CVD Risk Reduction in Women: Current Guidelines

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Awareness of Heart Disease as Leading Cause of Death in Women

Pathophysiology of CHD New Paradigm in Women

- Diffuse atherosclerosis
- Coronary vasospasm
- Endothelial dysfunction
- Small vessel disease (Syndrome X, microvascular disease)
- Apical Ballooning (“broken heart”, tako-tsubo cardiomyopathy, stress cardiomyopathy)
Unique CVD Risks in Women

- Lifetime hormonal fluxes (puberty, pregnancy, peripartum, menopause)
- Peripartum vascular remodeling
- HTN disorders of pregnancy
- Gestational DM
- Delivering a thin baby
- PCOS
- Post menopausal hormone therapy
- Coronary/aortic root dissection

CVD Prevention for Women: 2014

- Poor adherence to healthy behaviors
- New definitions and new risk factors
- New “spin” on old risk factors
- Imperfect (but improved?) risk assessment tools
- (Over?)-reliance on imaging
- Hype
- Hope
- Best practices

How Else are Women Different?

Make The Call
Don’t Miss a Beat

- Only 53% of women said they would call 911 if they were experiencing the symptoms of a heart attack
- However, 79% said they would call 911 if someone else was having a heart attack
- For themselves, 46% of women would do something other than call 911—such as take an aspirin, go to the hospital, or call the doctor
Make The Call
Don’t Miss a Beat

• Only 35% of women (36% of men) report “fast-onset” (“Hollywood”) heart attack symptoms (vs. “slow-onset”)

• Only 49% STEMI patients have fast-onset Sx

• Lack of “expected symptoms” leads to delays in care for women (and men)

O’Donnell: J Emerg Med 2013

Initial Evaluation of CVD Risk
An Imprecise “Science”

• Medical/family/pregnancy/reproductive history

• CVD symptoms, signs

• Exercise capacity

• Exam: BP, BMI, waist circumference

• Labs: Fasting lipoproteins, glucose

• Framingham risk assessment*: (BP, smoking, lipids, age, gender) …if no CVD or DM

• Depression screening*

Mosca L Circulation 2011
Women at “High Risk” for CVD

- Clinically manifest CHD
- Clinically manifest cerebrovascular disease
- Clinically manifest PAD
- Abdominal aortic aneurysm
- End-stage or chronic kidney disease
- Diabetes mellitus*
- 10-year predicted CAD risk >10%

*Evidence for greater/proportionate risk in women vs men

2013 Lipid Guidelines* for Women (and Men)
Moderate- or high-intensity statin therapy for those MOST LIKELY to benefit:

1. Known cardiovascular disease
2. LDL-C > 190 mg/dL
3. Type 2 diabetics ages 40-75 yrs
4. Estimated 10-year CVD risk > 7.5 % ages 40-75 yrs (sex/race-specific global risk assessment)**

*Lifestyle approach implicit
**Data on women/minorities less robust

Women “At Risk” for CVD

- Smoking*
- BP >120/80 mm Hg, OR on RX for HTN*
- Dyslipidemia (or on Rx)
- Obesity, particularly central adiposity*
- Poor diet
- Physical inactivity
- Family Hx premature CAD (1st degree, men <55 years, women <65 years)
- Metabolic syndrome
- Advanced subclinical atherosclerosis
- Poor exercise capacity and/or abnormal heart rate recovery*
- Autoimmune collagen-vascular disease*
- Pregnancy complications: Preeclampsia, gestational DM or HTN*

*Evidence for greater/proportionate risk in women vs men
Ob-Gyne Diagnoses Impact on CVD Risk

Relative Risk of Subsequent CVD

- Gestational DM: 1.71
- Preeclampsia: 1.74
- PCOS*: 1.70


Inflammation
Oxidative Stress
Hypercoagulability
Endothelial dysfunction
Cardiovascular disease
Hypertension & diabetes in pregnancy

Pregnancy: “Metabolic Stress Test” that Predicts Development of Future CVD

- Preeclamptic pregnancy:
  - 3.8X more likely to develop DM
  - 11.6X more likely to develop HTN

- Gestational Diabetes:
  - Up to 70% develop Type 2 DM < 5 yrs

Sources: Magnussen 2009, Kim 2002

Pregnancy A Woman’s First “Stress Test”

- Complicated pregnancy eg pre-eclampsia
- Normal pregnancies
- Threshold for vascular or metabolic disease

Vascular risk factors

Neonatal life
Pregnancies
Middle age


*Polycystic Ovary Syndrome
Mother’s Diabetes Leads to Obesity in Their Children

Pregnant diabetic women’s children grow up to be heavier adults

**Myocardial Infarction in Pregnancy**

- Rare: ~6/100,000 (3-4x age matched)
- Spontaneous coronary dissection (SCAD) a significant factor
- Age: 30-fold ↑MI risk age >40 vs. <20 yrs
- Conventional CVD risks common:
  - HTN (15%), smoking (45%), DM (11%)
  - Infection, preeclampsia, age >30 years
- Black women’s higher risk due to ↑RF’s (not race)

....An attractive, but untested theory to reconcile observational (NHS) and RCT (WHI/HERS) findings

Hormone therapy initiated early in menopause (<3 years) will reduce progression of cardiovascular disease....

Is Timing Everything???
Hormone Therapy (HT): Does Timing and Estrogen Type Matter?

- **KEEPS**: Kronos Early Estrogen Prevention Study
  - 660 women aged 48-52, randomized to placebo, oral CEE, or transdermal 17 beta-estradiol patch with placebo or pulsed progesterone for 12 days/month
  - Endpoint: Progression of atherosclerosis measured by carotid intima media thickness and coronary artery calcification

- **ELITE**: Early versus Late Intervention Trial with Estradiol
  - 504 women either < 6 years from menopause or > 10 years from menopause randomized to oral 17 beta-estradiol or placebo, with progesterone gel or placebo
  - Endpoint: Progression of atherosclerosis measured by carotid intima media thickness

Source: Miller 2009, clinicaltrials.gov

HT & CHD, Stroke

- ET remains most effective Rx for vasomotor Sx
- ET may reduce CHD and CAD risk when initiated in younger and more recently postmenopausal women without a uterus
- Both ET and EPT increase ischemic stroke risk - no effect on hemorrhagic stroke risk
- HT is currently not recommended for CHD protection in women of any age

Hormone Therapy 2014

- **Individualize/Prioritize**: Health & QOL, personal risk factors, e.g., osteoporosis, VTE, CHD, stroke, and breast cancer.
- **Duration**: consider EPT vs ET (Breast Ca)
- **Premature/early menopause**: reasonable to use HT until age of natural menopause (51 years); longer duration based on Sx
- **Dose/Mode**:
  - Transdermal & low-dose oral ET associated with ↓VTE and stroke vs. oral ET (No RCT evidence)
  - Local low-dose ET for isolated vaginal Sx.
  - Compounded “bio-identicals” not recommended.

Clinical Pearl

- ASA 75-325 mg/day in women at high risk (regardless of age); if ASA intolerant, consider clopidogrel
- **Women ≥ 65 years**: Consider 81 mg/day if HTN controlled and risk of ischemic stroke or MI outweighs risk of therapy (most women)
- **Women < 65 years**: Consider 81 mg/day if benefit of ischemic stroke prevention outweighs adverse risks of therapy


Mosca et al Circulation 2011
Prevalence of “Life’s Simple 7” Among Women

Smoking in Women
Prevalence: 15.8%, 2012

“Social” smoking (1-4/day) kills
• 50% ↑ death
• 3X ↑ heart disease
• 5X ↑ lung cancer

vs. never smokers

Agaku: MMWR, 2014

Still smoking???
Then so is he....

• Preschoolers exposed to cigarette smoke are 21% more likely to have hypertension
• Mother’s smoking has greater impact than father’s

Sitting is the new tobacco

“Screen time”* doubles the risk of a heart attack and death—even with regular exercise

* TV or DVD watching, video gaming, leisure-time computer, Facebook...

Simonetti, Circulation, 2011

Stamatakis JACC, 2011
Pet Ownership and CVD Risk

Potential benefits

- ↑ physical activity (dogs only): Provide positive effect on owner’s cognitive beliefs about walking, motivation & social support
- Weight loss (if dog-walker)
- Favorable lipid profiles, ↓ BP
- Improved autonomic tone, ↓ sympathetic response to stress
- ↑ survival after ACS


DASH Study

- 48% women (BP 133/85mmHg)
- 60% African Americans
- > 60% obese
- Benefit = 1 drug (11/6 mmHg)
- More effective in:
  - Women
  - Age >45
  - African Americans
  - Hypertensives

Svetkey: Archives Int Med, 1999 Sacks, NEJM 2001; Bray, AJC 2004; Blumenthal, Arch Int med, 2010

Barriers for Women to Lowering Heart Disease Risk

- Caregiver obligations, time
- Confused by media, HCPs
- $$$/insurance barriers
- God/higher power determines my health
- Not confident I can, don’t know how to change, too complicated, fear change
- I am not at risk for heart disease
- I don’t WANT to change
- Stress, depression
- No support from health care provider or family

Mosca et al: Circulation 2012AHA Survey

DASH- Dietary Approach to Stop Hypertension

- Fruits and vegetables (9+)
- Whole grains
- Lowfat diary
- Low meat, fish, fowl
- Low sat/total fat, cholesterol
- Potassium & Calcium rich
- Low salt

Svetkey: Archives Int Med, 1999 Sacks, NEJM 2001; Bray, AJC 2004; Blumenthal, Arch Int med, 2010
Provider Barriers

- I doubt she can change
- I don't believe a lifestyle change will be enough to really impact her health
- I don't have time to become a change agent for my patient
- I don't have the training to help her change her behavior
- I don't get reimbursed for counseling

Path to Better Care for Women at Risk

- Recognize, address, sex AND gender differences in CVD risk, novel risks
- Raise awareness: especially minority women
- Universal lifestyle counseling
- MI symptoms: “Make the Call! Don’t miss a beat!”
- Address knowledge gaps with research, inclusion of women in CVD studies
- Assess/Address Barriers
- Families, children, and communities benefit from improving women’s CVD health