# Women's Health Policy Summit: Healthy Living and Chronic Disease

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## OBJECTIVES:

- Recognize the impact of chronic diseases and conditions, and the role healthy living plays on their natural history in:
  - Cardiovascular disease (CVD): coronary heart disease, stroke, heart failure
  - Diabetes mellitus, type 2 (DM)
  - Hypertension (HBP)
  - Metabolic Syndrome
  - Cancers
  - Chronic lung disease
- Understand the concept of "pre-disease" as it applies to the common chronic diseases, how they develop and cause harm
- Appreciate how sex differences impact the initiation, progression and presentation of chronic disease
- Identify advances in medical management of chronic disease and how healthy living can reduce or eliminate the need for many treatments

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## How Big a Problem is "Chronic Disease"

## CVD and CHD

- Cardiovascular Disease (CVD)
  - Heart: CHD, congestive heart failure (CHF), arrhythmias, valvular, cardiomyopathy
  - Blood Vessels: Hypertension, stroke, dementia, peripheral vascular disease
- Coronary Heart Disease (CHD)
  - Transient (angina) or persistent ischemia (MI)
  - FIXED (bulky plaque) or ACUTE (rupture of minor or major plaque, thrombus, spasm)

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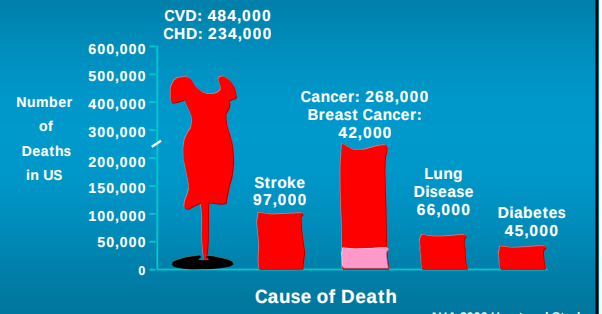
## Leading Causes of Death Among US Women: 2003




AHA 2006 Heart and Stroke Statistical Update 2006

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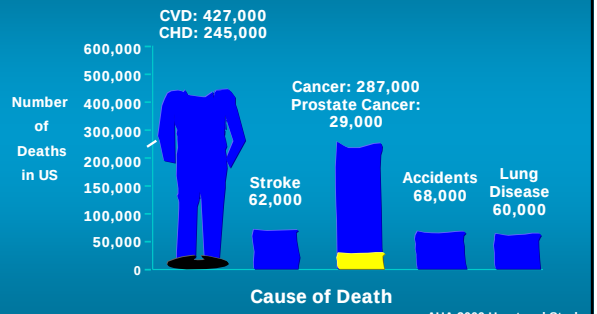
## Leading Causes of Death Among US Men: 2003




AHA 2006 Heart and Stroke Statistical Update 2006

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## Statistics: Deaths from CVD and CHD

| Men | | Women | |
|---|---|---|---|
| CVD: | 427,000 | CVD: | 484,000 |
| CHD: | 245,400 | CHD: | 233,900 |
| MI: | 90,000 | MI: | 81,000 |
| Strokes: | 61,600 | Strokes: | 96,200 |
| Total CVD: | 33 million | Total CVD: | 38 million |

1 in 3 adult men and women have some form of CVD

CHD and CVD rates increase as we age

AHA 2006 Heart and Stroke Statistical Update 2006



## Statistics: Stroke

| | Men | Women |
|---|---|---|
| Prevalence: | 2,400,000 | 3,100,000 |
| New strokes: | 327,000 | 373,000 |
| Stroke deaths: | 60,000 | 96,000 |

Leading cause of serious, long term disability



## Stroke: Not Just for Older Women

## Stroke Associations

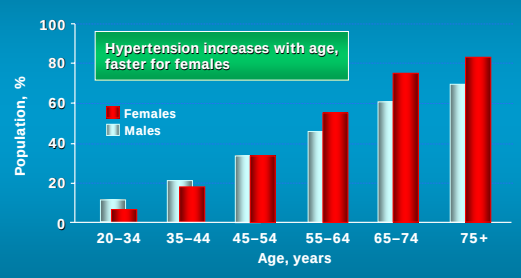
- Stroke post MI: 12% of women, 6% of men
- Women have 50% higher rate of stroke death
- BCP: RR 2.75 (1 per 24,000) (RR 1.9 on low estrogen preparations)
- HRT: RR 1.44 for ischemic stroke (lower risk RR 0.82 for hemorrhagic stroke)
- Peripartum: RR 95.0 for ICH, RR 34.0 for ischemic stroke and RR 37.0 for SAH

AHA 2006 Heart and Stroke Statistical Update 2006
JAMA 2000;284:72
JAMA 2003;289:2673



## Percent of U.S. Adults With Hypertension

NHANES 1999–2000




AHA 2006 Heart and Stroke Statistical Update 2006



## Hypertension Is a Major Risk Factor for CVD, MI and Heart Failure

- BP >140/90 mmHg associated with:
  - 69% of first myocardial infarctions
  - 91% of cases of heart failure
- Increases risk of heart failure by a factor of 2–3

BP=blood pressure; MI=myocardial infarction.

AHA 2006 Heart and Stroke Statistical Update 2006

## Female Gender Advantages

- Lower mortality than men
  - Ten year advantage by age
  - Similar response to risk factors
  - Absolute lower risk for any given level of risk factors
- Premenopausal ovarian function
  - Risk increases after any menopause
  - Estrogen alters arterial vessels

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Lancet 1992;339(8795):702-6
Ann Intern Med 1976;155(1):57

## Female Gender Disadvantages

- Less patient and physician awareness
  - 40% more missed MI in ER
- Less outpatient work up and treatment
- Higher mortality post-MI
  - 50% higher in first month
  - More second MI and death in 5 years
- Acute Coronary Syndromes
  - Delay in recognition at home, in ED
  - More death and complications post CABG

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Heart 2005;91:237

## Cardiovascular Risk Factors: Traditional, Metabolic Syndrome, Insulin and Diabetes

## Traditional, Unmodifiable CHD Risk Factors

- Increasing Age
- Family history of early coronary heart disease
- Genetics
- Diabetes Mellitus
- Male (for early disease)

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Am Heart J 1986;111:393

## Major Modifiable CHD Risk Factors

- Lipid Abnormalities
  - High LDL
  - Low HDL
  - High TG
  - High Lp(a)
- Hormonal status (loss of estrogen)
- Tobacco Use
- Hypertension
- Diabetes Mellitus
- Physical inactivity

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Am Heart J 1986;111:393-390
N Engl J Med 1990;322:213-217
Arch Intern Med 1997;157:2413-2446

## Less Commonly Recognized CHD Risk Factors

- Clotting abnormalities
- Low socioeconomic status
- Psychosocial factors
  - hostility
  - depression
  - lack of social support
- Oxidative Stress

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Am J Cardio 1999;84:549
JAMA 2000;284:3008

## Dyslipidemias

- HDL
  - Stronger predictor in women than men
  - 1 mg/dL increase – 3% decrease in CHD
  - Reverse transport, antioxidant
- Elevated Non-HDL cholesterol
  - LDL – equal men and women
  - Triglycerides– stronger in women
  - Lp(a) – associated with ApoB
- Triglycerides and VLDL
  - Make LDL smaller, more atherogenic

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JACC 1992;20(2):452-457
JACC 1994;24(7):1757-1761

## Traditional Risk Factors

- Tobacco
  - Accounts for 60% of risk in middle-aged women
  - Increased MI in young women
- Hypertension
  - Linked to other risk factors
  - 50% of women over 50, 65% of women over 65
  - 2 to 3 fold risk in highest versus lowest BP

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## Traditional Risk Factors

- Diabetes
  - Removes gender protection
  - Increases risk 3 – 7 times in women
  - May directly affect ovarian function causing premature menopause
- Physical inactivity
  - Appears to work through other known risk factors

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Diabetes 2001;50(8):1857
Ann Intern Med 1976;85(40):447

## Metabolic Syndrome

- Constellation of risk factors
  - Insulin resistance, hyperlipidemia, HBP, clotting, obesity, diabetes
  - Only a mild level of abnormality is needed
- Increases CVD risk by 50% in non-diabetics, doubles risk in diabetes
- Stronger risk: middle-aged women, 3 – 7 X

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JACC 2000;36(6):1797

## Definition of Metabolic Syndrome

Three or more of the following (NCEP):

- Abdominal obesity, waist > 35” (women)
- Triglyceride $\geq$ 150 mg/dl
- HDL < 50 mg/dl (women)
- BP $\geq$ 130/85 mm Hg
- Fasting glucose $\geq$ 110 mg/dl

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JAMA 2001;285:2486
Circ 2004;110:227

## Traditional Recommendations

- Focus treatment on patients at greatest risk
  - Most likely to have events and death
  - Most likely to rapidly benefit from efforts
  - Greatest benefit in short term & cost/benefit ratio
- Problems with this concept
  - Ignores lifetime risk
  - Diverts efforts from global prevention and global risk reduction
  - Limits long term benefits and potential for lifetime risk reduction

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Circ 2004;109:672

## Consider Treating Early Risk Factors

- Blood pressure risk factors even if blood pressure is < 140/90
- Lipid risk factors even if LDL <160
- Diabetes risk factors even if blood sugar is <110

How can early risk factor treatment make a difference?

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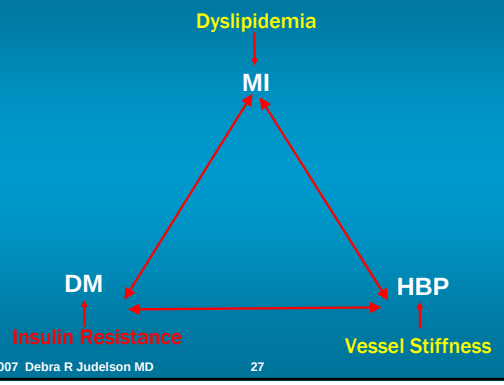
## Pre-Disease

## Pre-Disease

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## Consider Treating Early or Borderline Risk Factors

- Blood pressure risk factors even if blood pressure is < 140/90
- Lipid risk factors even if LDL <160
- Diabetes risk factors even if blood sugar is <110

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## Focusing on the Metabolic Syndrome

Three or more of the following (NCEP):

- Abdominal obesity, waist > 35" (women)
- Triglyceride ≥ 150 mg/dl
- HDL < 50 mg/dl (women)
- BP ≥ 130/85 mm Hg
- Fasting glucose ≥ 110 mg/dl

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JAMA 2001;285:2486
Circ 2004;110:227

## Lifestyle is What it's All About

## 90% of MI Risk Factors are Modifiable

- Cigarette smoking
- Abnormal blood lipids
- Hypertension
- Diabetes
- Abdominal obesity
- Physical inactivity
- Limited fruits and vegetables
- Excess alcohol
- Psychosocial issues

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Lancet 2004:364:937

## Risk Factors that are Modifiable

- Personal: Cigarette smoking; Physical inactivity; Limited fruits and vegetables; Excess salt, simple carbs and alcohol; Psychosocial issues; Obesity
- Medical evaluation and treatment of: Hypertension; Diabetes; Abnormal blood lipids; Metabolic syndrome; Hormonal deficiency
- Societal: Inadequate access to safe exercise locations, nutritious foods, health care and medications for HBP, DM, abnormal lipids; local air pollution, exposure to second hand smoke

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Lancet 2004:364:937

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Lancet 2004:364:937

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Lancet 2004:364:937

## Lifestyle Modifications to Prevent Chronic Disease/CVD

- Diet: calorie restriction; low simple sugars, low saturated and trans fat; low salt; high fiber; high marine fatty acids; high folate; high calcium and vitamin D
- 30 min exercise daily
- Not smoking
- Non-obese (BMI < 30)
- Alcohol up to 1 glass (5 oz) daily

= 83% CVD risk reduction

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Lancet 2004:364:937

## Healthy Lifestyle Modifies Risk Factors BEFORE Damage from Diseases Occur

- Rise: in good cholesterol, antioxidants, vascular softness, sensitivity to insulin
- Reduction in: blood pressure, bad cholesterol, inflammation, metabolic syndrome
- Leading to reductions in heart attack, stroke, heart failure, diabetes, osteoporosis; some cancers, lung disease

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Lancet 2004:364:937