
Effectiveness-Based Guidelines for Heart Disease Prevention in Women

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Objectives

- **Review Burden of CVD in Women (national and local perspective)**
- **Define the New Risk Categories**
- **Treatment Recommendations**
- **Inspiration from our Research**
- **Discussion**

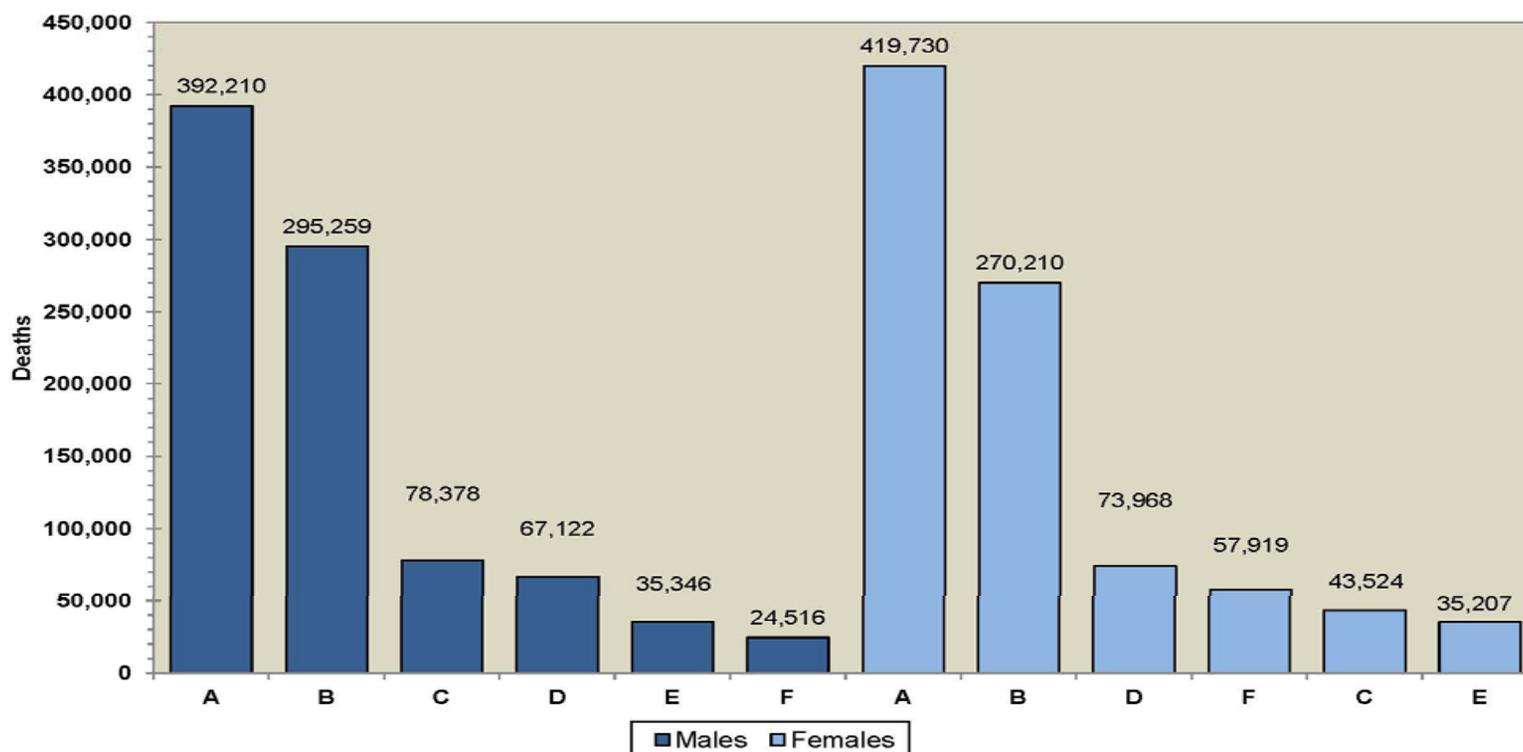
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Leading Causes of Death for All Males and Females



CVD & other major causes of death for all males and females (United States: 2008)



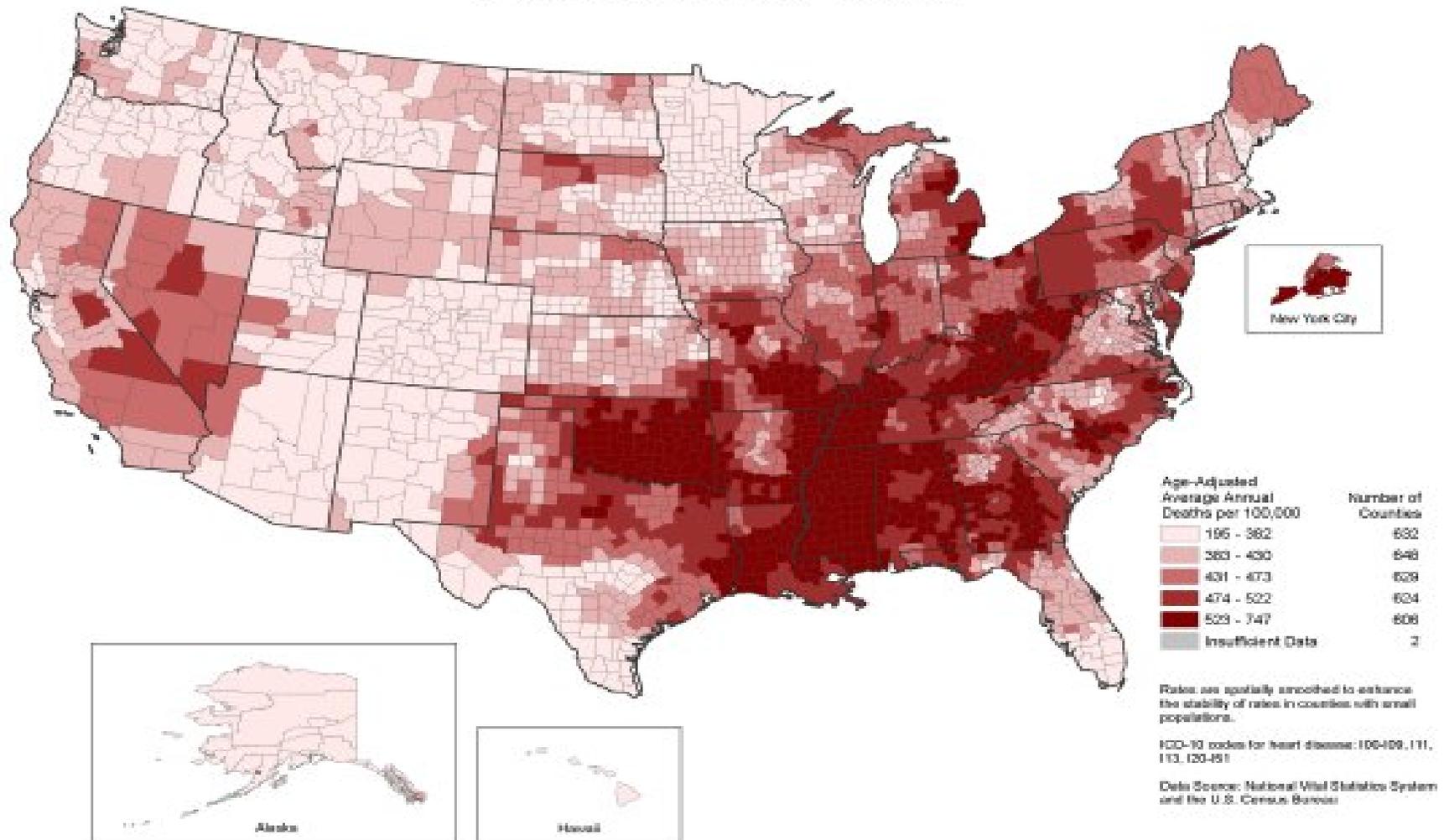
A indicates CVD plus congenital CVD (ICD-10 I00-I99, Q20-Q28); B, cancer (C00-C97); C, accidents (V01-X59, Y85-Y86); D, CLRD (J40-J47); E, diabetes mellitus (E10-E14); F, Alzheimer disease (G30). Source: NCHS and NHLBI.

What Does this Mean? (AHA)

- More women die of heart disease than men
- One death per minute
- One in 25 female deaths from breast CA; one in 2 from heart disease (2008)
- Death rates are increasing for younger women (age 35-44)
- Women age >45 are less likely than men to survive a first heart attack (74% vs 81%)
 - younger women fare worse (42% die w/in 1 yr of MI vs 24% of men)
- Women of color and of low SES status are disproportionately affected (28% higher death rates)

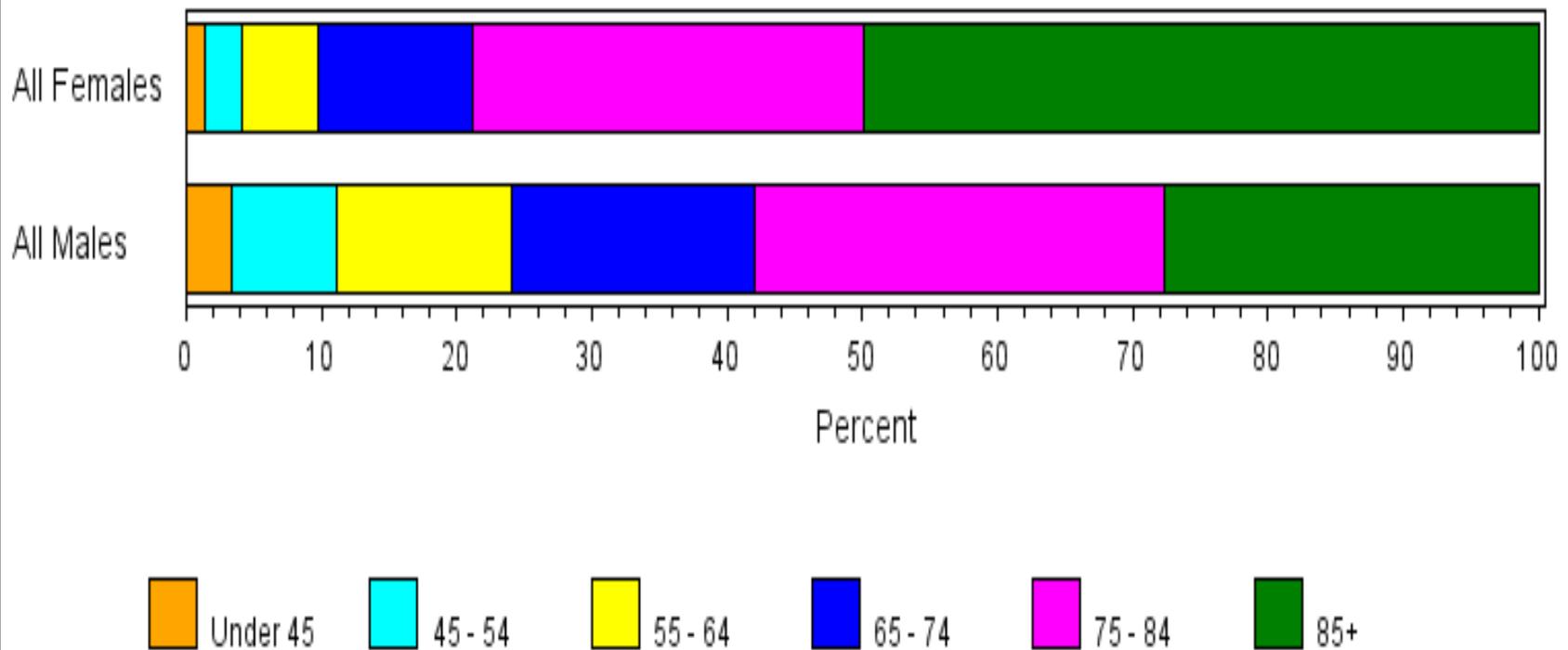
How about California- Southeastern (+ San Joaquin and Stanislaus) counties fare worse

Heart Disease Death Rates, 2000-2006
Adults Ages 35+, by County



California CVD Mortality Statistics: 35,119 deaths males; 37,980 deaths females (source: CDPH)

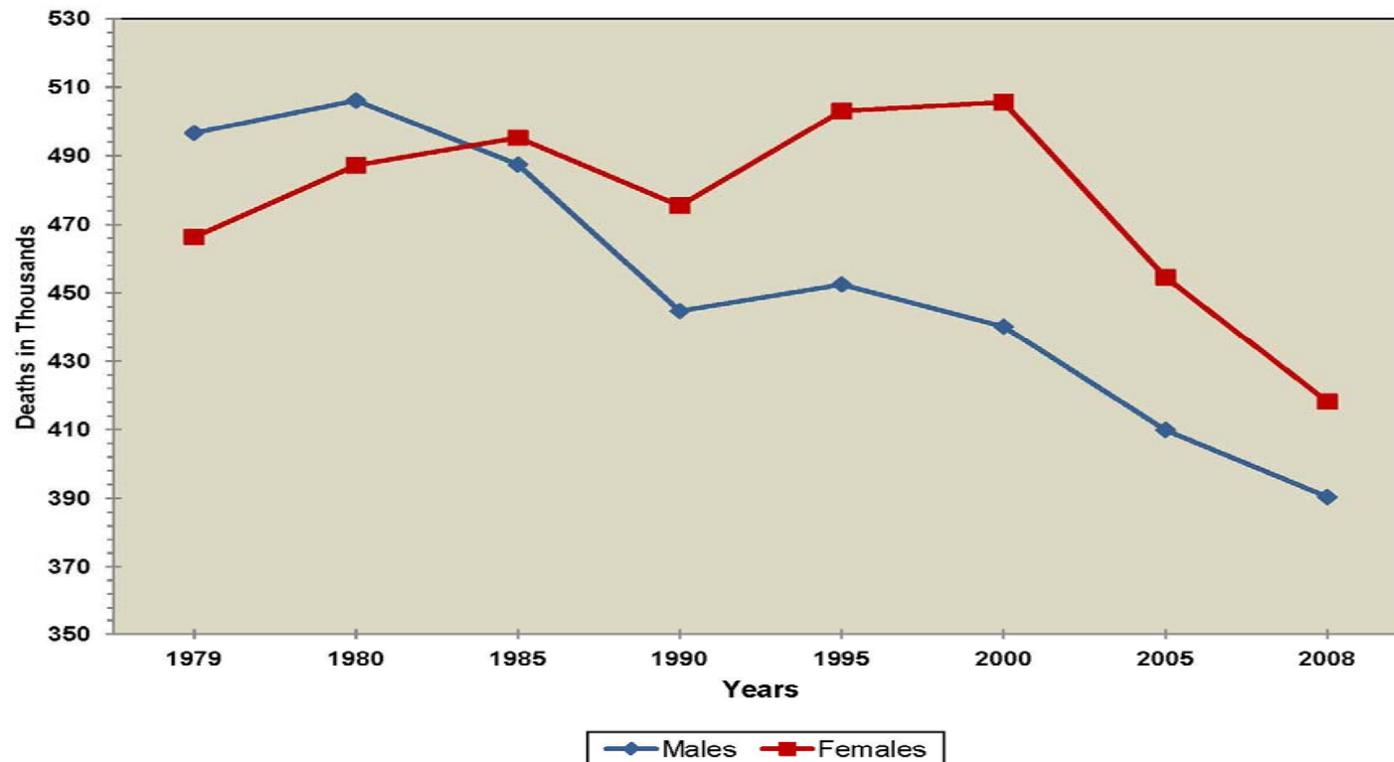
Age Distribution of Heart Disease Deaths by Sex California, 2000 - 2008



CVD Mortality Trends

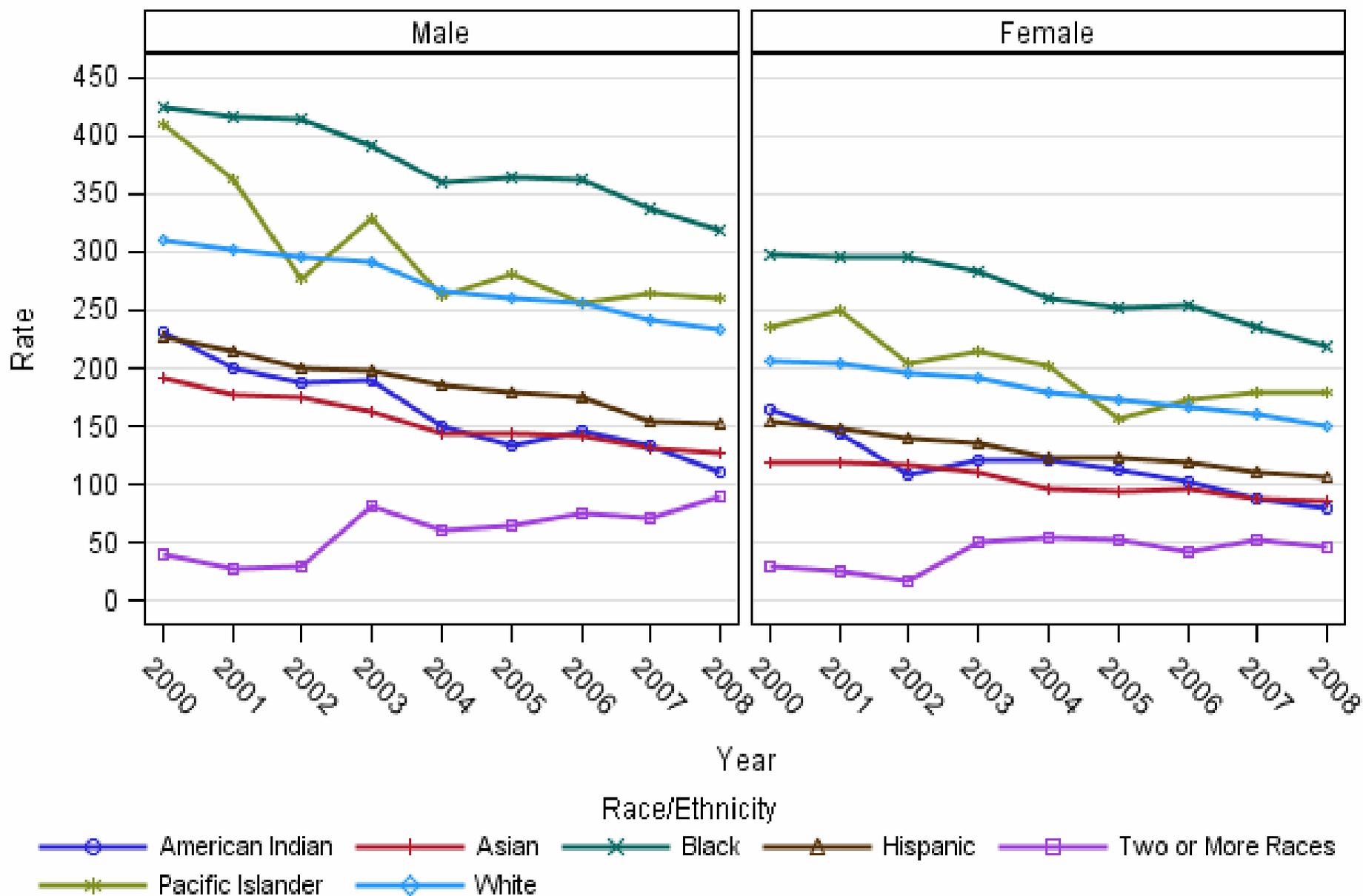


Cardiovascular disease mortality trends for males and females (United States: 1979–2008)



CVD excludes congenital cardiovascular defects (ICD-10 I00-I99). The overall comparability for cardiovascular disease between the International Classification of Diseases, 9th Revision (1979–1998) and International Classification of Diseases, 10th Revision (1999–2008) is 0.9962. No comparability ratios were applied. Source: National Center for Health Statistics.

Heart Disease Age-Adjusted Death Rate by Sex and Race/Ethnicity California, 2000 - 2008



How Does Sacramento Fare?

Sacramento Prevalence of Chronic Disease

| <u>Death rates /100,000</u> (age >35, all race, all gender) | Sacramento | CA State |
|--|------------|----------|
| Stroke | 87 | 79 |
| Coronary Artery Disease | 247 | 237 |
| Hypertension | 308 | 252 |

Source: CDC Division of heart disease and stroke prevention interactive atlas 2007-09. Last accessed July 6, 2012

Multiple Barriers to Heart Health in Women

- Heart disease as leading killer, yet recognized by less than half of all women
- Misperception that 'It's a man's disease'; 36% of women do not perceive themselves as at risk
- Women have poor knowledge of own CAD risk factors
- Failure to link risk factors to CAD
- 25% report lack of emphasis by health care providers
- Lack of health care provider emphasis on 'how to' make lifestyle changes

Additional Barriers

- **Delay in diagnosis and treatment, less aggressive Rx**
- **Underestimate of risk, and by current risk measures**
- **Present differently and management differs**
- **Women older, more co-morbidities at Dx**
- **Unknowns:**
 - available data limited in women age >80
 - impact of culture, ethnicity, race
 - gender differences in pharmacological effect
 - timing of MHT
 - others

Disparities in Heart Care for Women

It is estimated that up to 90% of heart disease is preventable, yet it is....

- **Under recognized** as the leading killer
 - 46% of women are unaware
 - Only 53% would call 911 for symptoms
 - 8% of PCPs, 17% of cardiologist recognize greater death toll for women
- **Under diagnosed**
 - More subtle symptoms; other symptoms may predominate
 - If symptoms, often not referred for further studies
- **Under treated**, even if with risk factors, post MI, or known CAD
- **Higher mortality** - age adjusted

The New Guidelines

- Updated from 2007
- Consensus of expert panel
- Based on clinical practice
- Based on gender-specific data and/or extrapolation from available data

Mosca, L. Circulation, 2011

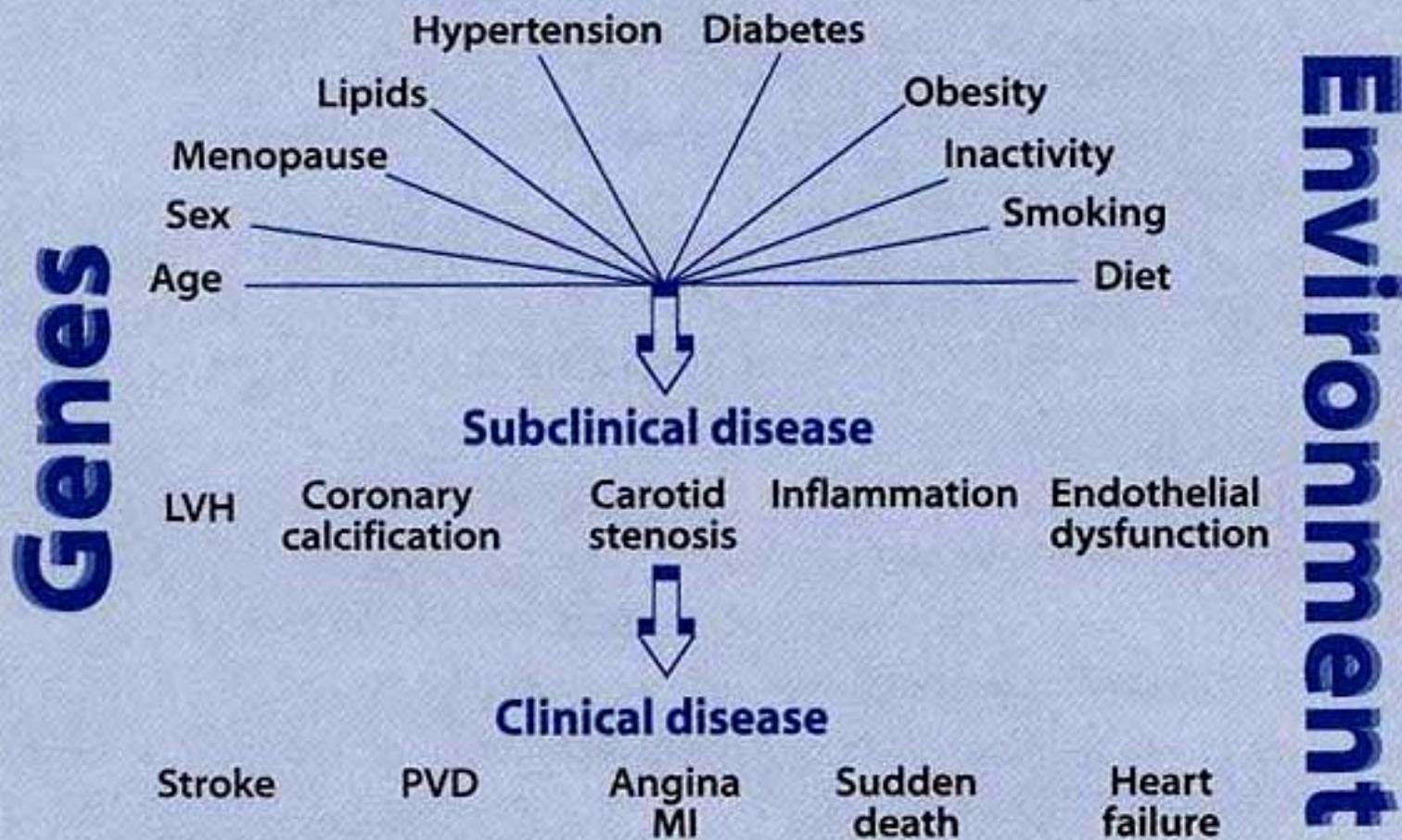
Concerns with Prior Guidelines

- **Other risk factors needed to be considered**
 - Family history
 - Sub clinical disease
 - Poor exercise capacity
 - Unhealthy lifestyles
- **Limitations of risk stratification with Framingham risk score recognized**
 - Narrow focus on 10-year risk
 - Lack of inclusion of important risk factors (e.g. family Hx)
 - 'Low risk' woman not sufficient to ensure low risk

Emphasis of New Guidelines

- **Women's global risk for CVD is high over the lifetime (50%)**
- **New CV risk classification**
- **Distinction between effectiveness (benefits & risks observed in clinical practice) and efficacy (benefits observed in clinical research)**
- **Revisions re. aspirin, HT, folic acid and antioxidant supplements**
- **New practical tips for lifestyle therapies (priority for intervention)**

Global CVD Risk



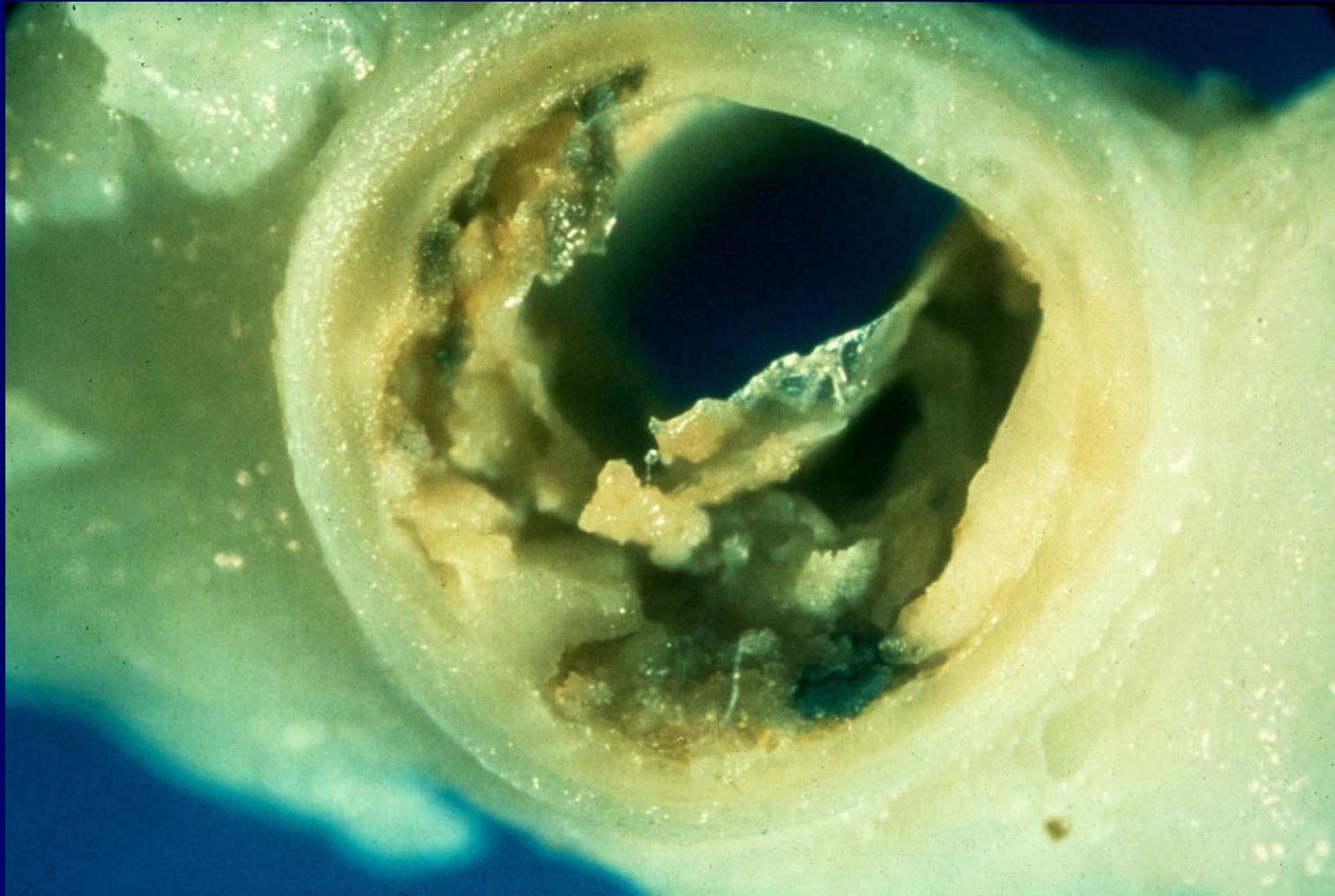
Early Lesion- Fatty Streak



Mature Atherosclerotic Lesion



Ruptured Atherosclerotic Plaque



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New Classification of Lifetime CVD Risk in Women

Risk Groups

- 1. HIGH RISK**
- 2. AT RISK (expanded category)**
- 3. IDEAL RISK (smaller category)**

'High' Risk Women (≥ 1 high risk state)

- **Clinically manifest CHD**
- **Clinically manifest Cerebrovascular disease**
- **Clinically manifest Peripheral vascular disease**
- **Abdominal Aortic Aneurysm**
- **DM**
- **CKD or ESRD**
- **10-year Framingham risk score $\geq 10\%$**

'At Risk' Women

- **>= 1 major CV risk factor including**
 - **Smoking**
 - **Poor diet**
 - **Physical inactivity**
 - **Obesity (especially central adiposity)**
 - **FHx premature CV disease**
 - * **first degree male < 55**
 - * **first degree women < 65**
 - **HTN (> 120/80) or on Rx**
 - **HLP (TC > 200 or HDL <50) or on Rx**

Additional 'At Risk' Women

- **Subclinical atherosclerosis (e.g., coronary calcification)**
- **Poor exercise capacity on ETT and/or abnormal heart rate recovery**
- **Autoimmune collagen vascular Dz (SLE, RA, etc.)**
- **Pregnancy-associated metabolic disorders:**
 - **pre-eclampsia**
 - **gestational DM**
 - **gestational HTN**
- **Metabolic Syndrome**

Metabolic Syndrome in Women →>> increased risk for CV event

3 or more of the following:

HTN (> 130/85 or on Rx)

High TG (> 150)

Low HDL (< 50)

Elevated FBS (> 100 or on Rx)

Central obesity (waist > 35")

'Ideal' CV Health Women

- Framingham global risk <10% (new cut point)

AND

- Healthy lifestyle:
 - diet (DASH) AND
 - exercise (150 min/wk mod intensity) or 75 min/wk vigorous or both

AND

- No CV risk factors:

TC <200 off Rx

BP < 120/80 off Rx

FBS <100 off Rx

BMI <25

no smoking

Still need to determine Framingham Risk Level

Framingham risk score

The scoring sheet is available at:

www.nhlbi.nih.gov/about/framingham/riskabs.htm

Framingham Risk Score (Women)

| Age/Years Points | | Total Cholesterol (mg/dL) | | | | | | CHD Risk | |
|------------------|----------|--------------------------------|----------|-------|-----------------------------|----------|-------------------|-----------|---------------|
| | | Age (years) | | | | | | Points | 10-y Risk (%) |
| | | 20-39 | 40-49 | 50-59 | 60-69 | 70-79 | | | |
| 20-34 | -7 | <160 | 0 | 0 | 0 | 0 | <1 | <9 | |
| 35-39 | -3 | 160-199 | 4 | 3 | 2 | 1 | 9 | 1 | |
| 40-44 | 0 | 200-239 | 8 | 6 | 4 | 2 | 10 | 1 | |
| 45-49 | 3 | 240-279 | 11 | 8 | 5 | 3 | 11 | 1 | |
| 50-54 | 6 | ≥280 | 13 | 10 | 7 | 4 | 12 | 1 | |
| 55-59 | 8 | Cigarette Smoking | | | | | | 13 | 2 |
| 60-64 | 10 | Nonsmoker | 0 | 0 | 0 | 0 | 14 | 2 | |
| 65-69 | 11 | Smoker | 9 | 7 | 4 | 2 | 15 | 3 | |
| 70-74 | 14 | Systolic Blood Pressure | | | | | | 16 | 4 |
| 75-79 | 16 | Untreated Treated | | | | | | 17 | 5 |
| | | <120 | 0 | 0 | HDL-C (mg/dL) Points | | 18 | 6 | |
| | | 120-129 | 1 | 3 | >60 | -1 | Score = 20 | 19 | |
| | | 130-139 | 2 | 4 | 50-59 | 0 | Risk = 11% | 20 | |
| | | 140-159 | 3 | 5 | 40-49 | 1 | | 21 | |
| | | ≥160 | 4 | 6 | <40 | 2 | | 22 | |
| | | | | | | | | 23 | |
| | | | | | | | | 24 | |
| | | | | | | | | 27 | |
| | | | | | | | | ≥25 | |
| | | | | | | | | ≥30 | |

Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults.
JAMA. 2001;285:2486.

What are Some of the Benefits of Ideal CV Health?

- **Greater longevity**
- **Dramatic reductions in risk for CVD events both short and long-term (7- vs 20-fold)**
- **92% reduction in SCD**

(Nurse's Health Study, 2011)

- **Greater QOL in older ages**
- **Lower Medicare costs at older ages**

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Clinical Recommendation Categories

1. **Lifestyle Interventions- priority**
2. **Major Risk Factor Intervention**
3. **Preventive Drug Interventions**

Lifestyle Interventions

For All

- Smoking cessation
 - Physical activity (mod and/or vigorous)
 - Heart-healthy diet (fruits, vegetables, grains; low sodium, sat and trans fats, alcohol, total calories)
 - Weight maintenance/reduction (BMI 18.5-24.9)
-

For High Risk

- Cardiac rehabilitation (ACS, CHD, CVA, PVD, CHF)
- Psychosocial factors- evaluation for depression
- Omega 3 fatty acid supplements (1800 mg/dy)

Specific Dietary Recs for Women (2,000 cal diet)

- Fruits/vegetables: $\geq 4-5$ cups/dy
- Fish: 2/wk (oily fish)
- Fiber: 30 g/dy (whole grain products)
- Nuts/legumes/seeds: ≥ 4 /wk (beans, peas, seeds, walnuts, almonds)
- Sat Fat: $< 7\%$ cal = < 14 g/dy
- Cholesterol: < 150 mg/dy
- Alcohol: ≤ 1 /dy (4 oz wine, 12 oz beer, 1-1.5 oz spirits)
- Sodium: < 1500 mg/dy

Specific Physical Activity Recs for Women

- Moderate intensity: min 150 min/wk; 300 min better (5 hrs)
- Vigorous intensity: min 75 min/wk; 2 ½ hrs/wk better
 - *Combination of moderate/vigorous encouraged --*
 - *For weight loss: 60-90 min/dy minimum --*
- Muscle-strengthening also recommended

Major Risk Factor Interventions: tighter cut points (important to goals of the Right Care Initiative)

- HTN- JNC VII; goal BP < 120/80
- Lipids
 - LDL <100 (<70 if high risk)
 - TG <150
 - HDL > 50
- DM (HgA1C < 7.0)

Preventive Drug Interventions- ASA

--Reduces first heart attacks in men, first strokes in women--

- High risk women: ASA 75-325 mg/dy (or Ticlid)
- Women age >65: ASA 81 mg/dy for stroke prevention
- At risk women: if benefits outweigh risks (GI bleeding, hemorrhagic stroke)
- Healthy women: not routine, can use 81 mg/dy or 100 mg every other day

Yet...

- **< 1/2 of the women who could benefit from aspirin are taking it**
- **the majority of women for whom aspirin is recommended for prevention of CVD are not following national guidelines**

Rivera, et.al. J Women's Health, April, 2012

Other Preventive Drug Interventions

- ACEI- in all women after ACS/MI, CHF (EF <40%), DM
- ARBs- alternative to ACEI in all ACEI candidates
- Aldosterone Antagonists- in all women on standard Rx with EF < 40% with CHF symptoms
- B-blockers- in all women with MI/ACS, CHF, and CVD even if nl EF

-- all underutilized in women --

Not Useful for the Prevention of CVD in Women in Any Risk Category

Class III

- **Menopausal Therapy-** initiation or continuation
 - HT
 - SERMs
- **Antioxidant Supplements** (B-carotene, C, E)
- **Routine use of Aspirin** in healthy and 'ideal risk' women age < 65
- **Folic acid** (w/ or w/o B6 or B12 supplements)

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Are Heart Disease Preventive Interventions Effective in Women? Our National and Local Experience

1. National

- * DHHS-OWH: Outcomes in National Model Women Heart Programs**
- * DHHS-OWH: Outcomes in National Community Organizations**

2. Local:

- *Outcomes in African American women in our local Community**
- *Pilot to evaluate outcomes in Latina women in our local Community (proposed)**

“Outcomes of Comprehensive Heart Care Programs in High-Risk Women”

Amparo C. Villablanca, M.D., Laurel A. Beckett, Ph.D., Yueju Li, M.A., Shantelle Leatherwood, M.H.A., Santosh K. Gill, M.D., Elsa-Grace V. Giardina, M.D., Anne L. Taylor, M.D., Carol Barron, R.N., JoAnne M. Foody, M.D., Suzanne Haynes, Ph.D., and Gail D’Onofrio, M.D.

JOURNAL OF WOMEN’S HEALTH

Volume 19, Number 7, 2010

(n=1,310 patients at six U.S. women’s heart programs)

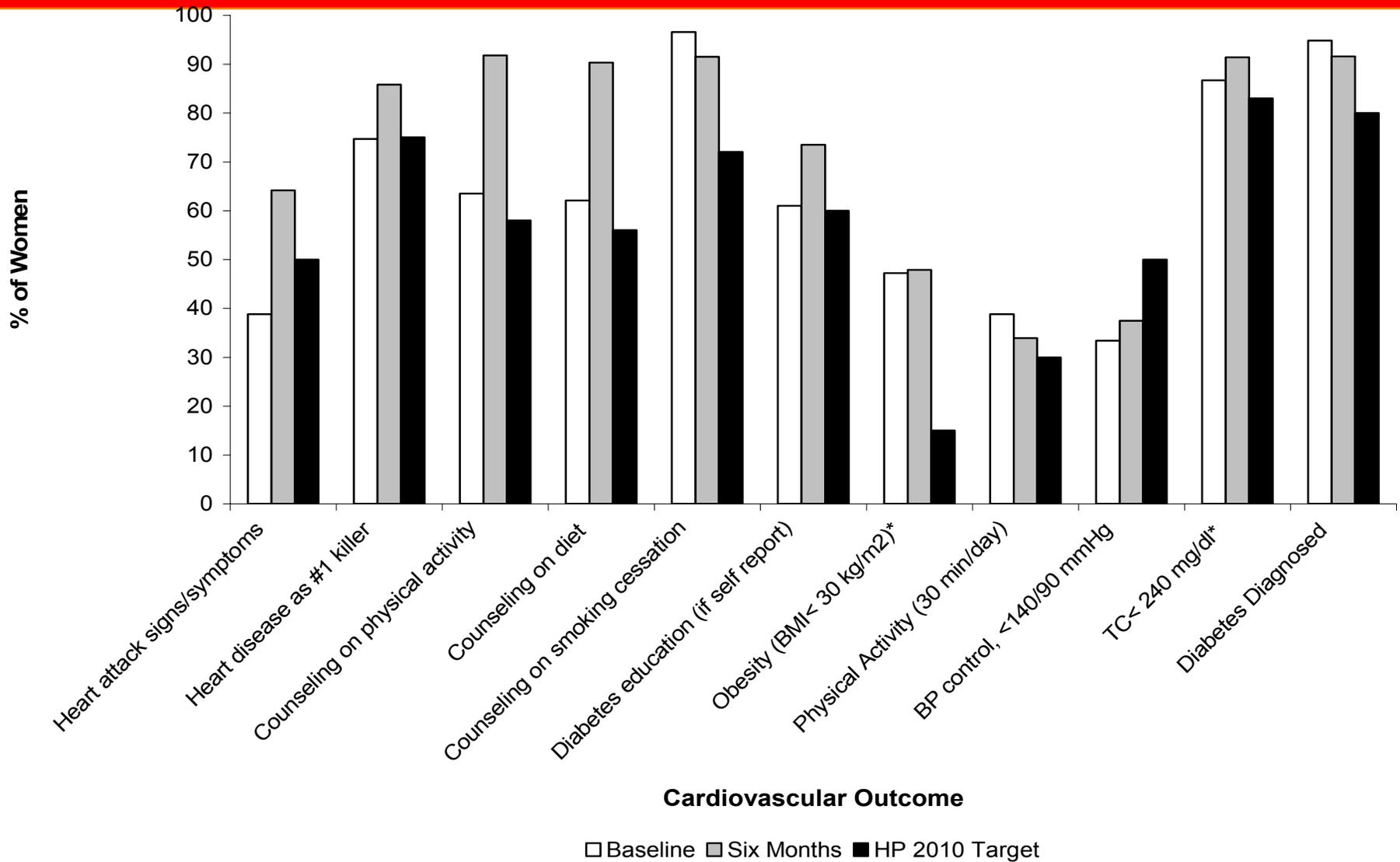
Summary (a)

- **Goals:** improve knowledge, reduce CVD risk, and attain Healthy People 2010 objectives among women in model women's heart programs.
- **Intervention:** A 6-month pre/post-longitudinal educational intervention of high-risk women.
- **Methods:**
 - 5 integrated components: education/awareness, screening/risk assessment, diagnostic testing/treatment, lifestyle modification/rehabilitation, and tracking/evaluation
 - Comprehensive heart care utilizing 2007 AHA guidelines

Summary (b)

- **Measures:** surveys, clinical, laboratory, and FRS
- **Results:**
 - At 6 mos, there were statistically significant improvements in fund of knowledge, risk awareness, and clinical outcomes.
 - Participants attained or exceeded >90% of the Healthy People 2010 objectives.

Results- CV outcomes



“Outcomes of National Community Organization Cardiovascular Prevention Programs for High-Risk Women”

Amparo C. Villablanca, Shavon Arline, Jacqui Lewis, Sekar Raju, Susan Sanders & Shannon Carrow

J. CARDIOVASC. TRANS. RES., 2009

(n=1,052 participants enrolled by 4 research sites in 32 communities across the US).

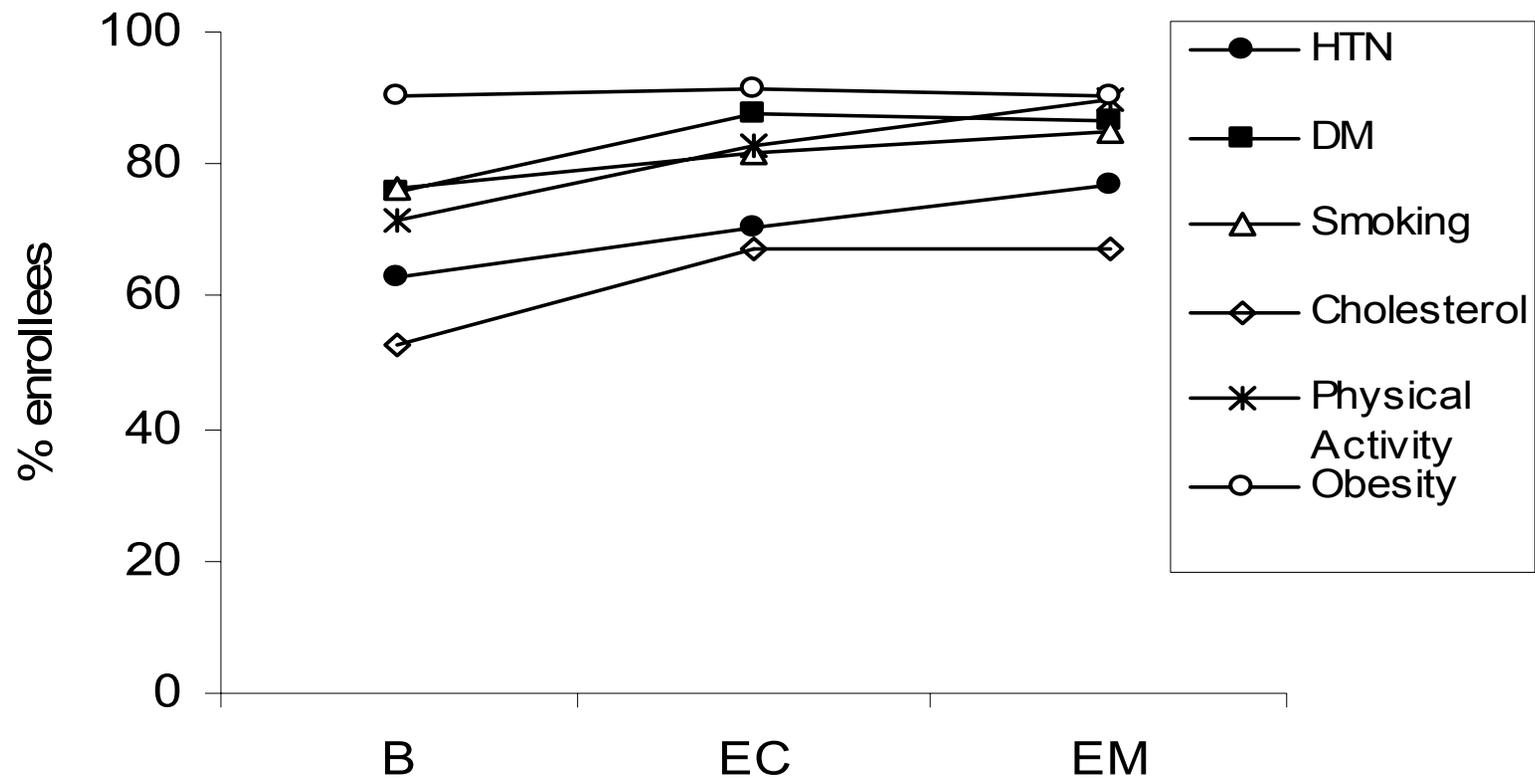
Summary (a)

- **Goals:** reduce cardiovascular disease (CVD) risk in women by implementing a CVD prevention health promotion program in faith- and community-based sites.
- **Intervention:** A 4-month pre/post educational intervention of high-risk women + 3 months of maintenance.
- **Methods:**
 - 8 bi-weekly counseling sessions conducted over 4 mos (6 of the major CVD risk factors [smoking, diabetes, hypertension, cholesterol, obesity, and physical inactivity] + signs and symptoms of a heart attack and stroke
 - 4–6 maintenance sessions over 3 additional mos

Summary (b)

- **Measures/Instruments:** surveys, medical screenings, health behavior counseling, risk behavior modification, and stages of change
- **Results:**
 - Significant improvement was attained in 28 secondary outcomes
 - No improvement in primary outcomes (physical activity and weight).

Results - Effects of the Intervention on Knowledge of Cardiovascular Risk Modification



“Cardiovascular Community Prevention Interventions for Reducing Inflammatory Burden and Metabolic Syndrome in High-risk Women: A Pilot Study”

Summary (a)

- **Goals:** reduce cardio-metabolic risk and inflammatory burden in high risk African American women locally
- **Intervention:** 4 month pre/post- community-based CVD educational intervention (n=42)
- **Methods:**
 - 8 bi-weekly counseling sessions conducted over 4 mos (six of the major CVD risk factors (smoking, diabetes, hypertension, cholesterol, obesity, and physical inactivity) + signs and symptoms of a heart attack and stroke + healthy lifestyles

Summary (b)

- **Measures/Instruments:** surveys, medical screenings, metabolic syndrome, inflammatory markers (TNF α , hs-CRP and IL-12)
- **Results:**
 - Significant improvement in multiple outcomes
 - Significant reduction in inflammatory burden (TNF- α by 16%, IL-12 by 20%, and CRP by 26%)
 - 60% reduction in participants with criteria for the metabolic syndrome!

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Practical CVD Risk Prevention in Women: What Can be Done by Practice Delivery Teams?

- **Evaluate Risk:**

- **Medical Hx, Family Hx, Pregnancy complication hx**
- **Symptoms of CVD**
- **Physical exam (including BMI, waist)**
- **Labs (including FLP, FBS)**
- **Framingham risk assessment (if no vascular disease or DM)**
- **Depression screening in women with CVD**

What More Can be Done?

- **Implement Lifestyle Recommendations**
- **Implement Risk Factor Management**
- **Implement Additional Pharmacotherapy if CVD event, CHF, other conditions**
- **Avoid Interventions shown to not be useful**
- **Educate, counsel, educate!**

Discussion

The weight of the evidence indicates efficacy, yet suboptimal treatment, of women with known CVD risk factors and those with proven obstructive CAD, despite evidence and guidelines.

1. What should be the priority for addressing **BARRIERS** to guideline implementation?
2. Should **QUALITY MEASURES** be based on implementation of guidelines?
3. What **STRATEGIES** could optimize implementation of guidelines?