>1,930</td>
<td>26</td>
<td>13.5</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Different COC formulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COC with drospirenone</td>
<td>6,576</td>
<td>6,598</td>
<td>65</td>
<td>9.9</td>
<td>1.03 (0.78–1.36)</td>
<td>0.86</td>
</tr>
<tr>
<td>COC with desogestrel/gestodene</td>
<td>12,907</td>
<td>13,974</td>
<td>143</td>
<td>10.2</td>
<td>1.04 (0.84–1.28)</td>
<td>0.72</td>
</tr>
<tr>
<td>COC with other progestin type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(norethindrone, ethynodiol, etc.)</td>
<td>17,602</td>
<td>21,717</td>
<td>226</td>
<td>10.4</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Progestin-only pills</td>
<td>3,306</td>
<td>1,901</td>
<td>26</td>
<td>13.7</td>
<td>1.22 (0.81–1.83)</td>
<td>0.34</td>
</tr>
<tr>
<td>Different estrogen-containing formulas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any COC</td>
<td>32,606</td>
<td>42,289</td>
<td>436</td>
<td>10.3</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Transdermal patch†</td>
<td>2,224</td>
<td>1,645</td>
<td>27</td>
<td>16.4</td>
<td>1.68 (1.14–2.49)</td>
<td>0.0091</td>
</tr>
<tr>
<td>Vaginal ring†</td>
<td>2,026</td>
<td>1,853</td>
<td>25</td>
<td>13.5</td>
<td>1.45 (0.97–2.18)</td>
<td>0.0703</td>
</tr>
</tbody>
</table>

COC, combined oral contraceptive; TE, thromboembolism. *Adjusted for age, advanced diabetes, hyperlipidemia, hypertension, cancer, obesity, and smoking. †Transdermal contraceptive patch (EVRA; Johnson & Johnson). ‡Combined hormonal vaginal ring (NuvaRing; Merck Sharp & Dohme).

The Metabolic Syndrome and Hormonal Contraception: The Topics We’ll Cover

• Metabolic syndrome in reproductive-aged women: scope and impact
• Hormonal contraception use, and effect on metabolic syndrome components
• When women with metabolic syndrome need reliable contraception: an evidence-based and practical approach
Considerations to Keep in Mind

• 45% of pregnancies in the US each year are unintended!¹

• Besides serving as an effective form of birth control (when used properly and consistently), oral contraception provides several other health benefits, including relief of dysmenorrhea and reduction in risk for ovarian cysts²

• When we counsel women with metabolic syndrome about the impact of hormonal contraception, we want them to improve their metabolic parameters – not stop using a reliable means of birth control
  • But what we say and mean is not always what patients hear and do

7 Questions to Weigh When Women with Metabolic Syndrome Need Contraception

1. What is the patient’s reason(s) for using contraception (birth control, perimenopausal symptoms, gynecologic condition, etc.)?

2. What is the severity or significance of the component conditions of her metabolic syndrome?

3. How does her current/preferred method of contraception affect the component conditions of her metabolic syndrome?

4. What do the guidelines say about use of her current/preferred method – and about alternatives?

5. How well would more “metabolic syndrome-friendly” alternatives meet her needs/reasons for using contraception? How likely would she be to tolerate and adhere to alternative methods?

6. How can presentation of the risks and benefits of her contraceptive options not only inform the patient but also encourage her to improve her metabolic syndrome parameters?

7. How do we engage in shared decision-making to arrive at an approach that meets both her contraceptive and cardiometabolic needs?
In Summary

• The prevalence of metabolic syndrome is increasing in American women, including in those of reproductive age

• Metabolic syndrome significantly elevates risk for cardiovascular disease and other conditions

• More than 17 million women use a hormonal method of contraception; an unknown portion of those women have metabolic syndrome

• Different methods of hormonal contraception have varying degrees of impact on metabolic syndrome component conditions, and on cardiovascular risk

• A comprehensive approach that weighs key questions and various options allows for formulation of an individualized plan to optimize a woman’s cardiometabolic health while meeting her contraceptive needs
Hypertension: pregnancy and beyond

HealthyWomen Heart Health Roundtable 2020

Line Malha, M.D., M.S.
Assistant Professor of Medicine, Division of Nephrology & Hypertension
Assistant Professor of Medicine in Obstetrics and Gynecology
Weill Cornell Medicine
Pregnancy Facts and Myths
MYTH
Pregnancy = Healthy
Maternal Deaths in the U.S. Are on the Rise

Maternal mortality ratio (number of maternal deaths per 100,000 live births)

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>380</td>
<td>210</td>
<td>-45%</td>
</tr>
<tr>
<td>Developed Regions</td>
<td>26</td>
<td>16</td>
<td>-38%</td>
</tr>
<tr>
<td>Developing Regions</td>
<td>430</td>
<td>230</td>
<td>-47%</td>
</tr>
<tr>
<td>United States</td>
<td>12</td>
<td>28</td>
<td>+136%</td>
</tr>
</tbody>
</table>

Source: World Health Organization
Mortality by Age and Racial Groups

Top 6 causes of maternal death

Source: Linked Death-Birth Files, 2011 & 2012 Maternal Death Cohorts
Prepared by: Office of Program Decision Support, FCHS, DSHS, 2014
### Types of Hypertension in Pregnancy

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
<th>Proteinuria or new sign/symptom</th>
<th>BP returns to normal by 3-6 months postpartum but may develop chronic hypertension in ½ cases</th>
<th>AND a diagnosis of chronic hypertension</th>
<th>BP returns to normal by 12 weeks postpartum</th>
<th>Gestational hypertension that does not return to normal by 12 weeks postpartum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preeclampsia</strong></td>
<td>Eclampsia superimposed on chronic hypertension (BP≥140/90mmHg twice in ≥4 hours OR ≥160/110mmHg twice in mins diagnosed &gt;20 weeks)</td>
<td>Proteinuria or new sign/symptom</td>
<td>BP returns to normal by 3-6 months postpartum but may develop chronic hypertension in ½ cases</td>
<td>AND a diagnosis of chronic hypertension</td>
<td>BP returns to normal by 12 weeks postpartum</td>
<td>Gestational hypertension that does not return to normal by 12 weeks postpartum</td>
</tr>
<tr>
<td><strong>Gestational Hypertension</strong></td>
<td>Diagnosed ≤20 weeks</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Chronic Hypertension</strong></td>
<td>Diagnosed ≤20 weeks</td>
<td></td>
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</tr>
<tr>
<td><strong>Low Platelets</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Decrease in kidney function</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Increase in liver enzymes</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Pulmonary edema</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Neurologic or visual symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**References:**
Preeclampsia is a placental disease

- The placenta is a fetal organ: interface between fetal and maternal circulation. Role: sustain the fetus
- Abnormal placentation: trophoblasts (placental) do not invade deeply into the spiral arteries (maternal)

Preeclampsia is a placental disease

• The placenta is a fetal organ: interface between fetal and maternal circulation. Role: sustain the fetus

• Abnormal placentation: trophoblasts (placental) do not invade deeply into the spiral arteries (maternal)

... this then affects the mother

- Factors are released by the placenta leading to an Anti-Angiogenic milieu
  - ↑ soluble fms-like tyrosine kinase 1 (sFlt-1)
  - ↓ Placental Growth Factor (PIGF)
- Endothelial injury: blood vessels throughout the body are injured

Fetal/Placental Risk Factors for preeclampsia

• 1st pregnancy
• Multiple gestations (same father)
• Multigravid gestation
• Hydatidiform mole
• Donor egg (IVF)
MYTH
If you have Hypertension or a history of Preeclampsia you should NOT be pregnant.
## Maternal Risk Factors for Preeclampsia (PE)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Reported Risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney Disease</td>
<td>15-50</td>
</tr>
<tr>
<td>Chronic hypertension</td>
<td>15-25</td>
</tr>
<tr>
<td>Diabetes</td>
<td>10-35</td>
</tr>
<tr>
<td>Family history of PE</td>
<td>10-15</td>
</tr>
<tr>
<td>Obesity/insulin resistance</td>
<td>10-15</td>
</tr>
<tr>
<td>Age &gt; 40 y.o.</td>
<td>10-20</td>
</tr>
<tr>
<td>Thrombophilias</td>
<td>10-40</td>
</tr>
</tbody>
</table>

Aspirin (ASA) prevents PE

• In 32891 pregnancies; ASA (60-150mg daily) reduced:
  ▪ Preeclampsia by 17%
  ▪ Preterm birth by 8%
  ▪ Fetal death by 14%

• USPF Task force recommends ASA for high risk pregnancies:
  ▪ A history of preeclampsia
  ▪ Hypertension
  ▪ Diabetes
  ▪ Kidney disease
  ▪ Autoimmune disease
  ▪ Multifetal pregnancy

• ASAPP Study: A Randomized Controlled Trial Comparing Low Doses of Aspirin in the Prevention of Preeclampsia (Weill Cornell)

Henderson JT, el al. U.S. Preventive Services Task Force Evidence Syntheses 2014
What to do about Hypertension during pregnancy
Medical management

• Blood pressure (BP) control
  ▪ Different societies disagree about the target blood pressure
  ▪ All agree to keep blood pressure <160/105mmHg
  ▪ Use medications safe in pregnancy

• Close monitoring of organ damage

• Depending on morbidity and gestational age: Deliver
Chronic Hypertension in Pregnancy (CHAP) study may change the target- stay tuned!

- Multicenter NIH Sponsored clinical trial
- CHAP clinical trial comparing two strategies for managing chronic hypertension
  - SUSPECTED or known cHTN
  - US Confirmed singleton pregnancy <23 weeks
  - Randomized
    - Standard of care group: BP medications started only if BP≥160/105 mmHg
    - Treatment group: BP medications prescribed to keep BP <140/90

- Primary site University of Alabama at Birmingham (PI: Dr Alan Tita)
- Cornell Site with PI: Dr Phyllis August, Co-investigators: Dr Kathy Matthews and Dr Line Malha. Coordinator: NP Rosemerie Marion
Beyond pregnancy: What are the implications of Hypertension in Pregnancy?
Hypertension in pregnancy increases the risk of Cardiovascular disease (CVD)
CVD 14 years after PE ± preterm birth

<table>
<thead>
<tr>
<th>Post Pregnancy Outcomes at a mean follow up of 14.6 years, n=782 287</th>
<th>Hazard Ratios</th>
<th>Index Pregnancy PE</th>
<th>Index Pregnancy PE, delivery&lt;37w, low birth weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>4.07</td>
<td>7.68</td>
<td></td>
</tr>
<tr>
<td>Ischemic Heart Disease</td>
<td>1.82</td>
<td>2.26</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>1.53</td>
<td>2.44</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.63</td>
<td>3.25</td>
<td></td>
</tr>
<tr>
<td>Thromboembolism</td>
<td>1.91</td>
<td>2.57</td>
<td></td>
</tr>
</tbody>
</table>

P value <0.001

Recurrent Preeclampsia increases CVD risk > 25 years later

Follow up and education are key

• Long-term multi-disciplinary follow-up
• Discuss risks for future pregnancies and risk mitigation
• Acknowledge emotional distress and sometimes PTSD
  • Preeclampsia Foundation (preeclampsia.org)
• Patient information and targeted prevention measures for these women are inadequate
  • Often women are not aware of their increased CVD risk
• Regular monitoring, healthy lifestyle, and effective control of all risk factors → long term CVD prevention

Thank you for your attention!

Questions?
Spontaneous Coronary Artery Dissection: How to Diagnose, How to Manage

Malissa J. Wood, MD
Co-Director Corrigan Women’s Heart Health Program
Massachusetts General Hospital
Overview

• Definition: What is SCAD?
• Epidemiology
  – What does the typical SCAD patient look like?
• Conditions associated with SCAD
• Diagnosis
• Management
**Triggers**

Precipitating events:
- Adrenaline causes ↑ cardiac and vascular shear stress which may lead to increased risk of vascular injury
  - Severe emotional stress (40%)
  - Vigorous physical activity (24%)
    - More common in men (>50%)- MGH
  - Cocaine, energy drinks
- Hormone exposure

**Vascular Vulnerability**

- Pregnancy/post partum (12-40% of SCAD cases)
- Fibromuscular dysplasia (FMD)
- Genetically mediated vasculopathies
  - Vascular EDS
  - Marfan syndrome, Loeys-Dietz
- Rheumatologic disorders
  - SLE, PAN, hypereosinophilia

Emotional Stress in SCAD

Emotional stressors
Antecedent emotional stresses such as a bereavement or major personal crisis have been reported in a higher than expected proportion of SCAD cases, particularly in women.4,8,9

<table>
<thead>
<tr>
<th>Activity</th>
<th>Extreme emotional stress</th>
<th>5 (26.3)</th>
<th>0.84</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of depression</td>
<td>146 (19.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of anxiety</td>
<td>148 (19.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On medication for depression</td>
<td>111 (14.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On medication for anxiety</td>
<td>88 (11.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>87 (13.9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Past medical history: migraines 31 (32%)
Past medical history: depression 20 (20%)
Past medical history: anxiety 31 (32%)

Sharma Am J Cardiol 2019, Duran Cath Cardiovasc Int 2019, Adlam EHJ 2019
Most frequently reported sources of stress included:
- Intimate partner conflict
- Conflict with close family member or friend
- Change in work status or responsibilities

40% rated their stress between a 7 and 10 in the 2 weeks prior to SCAD

121 of respondents reported having engaged in extreme or unusual physical exertion in two weeks prior to SCAD
MGH Registry

43 SCAD pts with LVG at the time of coronary angiography

24/43 (58%) had findings consistent with TTS

Hyperdynamic LV function of the basal territory and hypokinesis to akinesis to dyskinesis of the apical territories in the presence of a patent infarct related artery
Overlap Between SCAD and Takotsubo

- MGH Registry
  - 43 SCAD patients with coronary angiography
  - 24/43 (58%) had findings consistent with TTS
    - Hyperdynamic LV function of the basal territory and hypokinesis to akinesis to dyskinesis of the apical territories in the presence of a patent infarct related artery
Psychological Management

- Team approach
- SSRI /anxiolytic
- Behavioral health provider
- Cardiac Rehab*
- Stress management
Diagnosis and Treatment in the Acute Setting

- EKG
- Echocardiogram
- Blood testing: troponin
- Cardiac catheterization
- No stenting if necessary
- Very rarely is bypass surgery required

Hayes, Circulation 2018
Medical Treatment

- Aspirin indefinitely
- Some use Plavix
- Beta blockers
- Control blood pressure
- Statins only if needed for other reasons

Vascular Screening = Concomitant FMD in up to 50% of SCAD patients

Saw J, et al. JACC CV Int 2013

CTA head and neck, abdomen and pelvis recommended:

Recovery after SCAD- Cardiac Rehab

- Specific program targeting to high baseline physical fitness, high stress and anxiety
- Focus on stress management techniques
- Group based education classes
- Peer mentoring
- Vancouver, Mayo Clinic and MGH SCAD cardiac rehab protocols
- Individualized approach
Recovery after SCAD - Cardiac Rehab

- Specific program targeting high baseline physical fitness and high stress and anxiety
- Focus on stress management techniques
- Group-based education
- Peer mentoring
- Vancouver, Mayo Clinic and MGH SCAD cardiac rehab protocols
- Individualized approach
Conclusions

• CVD remains the number one killer of American women
• Gender disparities exist across the continuum of treatment for cardiovascular disease
  – Particularly amongst black and Hispanic women
• Multifaceted approach to address disparities
• Dedicated gender specific guidelines and risk prediction models are needed
• Women’s Heart Centers will help address these issues
• Collaboration of multiple stakeholders including patients, care providers, policy-makers, industry partners will best address this need
SCAD Care- It takes a village!
108 patients enrolled
8 enrolling sites
12 sites in training/IRB/DUA

• Institutional IRB
• Data Use Agreement

• Michael Gibson, MD
• PERFUSE staff

Study Chairperson
• Esther Kim, MD, MPH

Steering Committee
• Malissa Wood, MD
• Katherine Leon
• Sahar Naderi, MD

Advisory Council
• SCAD Alliance Scientific Advisory Board
Summary

• SCAD is a common cause of heart attack in young and middle aged women and some men with few ASCVD risk factors

• Significant work remains needed to understand the pathophysiology, natural history and optimal management of SCAD; safety of pregnancy, role of CTA in diagnosis, non-surgical management of acute ischemia

• Conservative Medical Therapy when feasible and in the absence of high-risk features should be the mainstay of therapy

• SCAD specific approaches to stenting, physician awareness is critical

• Mainstay of medical therapy includes ASA, Beta Blockers, stringent blood pressure control as well as attention to underlying psychiatric illness

• Cardiac Rehab referral is safe and associated with improved outcomes
mjwood@mgh.Harvard.edu
(617) 726-0995

@drmalissawood
Do you plan heart healthy meals?

- Always
- Sometimes
- Never
Do you smoke cigarettes?

Every day
Occasionally
Rarely
Never
How often do you do light activity or exercise at least 30 minutes?

5-7 days per week

2-4 days per week

0-1 day per week
Managing Midlife: Heart Attacks, Chronic Diseases and Lifestyle During the Middle Years

◆ Kathy Berra, MSN, NP-BC
  ▶ Past President and Founding Member of the Preventive Cardiovascular Nurses Association, Stanford Prevention Research Center
  ▶ Co-Director, The LifeCare Company

◆ Icilma V. Fergus, MD
  ▶ Director of Cardiovascular Disparities, Mount Sinai Medical Center

◆ Lauren A. Baldassarre, MD
  ▶ Director of the Cardio-Oncology Program, Yale Cancer Center
Heart Disease
“It’s a Family Affair”

Kathy Berra, MSN, NP-BC, MAACVPR, FAHA, FPCNA, FAAN
The LifeCare Company, Co-Director
Stanford Prevention Research Center, Emeritus
IRAQ: INSIDE THE OCCUPATION / THE SEARCH FOR SADDAM

WOMEN & HEART DISEASE

Is your biggest worry breast cancer? Think again. ONE OUT OF THREE women will die of heart disease. What you can do to protect yourself
Because of my age, the cardiac tests were ignored.
National Study of Women’s Awareness, Preventive Action and Barriers to Cardiovascular Health

• Awareness, knowledge of personal level of health (1008 women random digit dialing)
  • Awareness has doubled since 1977 (55% vs 30%)
  • Significantly ↑ for white women c/t African American and Hispanics (63%, 38%, 34%)
  • Independently associated with ↑Physical Activity and weight loss
  • Most women took steps to ↓ risk in family members and themselves

Figure 2. Actions taken to lower personal and family members’ risk of heart disease in the previous year.
Top 10 Motivators for CVD Preventive Measures

- Improve their health (95%)
- Feel better (92%)
- Live longer (90%)
- Avoid taking medication (69%)
- Did it for their family (67%)
- Saw/read health information about heart disease
- Their health care provider told them to
- A relative developed heart disease
- A relative encouraged them to
- They developed symptoms related to heart disease

Top 10 Barriers for CVD Preventive Measures

- Too much confusion in the media (49%)
- God or a higher power determines health status (44%)
- Had family obligations and people to take care of (36%)
- Did not perceive herself at risk
- Did not want to change lifestyle
- Did not have money or insurance coverage
- Healthcare provider did not say it was important
- Not confident she could change
- Family told her she did not need to change
- She was fearful, too stressed, it was too complicated, did not know what to do, was confused, depressed, too ill

Keeping the Family Healthy

When asked whose health is most important to them, 56% of women - someone else’s health (children, 30%; spouse/partner, 17%; parents, 7%; other, 2%)

What would help?
91% - access to better fruits, vegetables, and healthy foods
80% - greater access to indoor/outdoor recreation facilities
79% - require restaurants to post nutrition information
75% - require smoking bans
74% - stricter regulations on pollution
73% - ban trans fats in restaurants
62% - increase public safety in public recreation areas

Additional Barriers to Heart Health for Women

• Low income and low SES predicts mortality from chronic disease such as CHD and Diabetes
• Lack of formal education is associated with lack of access to health care
• Social support from family and friends together significantly predict physical activity behavior
• Family and social support independently predict physical activity behavior

Steinberger J, Circulation 2009;119;628-647
Caregiving Adds Barriers to Heart Health for Women

Mothers who are caregivers report:

- Increased stress
- More exhaustion
- Less time for one’s self
- Trouble sleeping
- Not enough time to spend with other
- Friends/family members.

Heart Disease – It’s a Family Affair

• Is there an association between family history, CVD risk factors and CVD event rates?

• Does knowledge and awareness of CVD risk factors lead to Lifestyle change in families?

• Redefining the “family” – creating healthier communities
**Family matters in the fight against CVD**

- Children of parents with CVD risk factors = high risk of developing CVD risk factors d/t shared genetic susceptibility, lifestyle behaviors, and environmental factors

- Children with parents + early ASHD – more obese, worse lipids, HTN, glucose, reduced endothelial function and evidence of c-IMT

- Medical and lifestyle RF aggregate in families – there is a need for greater emphasis on the family to reduce the burden of CHD

Prevalence (%) of age, gender, and race adjusted CAC ≥ 75th percentile by Fam HX of premature HD among ethnic groups in individuals classified as low-to-intermediate risk by Framingham Risk Score.
Ways parents influence lifestyle behaviors

• 1 hour of TV per day + 1 or 2 overweight parents = 15% - 32% greater risk of children being overweight than with normal-weight parents

• Mediterranean diet (fruits, vegetables, whole grains, fish) plus olive oil or nuts, has beneficial effects on cardiovascular risk factors in adults and children

“Awareness of heart disease as the leading cause of death for women was a significant predictor of taking personal action to lower risk of heart disease, and the majority of women also encouraged action for someone in their family”

Dick Tracy, circa 1955

The Jetsons, circa 1960

Circa 2015

2020
~ 10,260,000,000 results (0.74 seconds 1/2/20)
Health Care Information on the Web

- MedlinePlus
- MDAdvic.com
- WebMD
- Google Images
- Wikipedia
- HealthCare.gov
- Epocrates Online
- AHA Go Red for Women
- HON Logo
- ThinkWellPoint
Who Uses the Internet?

• 2016 - US 50-64 YOA 87% > 65 YOA 64%

• 2005 - 2015 US - 65% of adults use social networking sites tenfold

• By 2016 - 1 Billion unique websites worldwide

• 40,000 search queries every second worldwide.

• 80% of US adults, searched for at least 1 of 17 health topics.

• Women, persons <65 YOA, college graduates, those with broadband access at home search the most.

www.internettlivestats.com/google-search-statistics  Google.com
Why Do Women Use the Internet for Health?

• To be actively involved in making health care decisions

• Want information, choice, control, informed decision making, improved interaction with providers

• Believe that information improves quality of care

• Are most interested in diseases and treatments, followed by diet, exercise, medications, alternative medicine and health coverage

• 57% search on behalf of others – women are more likely to seek healthcare information

Effect of Lifestyle-focused Text Messaging on Risk Factor Modification in Patients with Coronary Heart Disease - TEXT ME

- Effect of a lifestyle-focused semi-personalized support program delivered by mobile phone text messaging

- RCT – patients with CHD to receive (n = 352) or not receive (n = 358) text messages that provided
  - Advice
  - Motivation
  - Information on diet
  - Physical activity
  - Smoking cessation

- “Simultaneous improvement in multiple CVD risk factors could significantly amplify the downstream consequences for CVD risk”

**Intervention N=352 vs. Control N=358 at 6 Months**

<table>
<thead>
<tr>
<th>Primary Outcome: LDL reduction</th>
<th>Secondary Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention vs. Control</strong></td>
<td><strong>Intervention vs. Control</strong></td>
</tr>
<tr>
<td>LDL-C (I vs. C)</td>
<td>Smoking - nonsmoking</td>
</tr>
<tr>
<td>Absolute reduction of 5 mg/dL - Modest but + change</td>
<td>74.6% vs. 55.9%</td>
</tr>
<tr>
<td></td>
<td>Blood pressure &lt;140/90 mm Hg</td>
</tr>
<tr>
<td></td>
<td>79.2% vs. 54.9%</td>
</tr>
<tr>
<td></td>
<td>BMI absolute decrease of 1.3</td>
</tr>
<tr>
<td></td>
<td>Exercise frequency – regular exercise</td>
</tr>
<tr>
<td></td>
<td>53.8% vs .22.5%</td>
</tr>
</tbody>
</table>
According to the on-board calorie computer, you burned the equivalent of three M&M’s.
Thank You
Cardiovascular Disease: Achieving Health Equity for Women

Icilma Fergus, MD, FACC
Associate Professor of Medicine
Mount Sinai School of Medicine, New York
February 3, 2020
Disclosure Slide

No disclosures relative to this discussion
Objectives

• Current mortality trends in women with cardiovascular disease
• Disparities in Risk Factors and presentation
• Special considerations within ethnic groups
• Stratification and assessment for CVD in Women
• Managing disparities to ensure Health Equity
Women and CVD

• Every minute in the US, a woman dies from heart disease, stroke or another form of CVD.
• More than one in three women is living with CVD (higher in some groups)
• Although heart disease death rates have declined steadily over the last 25 years, rates among women have fallen at a slower rate and rising
• Women may be still be less likely to receive cardiovascular testing and appropriate treatment especially among some groups


**Chart 12-16. Cardiovascular disease (CVD) mortality trends for males and females (United States: 1979–2015).**

CVD excludes congenital cardiovascular defects (International Classification of Diseases, 10th Revision [ICD-10] codes I00–I09). The overall comparability for cardiovascular disease between the International Classification of Diseases, 9th Revision (1979–1998) and ICD-10 (1999–2015) is 0.9962. No comparability ratios were applied.

Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

Circulation 2018
Most Common Cause of Death 2018

Heart Disease and Stroke Statistics—2018 Update: A Report From the American Heart Association, Volume: 137, Issue: 12, Pages: e67-e492, Circulation
Revascularization in WHI

Using data from the WHI in 20,262 postmenopausal women before and after 2005, 17,509 whites; 2,181 blacks, and 572 Hispanics

• Black women with STEMI had lower rates of treatment pre-2005 (15 percent lower) and post-2005 (39 percent lower) compared with White women
• Black women had a 33 percent lower rate of revascularization regardless of timing, and a 23 percent lower rate of receiving it within 12 hours of heart attack symptoms.
• Hispanic women with ACS also faced lower rates of treatment before 2005 (23 percent lower), but the gap narrowed slightly after 2005 (7 percent lower).
• No difference in treatment rates when looking at socioeconomic status.

Tertulien, et al, Brown University, 2018 JAHA
Trends in awareness that heart disease is the leading cause of death in women
Health Disparity - Definition

• Health disparity is a difference in health status, health care access, quality and utilization that occurs based on social race (racism), ethnicity (ethnocentrism), gender (sexism), education, income, geographic location (elitism) or disability (ableism) and is fundamentally unfair in policy design and practice.
Equality vs Equity
Barriers to Achieving Health Equity

A) Patient Related:
- Low health literacy
- Language other than English
- Alternative health beliefs
- Cultural beliefs
- Medication dosing/Side Effects
- Lack of choices
- Lack of Trust
- Pride
- Lack of involvement in the treatment decision-making process,
- Cost of medication and access

B) Physician Related:
- Prescription of complex drug regimens,
- Communication barriers,
- Ineffective communication of information about adverse effects,
- Provision of care by multiple physician
- Implicit Bias

C) Health care systems Related:
- Institutional Racism
- Office visit time limitations,
- Limited access to care
- Lack of health information technology

Source: Brown MT Mayo clinic 2011
Case Summary

• Ms JM is an 83 year old female, Hispanic; limited English. On presentation she mentioned that she had “something wrong with her heart” at another institution and “almost lost her legs because of it” and “she feels worse now”. She is sob and clearly in heart failure but her and her family are sceptical and afraid of having another procedure.
  – Presents with progressive DOE
  – Very confused and afraid
  – Family members suspicious, feeling no one spoke to them about the outcome and what transpired
Chart review from OH

Complicated Case of CAD
Severe MR
Post Cath pseudo aneurysm
Post procedure DVT IVC filter
Comorbidities: HTN, HLD, CRI, Osteoporosis, Frailty

Health Equity concerns: LACK OF TRUST and limited health literacy
Question 1

Which of the following is/ are contributing factors in the patient refusing to consent to life saving medical treatment:

a. Ineffective Communication: Preferred language for communication and Low health literacy
b. Cultural health beliefs
c. Bias of the health care team
d. A,B, C
e. All of the Above
Question 2

Would the use of a certified medical Spanish Interpreter from the patient's country of origin improve the decision making process for JM and her family by:

a. Improving Trust in the medical team
b. Enhancing the social history to include cultural and religious belief about health
c. Accuracy of adherence to the medical treatment plan
d. A and B
e. All of the above
Managing this patient

• Severe Cardiac issue suspected
• Afraid of procedures and doctors
• Family suspicious of further care and has limited understanding of continued planning

• **What steps should the current care team take to ensure Health Equity?**
TEE: Severe MR

- Severe MR due to flail P2 scallop (EROA 63 mm²)
- Moderate PHT
- LVEF 58%
- Mild TR
Cardiac Catheterization

- Elevated PCWP and large V-wave
Surgical Evaluation

• Considered High risk for SMVR
  – STS Score: 3.89%
  – EuroSCORE II: 3.06%
  – Logistic EuroSCORE: 5.77%
Edge to Edge Repair-MitraClip
Significantly reduced MR
Hypertension among groups

Hypertension Awareness and Treatment among groups

Heart Disease and Stroke Statistics—2018 Update: A Report From the American Heart Association, Volume: 137, Issue: 12, Pages: e67-e492, DOI: Circulation
HTN in Women

- New Guidelines – higher prevalence in all groups
- High blood pressure doubles risk for cardiovascular disease and heart failure and increase stroke risk

Women age 20 and older who have HBP:

- White females — 27%
- Black/African-American females — 41-43%
- Mexican-American females — 27%

AHA/ACC guidelines on the management of Hypertension 2017, Benjamin -Circulation 2018
Obesity, Physical Activity

Obesity ≥20 years

- White F: 32.2%
- White M: 36.2%
- Black F: 58.5%
- Black M: 38.8%
- Hispanic F: 41.4%
- Hispanic M: 37.0%

Physical activity >18 years

- White F: 40.1%
- White M: 24.1%
- Black F: 36.0%
- Black M: 25.9%
- Hispanic F: 29.7%
- Hispanic M: 25.0%

Obesity

- 30 pounds or more overweight are at increased risk to develop heart disease even if they have no other risk factors
- Waist circumference ≥ 35 in (88cm) in women and 40 in (102cm) in men, BMI < 25
- However, risk is greater if there is visceral fat
Visceral adipose tissue by computed tomography
African American vs Filipina women

African-American

BMI = 25 kg/m²,
Height: 5’7”, Weight: 160 lbs
VAT: 25.4 cm³

Filipina

BMI = 20 kg/m²
Height: 5’4”, Weight: 115 lbs
VAT: 84.0 cm³
Visceral adipose tissue by waist girth in women with normal* BMI, by ethnicity

*Normal BMI: Filipino: <23 kg/m²; African-American, Caucasian: <25 kg/m²

MetS by NCEP, IDF and WHO criteria in women without CVD and type 2 DM

Araneta MRG. Diab Care. 2002; 495:494-99
Araneta MRG. 42nd Annual Meeting European Diabetes Epidemiology Group, Cambridge, UK 2007
CVD Death rates for Asian population

Powell et al. JACC 2014
Asian and American Indian/Alaskan

Heart Disease and Stroke Statistics—2018 Update: A Report From the American Heart Association, Volume: 137, Issue: 12, Circulation
Obesity, Physical Activity

Obesity ≥20 years

- White F: 32.2%
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- Black F: 38.8%
- Black M: 41.4%
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- Hispanic M: 38.6%

Physical activity >18 years

- White F: 36.2%
- White M: 40.1%
- Black F: 24.8%
- Black M: 25.9%
- Hispanic F: 29.7%
- Hispanic M: 29.7%


Physical Activity

– Moderate Exercise – 150 minutes per week, OR
– Vigorous Exercise – 75 minutes per week, OR
– An equivalent combination of the two

• Aerobic exercise should be performed in episodes of at least 30 minutes, preferably spread throughout the week
• Muscle strengthening activities that involve all major muscle groups should be performed 2 or more days/week
• Moderate exercise includes:
  – Dancing fast for 30 minutes
  – Raking leaves for 30 minutes
  – Gardening for 30-45 minutes
  – Pushing a stroller 1 mile in 30 minutes
  – Not everyone can go to the gym

Source: Mosca 2013; Surgeon General Call-to-Actionn2007/AHA 2018
Diabetes

Women age 20 and older with diabetes:
• White females — 5.6%
• Black females — 13.2%
• Mexican-American females — 10.9%
• Numbers increasing especially in urban communities 15-18%
• Consider the contribution of ethnic food choices and social gatherings

Mosca 2013
Cholesterol

New guidelines state that management should be for both primary prevention and secondary prevention with use of Statins early for high risk

Women age 20 and older with blood cholesterol levels of 200 mg/dL or higher:

• White females — 50%
• Black females — 42%
• Mexican-American females — 50%

ACC/American Heart Association (AHA) guidelines on the management of cholesterol to reduce atherosclerotic cardiovascular risk, heart attack, and stroke, 2013
HDL and women

• Low HDL more important in women than men
  – For every 1 mg/dL increase in HDL there is a 3% decrease in CHD risk for women and 2% decrease in CHD risk for men
• Total cholesterol/HDL ratio very predictive of CHD risk in women
• Triglyceride elevation associated with greater atherogenic significance in women than in men

Source: Maron 2000, AHA Heart and Stroke Facts 2011
CVD Symptoms Can Be Different in Women and among Women

- Denial, Stoic, Matriarch vs Over complaining
- Pain in upper back, jaw or neck
- Shortness of breath
- Flu-like symptoms – nausea, vomiting, cold sweats
- Stomach complaints
- Fatigue or weakness
- Anxiety, loss of appetite, discomfort
Other Risk Factors

Stress, anxiety

Depression
• Research has shown that depression is associated with an increased risk of high blood pressure, abnormalities of the autonomic nervous system and increased inflammatory response.

• Researchers are actively investigating if certain kinds of strokes or strokes in certain areas of the brain produce mood disorders.

• Depression affects between one- and two-thirds of stroke survivors. It’s characterized by feelings of overarching sadness, lack of pleasure in activities that were previously enjoyed, or changes in eating and sleeping patterns.

• High blood pressure, diabetes also linked to greater cognitive decline
Depression and CHD: Results from the Women’s Health Initiative Study

• Depression is an independent predictor of CHD death among women with no history of CHD
• WHI reported findings on depression in 93,676 women with no baseline history of CHD. After an average of 4.1 years of follow-up, depression was an independent predictor of CHD death and all-cause mortality after adjustment for age, race, education, income, DM, HTN, smoking, body mass index, physical activity and increased cholesterol.

Source: Wassertheil-Smoller 2004
Psychosocial Stressors in Women with CHD: The Stockholm Female Coronary Risk Study

- Among women who were married or cohabitating with a male partner, marital stress was associated with nearly 3-fold increased risk of recurrent CHD events.
- Living alone and work stress did not significantly increase recurrent CHD events.
- Marriage or partnership benefits men.

Source: Orth-Gomer 2000
## Some Tests are Less Accurate in Women

<table>
<thead>
<tr>
<th>Test</th>
<th>Other Names</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting Lipid Profile</td>
<td>ECG or EKG</td>
<td>Measures total, “good” (HDL) and “bad” (LDL), levels of cholesterol</td>
</tr>
<tr>
<td>Electrocardiogram</td>
<td>Echo</td>
<td>Measures electrical impulses of heart</td>
</tr>
<tr>
<td>Stress Test</td>
<td></td>
<td>Tests function of heart during strenuous physical exercise</td>
</tr>
<tr>
<td>Echocardiogram</td>
<td></td>
<td>Uses ultrasound waves to evaluate heart structure and function</td>
</tr>
<tr>
<td>Nuclear Imaging</td>
<td>Thallium, MUGA scan</td>
<td>Uses radioactive dye injected into blood stream to evaluate heart function</td>
</tr>
<tr>
<td>Cardiac Catheterization</td>
<td>Angiogram “cath”</td>
<td>Used to diagnose coronary artery disease (CAD). An invasive procedure in which tubes are inserted through blood vessels, dye is injected and x-rays of the heart are taken</td>
</tr>
</tbody>
</table>

Difference in Disease Presentation

Obstructed coronary artery

Diffused narrowing in coronary artery

A schematic of mixed segmental and diffuse narrowings and associated pressure drops along the length of the artery at maximum flow. (A) Predominantly, more severe single segmental stenoses with less diffuse narrowing, suitable for angioplasty or bypass surgery. (B) Predominantly diffuse disease or multiple stenoses with less segmental narrowing, not appropriate for angioplasty or bypass surgery. Reprinted with permission from Gould IL. Coronary artery stenosis and reversing atherosclerosis. 2nd ed. London: Arnold Publishing, 1997.
Stress Echocardiogram
CAC screening

• CAC screening in asymptomatic, low-risk women might be appropriate because women are more likely to be classified as low-risk by the FRS
• Any CAC in low-risk women is associated with an increased risk for CHD events
Health Literacy

• Particularly challenging in racial-ethnic healthcare disparity
• Almost half (48%) of patients with hypertension or diabetes had inadequate health literacy
  – Less knowledge of their disease, important lifestyle modifications, and essential self-management skills

• Multicultural & multilingual patients tools can be valuable in this area

Addressing Cultural Contexts in Health Care

- Patient
- Family
- Healthcare System
- Community

Advocacy for CVD Patients

Provider

- Be a Strong Advocate For the Patient
- Positive Repetition
- Include Staff for Team Approach NP, PA, RN, MA
- Counsel and Educate on Good Health Habits i.e. diet, exercise, smoking cessation

Know when to refer to various specialists and how to manage referrals for maximum outcomes. Make communication a priority so that efforts at improving health are maximized.

http://www.aafp.org/about/policies/all/primary-care.html
Are Trials representative of our patients?

**Disease Indication**
- Adequate Representation (Knowledge base about the disease-literature and health databases)
- Known population disparity in incidence, severity, clinical course, side effects

**Generalizable**
- No known population differences in literature or databases
- Trial design reflect clinically relevant characteristics

“It is more important to know what sort of person has a disease than to know what sort of disease a person has”

Hippocrates
Summary

• CVD still major concern for women – leading cause of death
• Evaluate women according to Risk Factors that may be unique to or more prominent to that individual
• Consider whether health disparity is present and take appropriate steps to address the issue
• Advocate for your patient including encouraging enrollment in Clinical trials
Thank You...

...for your time!
The Intersection between Cancer, Cancer Treatment, and Heart Health

HealthyWomen Heart Health Roundtable
February 5th, 2020

Lauren A. Baldassarre, MD
Cardio-Oncology Director
Cardiac MR/CT Cardiology Director
Assistant Professor of Cardiology and Radiology & Biomedical Imaging
Recommend to Improve These Modifiable Risk Factors Before, During, and After Treatment

- Heart Healthy Diet
- Avoidance of Excessive Alcohol Intake
- Exercise (at least 150 minutes/week, moderate intensity)
- Weight Loss
- Smoking Cessation
- Blood Pressure Control (<130/80 mmHg)
- Good Blood Sugar Control in Diabetes

Mehta LS et al. *Circulation*. 2018;137:e30-e66
What are the Signs and Symptoms of Cardiovascular Complications from Cancer Therapy?

- Asymptomatic
- Shortness of Breath
- Chest Pain
- Palpitations
- Irregular Heart Rhythm
- Swelling of legs or feet
- Fatigue
- Decreased Exercise Tolerance

“The difficulty when dealing with cardiology side effects is that they can often mask themselves as normal effects from the cancer treatment itself...”
What are the Questions Women Should Ask their Physician Before, During, and After Treatment?

• What are my cardiovascular risk factors?
• How may the cancer therapy affect, or have affected my heart?
  – Know prior therapy received, including doses
• Do I need any tests to evaluate further my heart or blood vessels?
• Is there anything I can do to protect my heart during or after treatment?
• Should I see a heart specialist?
Who Should See a Cardiologist or Cardio-Oncologist?

- Any patient before, during, or after any potentially cardiotoxic therapy is appropriate
- **Especially recommended** for those who:
  - Have received high dose anthracycline (>250 mg/kg)
  - Chest radiation therapy
  - Have one or more cardiovascular risk factor
  - Already have cardiac disease
  - Any abnormality on cardiac testing (ECG, echo, stress test)
  - New or concerning cardiac symptoms
- Pre-operative or Pre-transplant CV risk assessment
Resources are Available to Help Educate Women on how to Decrease Their Risk

CANCER TREATMENT & YOUR HEART

Protect your heart BEFORE, DURING, and LONG AFTER cancer treatment.

CANCER TREATMENTS SAVE LIVES

but sometimes also can damage your heart or blood vessels.

17 MILLION SURVIVORS in the U.S. alone

Know what increases your risk for heart disease:
- High blood pressure
- High cholesterol
- Diabetes
- Obesity
- Tobacco use
- Family history

Possible effects during treatment:
- Damage to the heart or blood vessels
- Loss of physical fitness, weight gain, high blood pressure

Late effects:
- Heart problems can develop late, more than 10 years down the line

CardioSmart.org/CancerTreatment
Take-Home Points

• **Women with cancer should:**
  - understand their cardiovascular risk
  - modify cardiovascular risk factors when possible, to optimize their cardiovascular and cancer health
  - recognize cardiac symptoms
  - seek specialized cardiovascular care when indicated
Name some heart attack symptoms in women
Working Lunch: Patient Panel

◆ Debora Grandison
  ▶ Patient Advocate
  ▶ WomenHeart Champion

◆ Robin Olson
  ▶ Patient Advocate
  ▶ WomenHeart Champion
How concerned are you about how hormonal changes can affect your heart?

- Very concerned
- Somewhat concerned
- Not concerned
Getting Older: How Menopause and Aging Affect the Heart

- Lisa Larkin, MD  
  - *Founder and CEO of Ms. Medicine*
- John Dodson, MD  
  - *Director, Geriatric Cardiology Program, NYU Langone Medical Center*
- Anthony Aizer, MD  
  - *Program Director, Clinical Cardiac Electrophysiology Fellowship, NYU Langone Medical Center*
Menopause and Heart Health: The Truth About Hormone Therapy at Midlife

Lisa Larkin, MD, FACP, NCMP, IF
Founder and CEO, Ms.Medicine
President and CEO, Lisa Larkin MD and Associates
Treasurer, Board of Trustees, North American Menopause Society (NAMS)
Founder and Executive Director, Cincinnati Sexual Health Consortium
Karen

52-year-old healthy woman presents with severe hot flashes, night sweats and sleep disturbances. She also reports fatigue and weight gain of 7 lbs in 6 months.

Her last period was 14 months ago.

OTC supplements have been ineffective.

No medications

SH: exercises 3 days a week (elliptical and yoga)

FH: father had a heart attack and bypass surgery at age 58

BMI 23  BP 128/78

Total cholesterol 248, LDL 148, HDL 70
Karen

She is miserable.

She understands hormone therapy might help her symptoms…

but she *knows* they increase her risk of

• Breast cancer
• Heart disease
• Dementia
Clinical Considerations

- What is the impact of menopause on the development of cardiovascular disease in women?
- Is the perception that hormone therapy at menopause increases CVD risk correct?
- Is hormone therapy at menopause for women with a FH of CVD appropriate?
- Is there data to support benefit of one type of HT over another (i.e. “bioidentical,” oral or transdermal) for CVD prevention?
Menopause

• Every Woman goes through menopause

• **Average Age in the US: 51 but range is 44-56**

• **Natural Menopause:** Confirmed after 12 consecutive months of no menstrual bleeding

• Women spend more than one third of their life as post menopausal women
Symptoms Menopause Transition

- Menstrual changes
- Hot Flashes
- Night Sweats
- Sleep disturbance
- Mood changes /Irritability

- Fatigue
- Forgetfulness
- Sexual health changes (dryness, libido)
- Dry skin and Hair loss
- Weight gain
- Heart palpitations
Midlife Physiologic Changes:

- Increase in body weight/BMI
- Change in distribution of body fat (pear shape changes to apple shape)
- Loss of lean muscle mass and increase in body fat
- Decrease in metabolic rate
- Increase in blood pressure
- Insulin resistance and development of diabetes
- Increase in lipids
Symptoms Associated with Menopause

VMS

- Maximal in the perimenopause and menopause transition
- 50-85% women
- More common in Black and Latina women
- Cigarette smoking increases frequency and severity
- Resolve spontaneously in 85% of women within 5 years
- 10-15% women have persistent flushes throughout their lifetime
VMS Severity

- Family history
- Race: Caucasian vs. African American
- Symptoms during the perimenopausal period
- Weight
- Suddenness of menopause
- Natural or surgical menopause
- Smoking
- Alcohol intake
VMS: Association with Development of Cardiovascular Disease!
The Winding Journey of Menopausal HT

At Peak 90M Prescriptions
18M Women
28% PM women on HT

NHS, HERS

In one year HRT RX's decreased 32%

Premarin © Marketed

Endometrial Cancer

Progestins

CHD Benefits

At Peak 90 Million Prescriptions
By 2003 HRT prescriptions decreased by 32%

At Peak 90M
Prescriptions
18M Women
28% PM women on HT

HRT ↓32% by 2003

WHI
25% increased risk of breast cancer
30% increase in heart disease
40% increase in stroke

WHI 2002: Media created widespread panic over the safety of HT
WHI 2002: Estrogen + Progestin (Prempro)

<table>
<thead>
<tr>
<th>Event</th>
<th>Per 10,000 women</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Cancer</td>
<td>+8 (30 vs 38)</td>
<td>26% increase</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>+7 (30 vs 37)</td>
<td>29% increase</td>
</tr>
<tr>
<td>Stroke</td>
<td>+8 (21 vs 29)</td>
<td>41% increase</td>
</tr>
</tbody>
</table>

WHI: THE END OF THE HORMONE ERA

- Prescriptions for HT declined by 68%
- 52% of patients stopped HT without consulting their physician
- 50% of patients lost trust in their physician
- Non hormonal OTC supplement use and compounded HT use by patients surged
- Physicians became fearful of HT and stopped writing prescriptions for HT
WHI Considerations

• Mean age 63
• Most women were more than 10 years beyond menopause
• Most did not have VMS; none were severe
• High prevalence of HTN, Smoking, high cholesterol
• Only Premarin and Prempro studied- oral
• No transdermal hormones
• No bioidentical hormones

Position Statement

The 2017 hormone therapy position statement of The North American Menopause Society

Clinical Practice

Caren G. Solomon, M.D., M.P.H., Editor

Hormone Therapy for Postmenopausal Women

JoAnn V. Pinkerton, M.D.

This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the author’s clinical recommendations.

A healthy 53-year-old nonobese, menopausal woman presents with an 8-month history of menopausal symptoms, noting worsening hot flashes, soaking night sweats, and sleep disruption with fatigue that is affecting her work. Her mother had breast cancer at 75 years of age. Results of a recent mammogram were negative. The patient has heard that hormone therapy may be harmful but worries about functioning at work. How would you advise this patient?
NAMS 2017 Position Statement on Hormone Therapy

- **HT first line therapy for VMS in appropriate patients and is gold standard**
- Premature menopause should be treated with HT until 51
- **“Timing Hypothesis” for CVD and HT**
- Transdermal lower stroke risk compared to oral
- Concerns about CBHT
- Individualize HT use after age 60; no mandate to stop at 65

- HT improves sleep
- HT prevents osteoporosis and fractures
- HT in older women (over 65) rare increase in dementia; in younger women neutral to beneficial “critical window hypothesis”
- HT decreases development of AODM
- Increased risk BC in E+P after 5 years; no increased risk with E alone (only Premarin studied)
Incidence of CVD: Relation to Menopause Status

The Framingham Study

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Premenopausal</th>
<th>Postmenopausal</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>0.6</td>
<td>2.2</td>
</tr>
<tr>
<td>40–44</td>
<td>0.6</td>
<td>3.6</td>
</tr>
<tr>
<td>45–49</td>
<td>2.0</td>
<td>4.0</td>
</tr>
<tr>
<td>50–54</td>
<td>3.6</td>
<td>6.5</td>
</tr>
</tbody>
</table>

n = 2873.
WHI EPT Trial: Absolute Risk by Age

WHI ET Trial: Absolute Risk by Age

• 18 year follow up

• NO INCREASE IN
• -ALL CAUSE MORTALITY
• -CVD Mortality
• -CHD Mortality
Menopause and CVD Progression

Menopause leads to accelerated progression of atherosclerosis
Premature/Early menopause is associated with earlier CVD
Menopause and loss of estrogen results in:
• Change in fat redistribution (increase abdominal fat)
• Increase in fat around the heart
• Increase in lipids
• Insulin resistance
• Vascular changes (ER and PR receptors in vascular tissues)
  • Blood flow in vascular beds decreases
  • Endothelial dysfunction
  • Increase in inflammatory cytokines
CVD and HT: The Timing Hypothesis

Mason JE et al, Menopause 2006 13;1: 139-147
Karen

52 year-old healthy woman presents with severe hot flashes, night sweats and sleep disturbances. She is fatigued and irritable. Her last period was 14 months ago.

She has tried OTC supplements without benefit. She is afraid of hormone therapy because of heart disease and breast cancer.

SH: exercises 3 days a week (elliptical and yoga)

FH: father had a heart attack and bypass surgery at age 58

BMI 23  BP 128/78

Total cholesterol 248, LDL 148, HDL 70
ASCVD Risk Score:

10 year 1.5% (Low)
Optimal 1%

Lifetime Risk 39%
Karen: ASCVD Risk 1.5%

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Years Since Last Menstrual Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low (&lt;5%)</td>
<td>≤5</td>
</tr>
<tr>
<td>Low (5% to &lt;10%)</td>
<td>6 to 10</td>
</tr>
<tr>
<td>Moderate (10% to 20%)</td>
<td>&gt;10</td>
</tr>
<tr>
<td>High (more than 20%)</td>
<td></td>
</tr>
</tbody>
</table>

**Decision about duration of use:** continued moderate-to-severe symptoms; patient preference; weigh baseline risks of breast cancer vs osteoporosis.
Rita - age 64

8 years beyond menopause

ASCVD Risk Score:
10 year 5.6% (Intermediate)
Rita: ASCVD Risk 5.6%

<table>
<thead>
<tr>
<th>CHD Risk Score</th>
<th>Years Since Last Menstrual Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤5</td>
</tr>
<tr>
<td></td>
<td>6 to 10</td>
</tr>
<tr>
<td></td>
<td>&gt;10</td>
</tr>
<tr>
<td>Very low (&lt;5%)</td>
<td>HT OK</td>
</tr>
<tr>
<td>Low (5% to &lt;10%)</td>
<td>HT OK</td>
</tr>
<tr>
<td>(Choose transdermal)</td>
<td></td>
</tr>
<tr>
<td>Moderate (10% to 20%)</td>
<td>HT OK</td>
</tr>
<tr>
<td>(Choose transdermal)</td>
<td></td>
</tr>
<tr>
<td>High (more than 20%)</td>
<td>Avoid HT</td>
</tr>
</tbody>
</table>

Avoid HT

Decision about duration of use: continued moderate-to-severe symptoms; patient preference; weigh baseline risks of breast cancer vs osteoporosis.
KEY TAKE HOME MESSAGE TODAY

HT started within 10 years of menopause:

• **Reduces CHD** by 48%
  RR 0.52 (CI 0.29-0.96)

• **Reduces Death** by 30%
  RR 0.70 (CI 0.52-0.95)

Hormone Therapy has BENEFIT for CVD prevention in the right patient!
Which Hormone Therapy is Best????

- “Synthetic” oral (Premarin)
- Bio-identical oral
- Bio-identical patches, gels
- Custom compounded Bio-identical hormones
  - Creams, gels, troches, pellets
  - BiEst, TriEst, Testosterone
Transdermal

- Metabolically “friendlier” compared to oral (Clotting factors, CRP, Triglycerides, SHBG)
- Multiple observational and meta analysis showing decreased VTE, CAD, stroke compared to oral ET (Esther, French, Danish)
- Recently published large population based study 54,000 people, transdermal ET significantly lower risk VTE compared to oral

“When prescribing ET the gynecologist should take into consideration the possible thrombosis sparing properties of transdermal form of ET”

ACOG Committee Opinion 2013; 1214 (4) 887-890
Laliberte et al Menopause 2011;18 (10): 1052-9
Custom Compounded Bio-Identical Hormones (CBHT)

• CBHT is now a marketing term promoted by celebrities and deeply engrained in the public lexicon
• Mixtures of hormones produced in a compounding pharmacy
• Require a prescription from a licensed provider
• Not FDA regulated or FDA approved
• Contain mixtures of estradiol, estriol, estrone, testosterone, and progesterone
• Marketed as “more natural, “safer” “anti’aging”-NO DATA
Respected Medical Societies are Against Compounded Hormones
ORIGINAL STUDY

Heart fat and carotid artery atherosclerosis progression in recently menopausal women: impact of menopausal hormone therapy: The KEEPS trial

Samar R. El Khoudary, PhD, MPH,¹ Vidya Venugopal, PhD,¹ JoAnn E. Manson, MD,² Maria M. Brooks, PhD,¹ Nanette Santoro, MD,³ Dennis M. Black, PhD,⁴ Mitchell Harman, MD,⁵ Howard N. Hodis, MD,⁶ Eliot A. Brinton, MD,⁷ Virginia M. Miller, PhD,⁸ Hugh S. Taylor, MD,⁹ and Matthew J. Budoff, MD¹⁰

Menopause, Vol. 27, No. 3, 2020
Hormone Therapy (HT) 2020

• HT is indicated for symptom management and not disease prevention
• Most younger women close to the menopause transition (within 10 years) have a favorable benefit to risk profile with HT
• In terms of CVD and dementia there appears to be an “estrogen window” in which HT is beneficial. After the “estrogen window” closes, the risk benefit of HT changes
• **HT initiated close to menopause is associated with decreased CVD risk, delayed CVD progression and decreased mortality.**
Hormone Therapy (HT) 2020

- Choice of HT must be individualized based on patient risk factors for CVD, breast cancer, osteoporosis
- Other considerations include patient preference and cost
- Individual and comprehensive evaluation of a women’s personal health history, FH, symptoms, goals of treatment is critical
- Education and shared decision making to develop a treatment plan is critical
- Science and data regarding preferred hormone regimen is continuing to evolve
CARDIOVASCULAR AGING...
...AND WHAT YOU CAN DO ABOUT IT

John A. Dodson, MD, MPH  @JDodsonMD
Assistant Professor of Medicine and Population Health
Director, Geriatric Cardiology Program
New York University Grossman School of Medicine
What I do

• Research: Cardiovascular aging
• Clinical: NYU Geriatric Cardiology Clinic
  ➢ Caring for older adults (age ≥70) with cardiovascular disease
What is geriatric?
Geriatric terminology

Young old: 65-74
   Medicare

Middle old: 75-84
   “Older adults”

Oldest old: ≥85
   “Oldest old”
Cardiovascular aging
“A man is as old as his arteries.”

- Thomas Sydenham, 1624-1689
Age-related cardiac changes

- Coronary artery disease
- Vascular stiffness
- Myocardial fibrosis
Coronary artery disease

- Defined as narrowing of the vessels supplying blood to heart muscle (myocardium)
- Can lead to heart attack
- Includes calcium deposits in vessels
Vascular stiffness

- Defined as reduced compliance of arteries – due to hardening of arterial walls
- Leads to elevated blood pressure over time
Systolic, diastolic, and mean blood pressure by age

Dodson JA & Maurer MS. In *Cardiology: an Illustrated Textbook*, 2012
Myocardial fibrosis

- Defined as fibrous tissue within heart muscle
- Leads to heart stiffening and potentially heart failure (“heart failure with preserved ejection fraction”)
Other changes

• Left ventricular hypertrophy (thickening of the heart muscle)
• Electrical changes (e.g. lower maximum heart rate with exercise)
• Calcification of heart valves
Chronologic vs. biologic age
Age 80 vs. Age 80

[Comparison of two images: one of a person in their 80s wearing sunglasses and another of the same person in their 80s sitting in a wheelchair]
Chronologic vs. biologic age

- Largely manifested in the frailty syndrome, is defined as an increased vulnerability to physiologic stressors.
- Signs/symptoms: weight loss, exhaustion, weakness, slow walking, decreased activity.
- Patients with frailty are more likely to fall, be hospitalized, have complications after surgery, and die within 5 years.
Can we prevent cardiovascular aging?
Two women, both age 60…
Cardiovascular aging

• Can we prevent it? Not entirely
• But there are specific steps that can slow the process
What you can do about it…

• Get your cholesterol checked
• Monitor your blood pressure regularly
• Exercise
• Quit smoking
• Healthy diet
• Coronary CT scan (certain cases)
Cholesterol

- Prevalence of elevated “bad” cholesterol (low density lipoprotein) in women aged 40-65: 20-30%
- One third of cases may be undetected

Xia Y et al. Sci Rep 2017;7:41687
Blood pressure

- Prevalence of high blood pressure (hypertension), women age 40-65: 30%
- Goal blood pressure: <130/80
- Treating hypertension early can prevent:
  - Coronary artery disease
  - Heart failure
  - Stroke
  - Kidney disease

Fryar CD et al. *NCHS Data Brief No. 289*, October 2017
Exercise

• U.S. guidelines:
  ➢ 150 minutes of moderate intensity exercise per week (30 minutes per day for 5/7 days)
  ➢ Up to 300 minutes per week is even more beneficial
  ➢ Muscle strengthening activities 2/7 days

<table>
<thead>
<tr>
<th>Aerobic</th>
<th>Muscle-Strengthening</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Walking</td>
<td>• Exercises using exercise bands, weight machines, hand-held weights</td>
</tr>
<tr>
<td>• Dancing</td>
<td>• Calisthenic exercises (body weight provides resistance to movement)</td>
</tr>
<tr>
<td>• Swimming</td>
<td>• Digging, lifting, and carrying as part of gardening</td>
</tr>
<tr>
<td>• Water aerobics</td>
<td>• Carrying groceries</td>
</tr>
<tr>
<td>• Jogging</td>
<td>• Some yoga exercises</td>
</tr>
<tr>
<td>• Aerobic exercise classes</td>
<td>• Some Tai chi exercises</td>
</tr>
<tr>
<td>• Bicycle riding (stationary or on a path)</td>
<td></td>
</tr>
<tr>
<td>• Some activities of gardening, such as raking and pushing a lawn mower</td>
<td></td>
</tr>
<tr>
<td>• Tennis</td>
<td></td>
</tr>
<tr>
<td>• Golf (without a cart)</td>
<td></td>
</tr>
</tbody>
</table>
Quit smoking

• Quitting smoking reduces heart attack risk by half within 1 year

https://www.who.int/tobacco/quitting/benefits/en/
Healthy diet

• High in fruits and vegetables
• High in fiber-rich whole grains
• High in omega 3 (fish twice a week)
• Low in trans fat
• Low in added sugars

https://www.heart.org/en/healthy-living/
Effects of Intermittent Fasting on Health, Aging, and Disease

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According to Weindruch and Sohal in a 1997 article in the journal, reducing food availability over a lifetime (caloric restriction) has remarkable effects on aging and the life span in animals. The authors proposed that the health benefits of caloric restriction result from a passive reduction in the production of damaging oxygen free radicals. At the time, it was not generally recognized that because rodents on caloric restriction typically consume their entire daily food allotment within a few hours after its provision, they have a daily fasting period of up to 20 hours, during which ketogenesis occurs. Since then, hundreds of studies in animals and scores of clinical studies of controlled intermittent fasting regimens have been conducted in which metabolic switching from liver-derived glucose to adipose cell-derived ketones occurs daily or several days each week. Although the magnitude of the effect of intermittent fasting on life-span extension is variable (influenced by sex, diet, and genetic factors), studies in mice and nonhuman primates show consistent effects of caloric restriction on the health span (see the studies listed in Section S1).
Intermittent fasting

- Cardiovascular benefits:
  - Reduces systemic inflammation
  - Improves insulin sensitivity
  - Improves cholesterol levels
- Difficult to do; I don’t routinely recommend (yet)

Coronary calcium scan

- Can detect early calcium in heart arteries (atherosclerosis)
- Useful for people at “intermediate risk” or with strong family history of early coronary artery disease

Hecht HS. *JACC Cardiovasc Imaging* 2015;8: 579-596
Conclusions

• Cardiovascular aging happens to everyone (but at very different rates)

• There are specific steps you can take to slow the aging process, many related to lifestyle
THANK YOU
Wrap Up: Messages for Patients and Health Care Providers at Every Stage of Life

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