WOMEN AND HEART DISEASE

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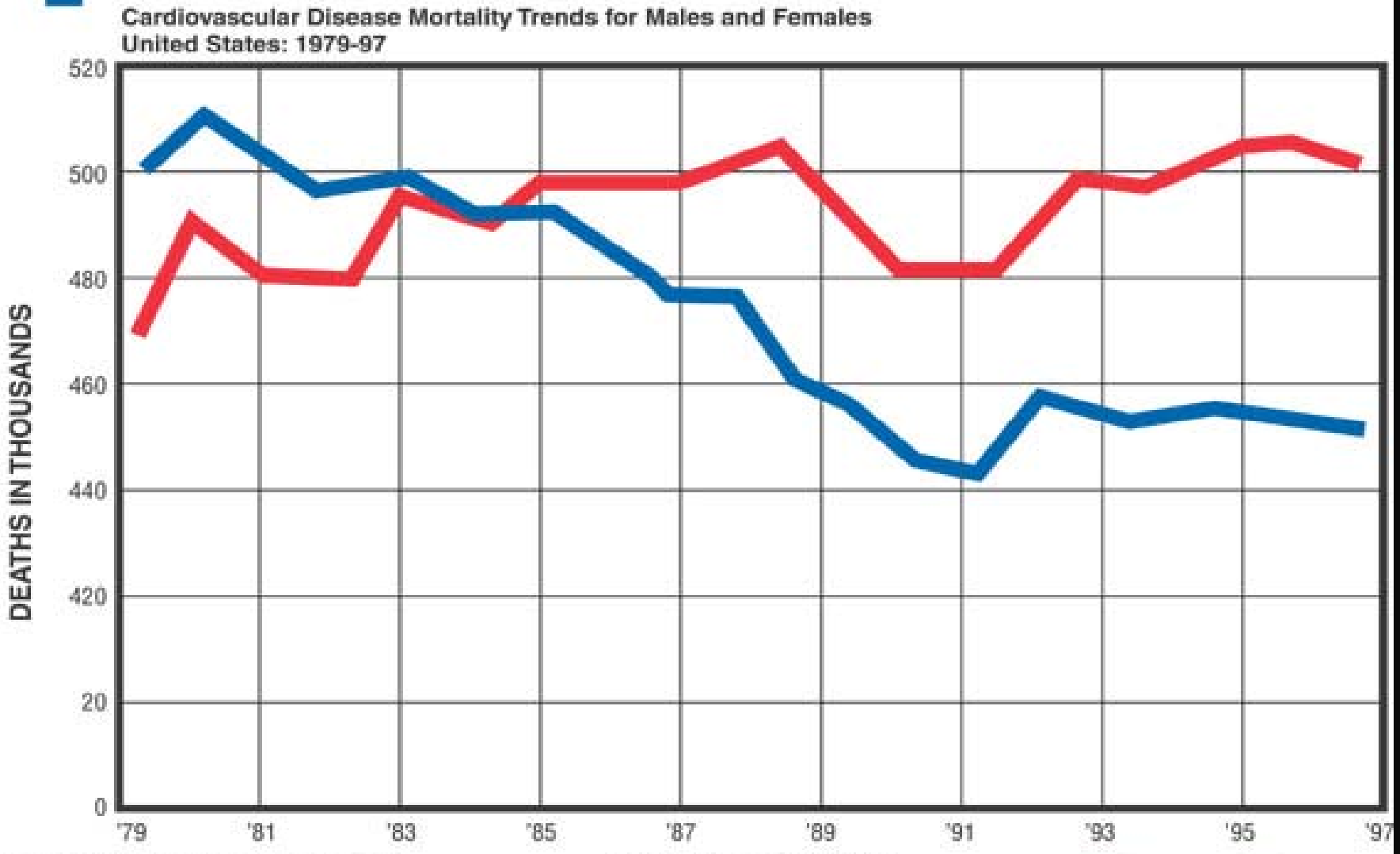
Women and Heart Disease Deaths

An Alarming Trend…



Source: CDC/NCHS ad the American Heart Association
Compliments of Womenheart: the National Coalition for Women with Heart Disease
1718 M Street, NW - #330 • Washington, DC 20036
(www.womenheart.org)

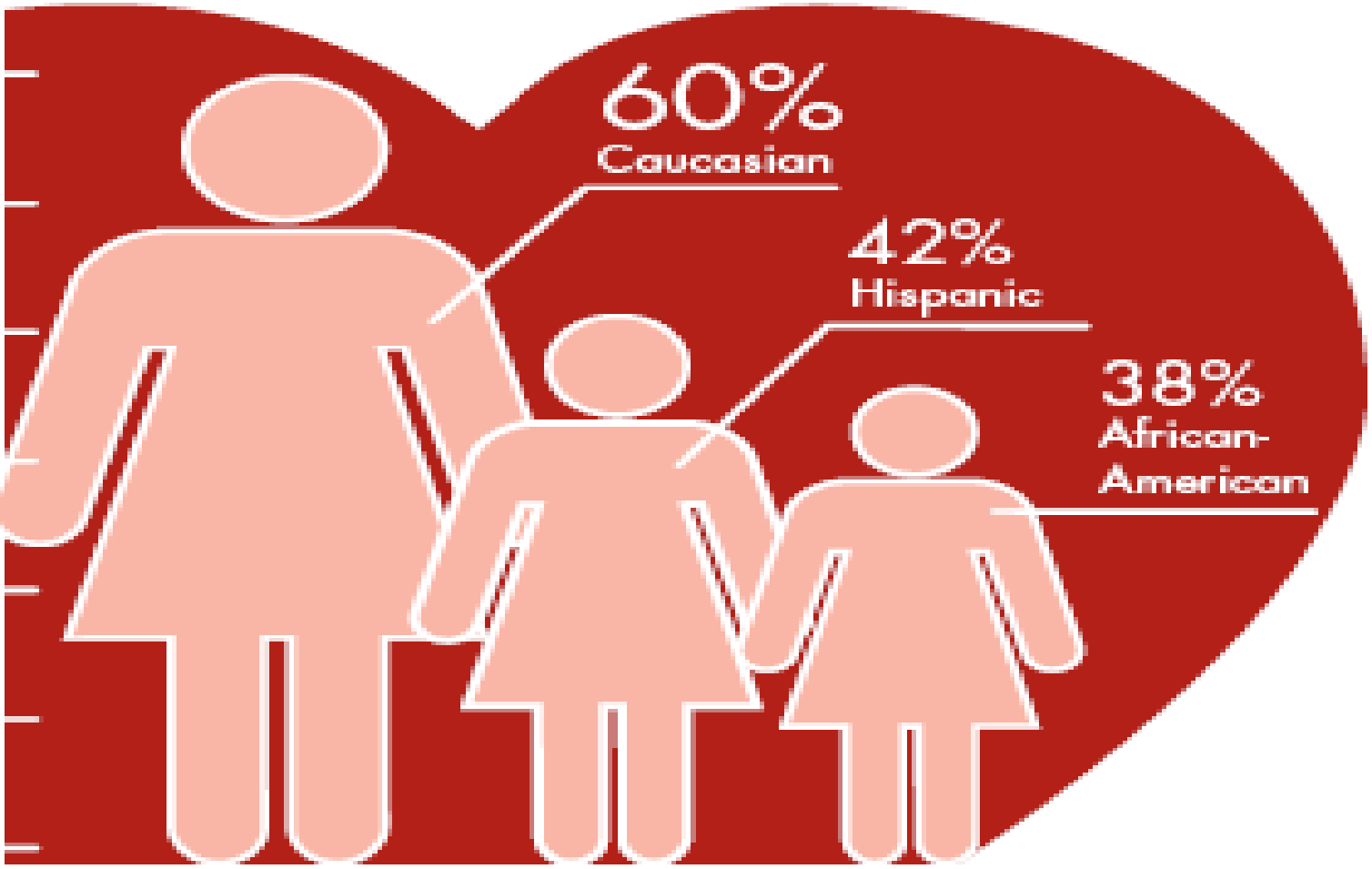
STATISTICS

- In 2003, over 45 million American women were older than 50.
- Cardiovascular disease is the leading cause of death among men and women in the United States, with most deaths resulting from coronary heart disease.
- Only 1 in 28 women will die of breast cancer, whereas 1 in 2 women will die of cardiovascular disease.

STATISTICS

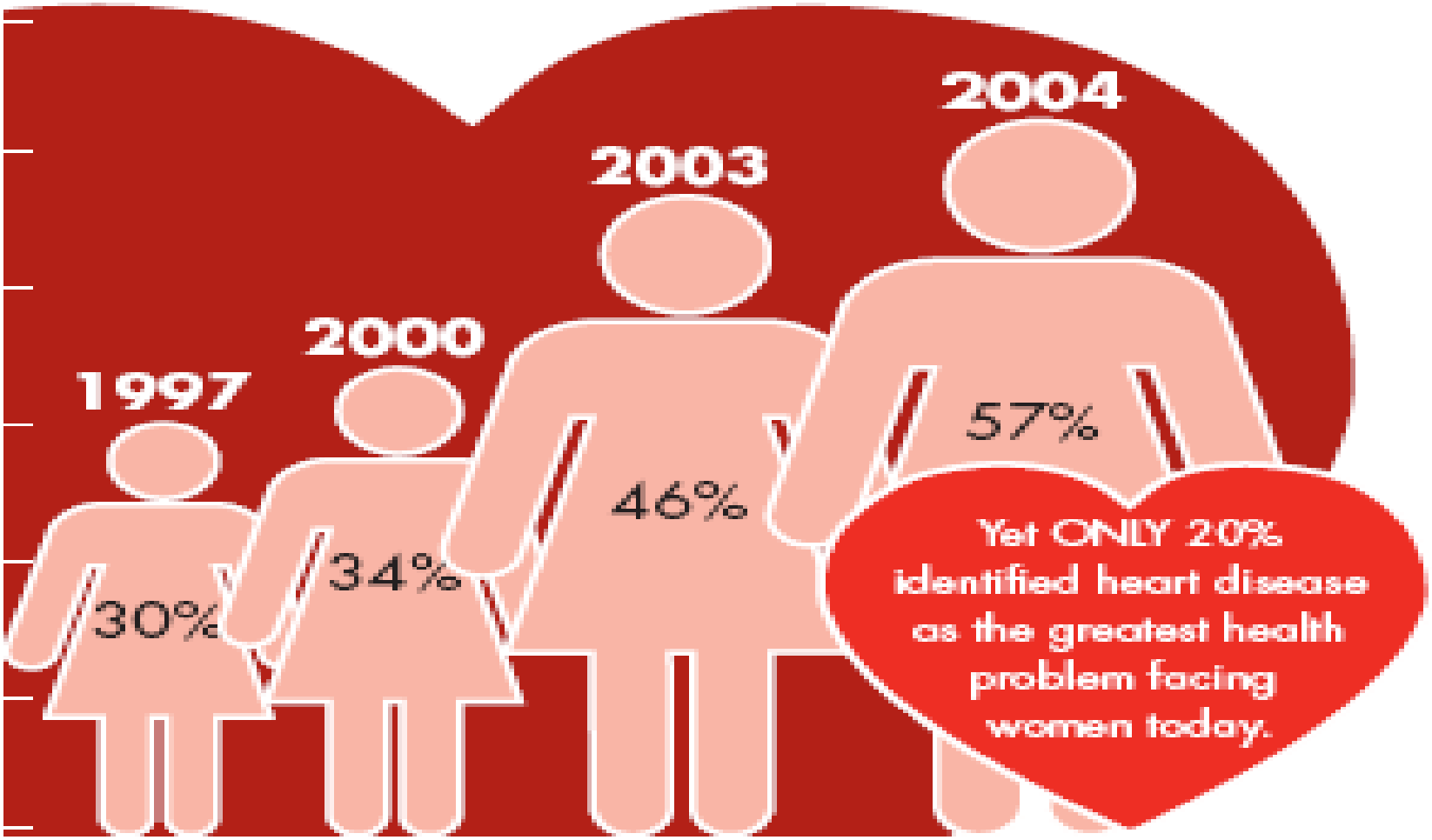
- The prognosis for cardiovascular disease is worse in women than in men. (60% sudden death)
- 38% of women compared with 25% of men will die within one year after a heart attack.
- The death rate due to CVD is higher in black women than in white women.
- Of the approximately 5.5 million stroke survivors alive today, 56 percent are women.

Awareness Among Women That Heart Disease Is Their Leading Cause of Death, By Ethnicity



Source: American Heart Association, 2004.

Awareness Among Women That Heart Disease Is Their Leading Cause of Death



Sources: Circulation, 2004; American Heart Association, 2004.

GENDER DIFFERENCES

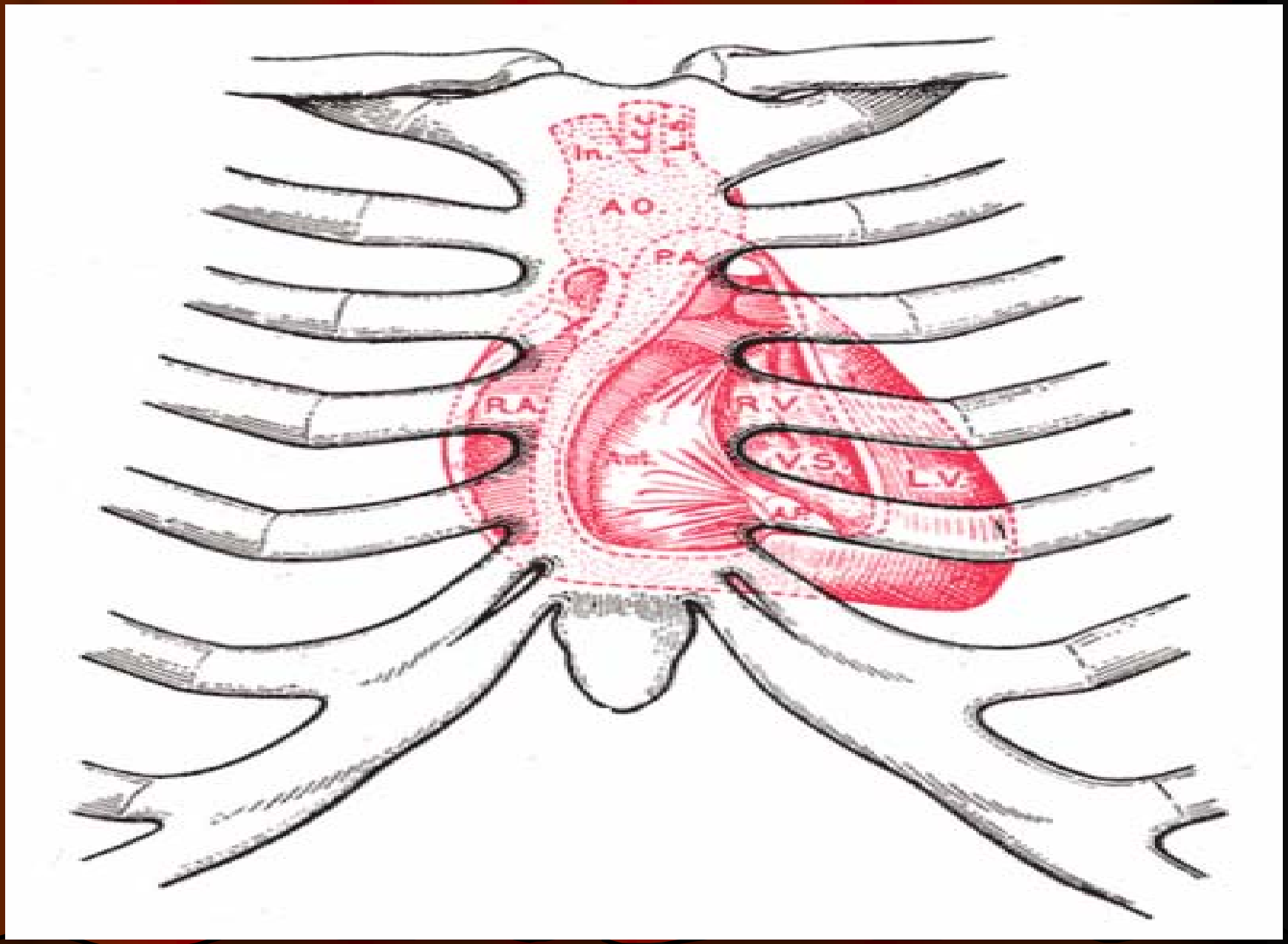
- Low blood levels of "good" cholesterol (HDL) appear to be a stronger predictor of heart disease death in women (esp; over-65 yrs)
- High levels of triglycerides (TG) may be an important risk factor in women and the elderly.
- Type 2 diabetes, seems to be an even stronger contributing risk factor for heart disease in women than in men.
- Diagnosis of heart disease presents a greater challenge in women than in men.
- More women than men die of stroke.

GENDER DIFFERENCES

FACTOR	MEN	WOMEN
Symptoms	Classic	Atypical
Age	>40	50/postmenapausal (10 yrs later than men)
Attitudes Chest pain	Heart attack	Indigestion/denial
Palpitaions	Heart attack	Anxiety/Depression
Sudden death Death in 1st yr of MI	48% 28%	60% 38%

GENDER DIFFERENCES

FACTOR	MEN	WOMEN
Heart Size	Larger	Smaller
Blood vessels	Larger	Narrower and easily blocked by plaque/clots
Precipitating event	Clots/plaques	Plaques are more unstable/likely to rupture. Plaques have more calcium/harder
Diagnostic tests	Stress tests are more specific.	High incidence of false positives. Stress ECHO or thallium recommended.
Angiograms	About 80% with clinical symptoms have blockages	ONLY 50%.Rest probably have micro-vascular disease.


In.
AO.
P.A.
R.A.
R.V.
V.S.
L.V.
A.P.

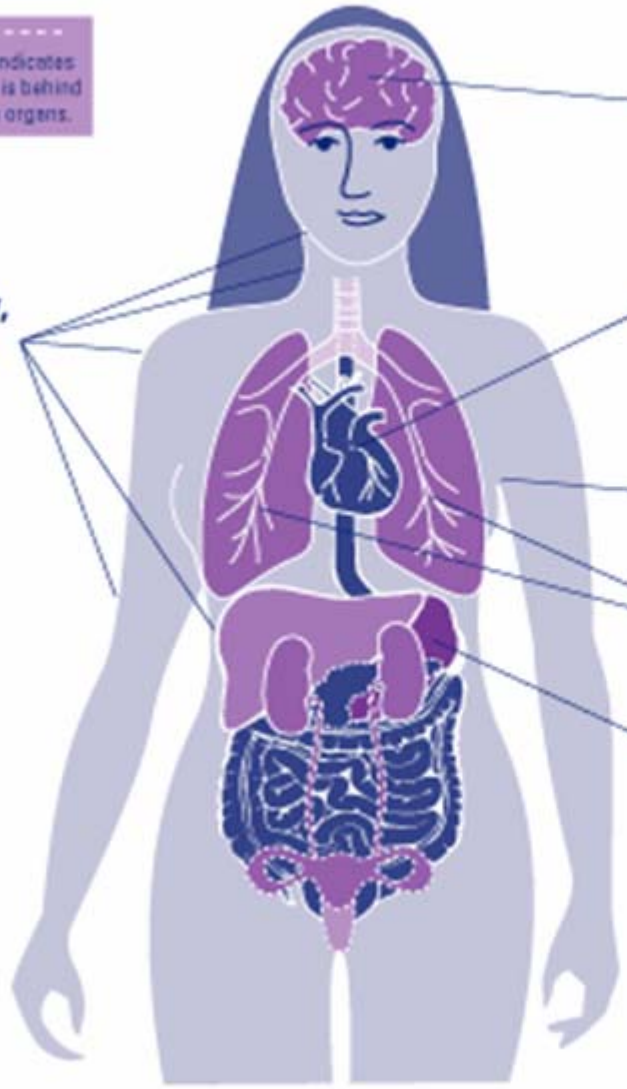
ATYPICAL CHEST PAIN

- Musculoskeletal conditions (36% of cases)
- Esophagus
  - Spasm
  - Gastro esophageal reflux disease (GERD).
  - Dysmotility
- Pulmonary
  - Bronco spasm
  - Pleuritis
- Cardiac
  - Angina
  - Vasospasm-Prinzmetal Angina, cocaine and amphetamines

CATASTROPHIC CHEST PAIN

- Acute coronary syndrome
- Aortic dissection
- Pulmonary embolism (PE)
- Esophageal rupture
- Pericarditis

Signs of a Heart Attack



Brain
anxiety, dizziness, trouble sleeping

Chest
chest pain, chest pressure, fullness or squeezing (lasts more than a few minutes or comes and goes)

Skin
cold sweat

Lungs
trouble breathing

Stomach
upset stomach, urge to throw up

Body
feel tired and weak

Arms, Back, Jaw, Shoulders, Neck
pain

EARLY WARNING SYMPTOMS

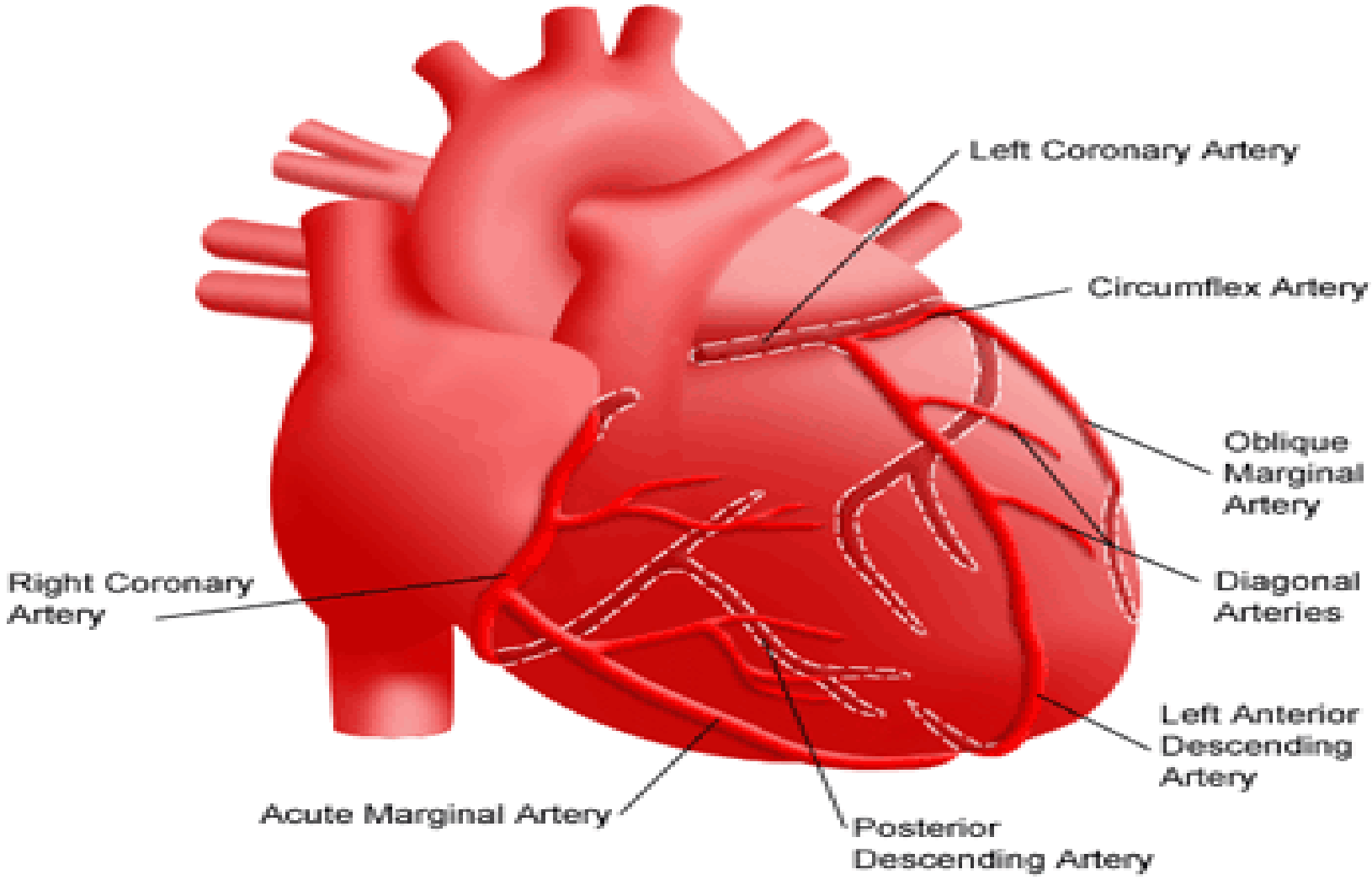
- Unusual fatigue
- Sleep disturbance
- Shortness of breath
- Indigestion
- Anxiety

SYMPTOMS

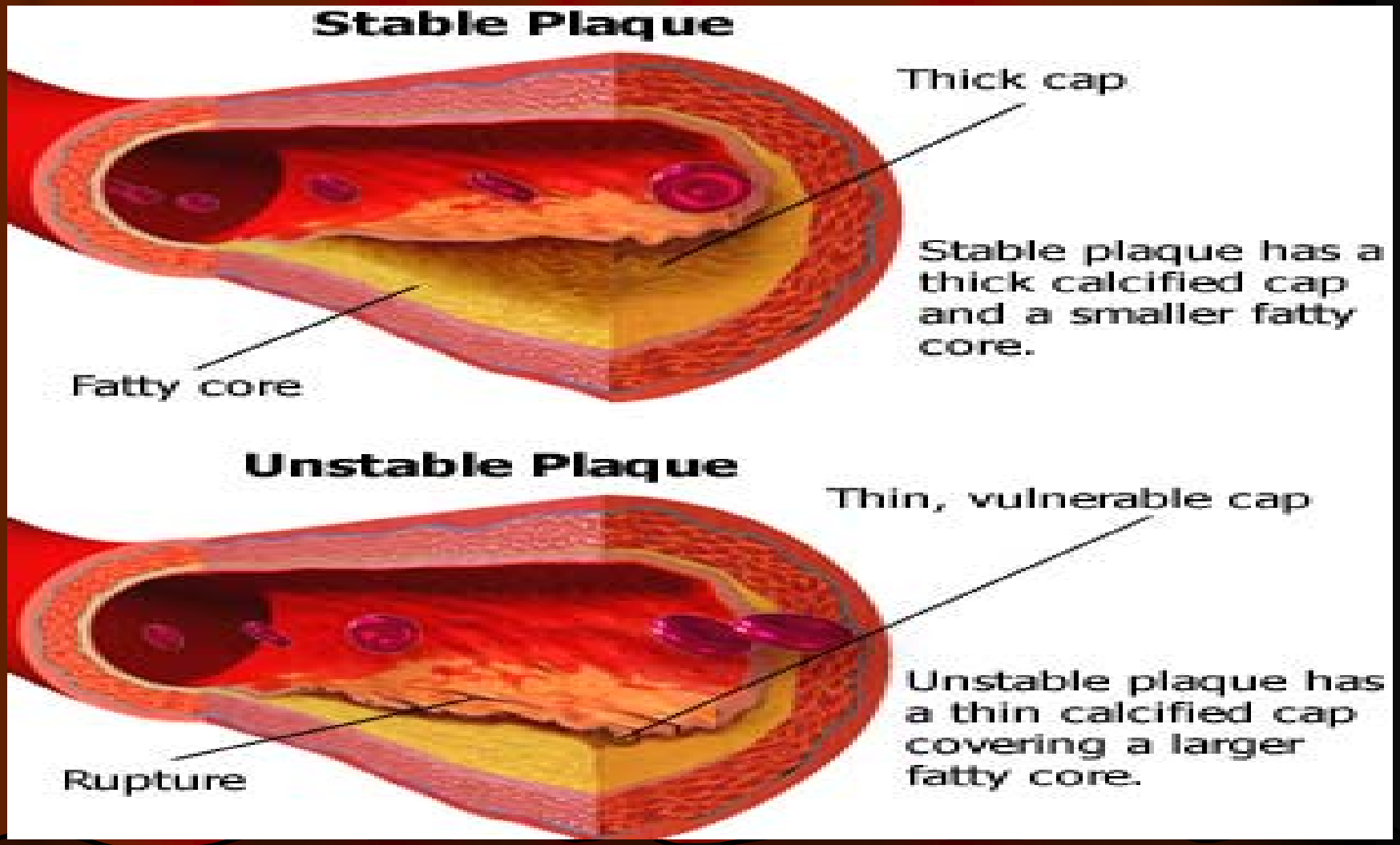
When experiencing a heart attack, women reported acute symptoms of:

- Shortness of breath
- Weakness
- Unusual fatigue
- Cold sweats
- Dizziness

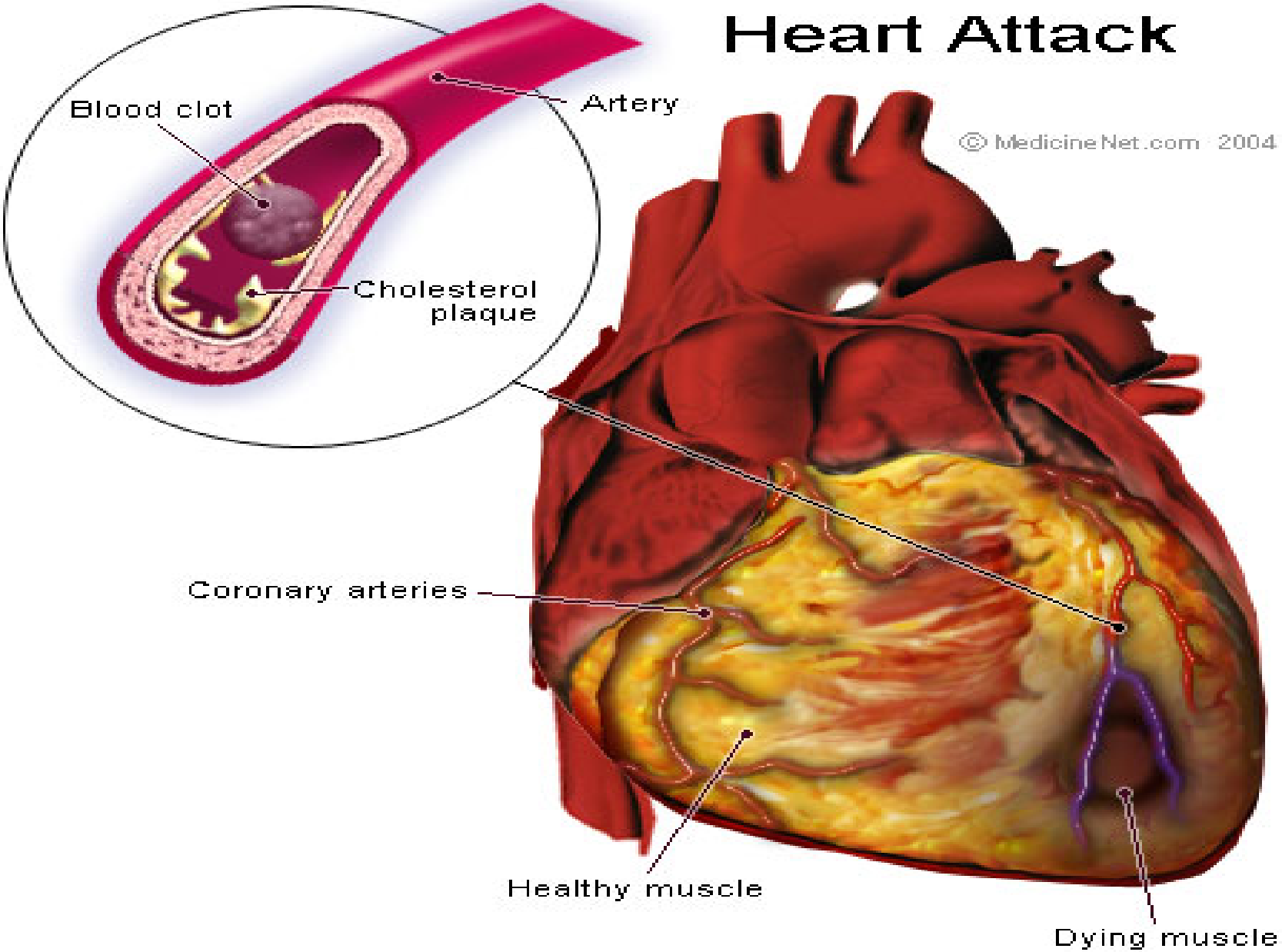
Coronary Arteries of the Heart



PATHOLOGY


Stable Plaque
Thick cap
Stable plaque has a thick calcified cap and a smaller fatty core.
Fatty core
Unstable Plaque
Thin, vulnerable cap
Unstable plaque has a thin calcified cap covering a larger fatty core.
Rupture

Heart Attack



CVD RISK FACTORS THAT CANNOT BE CHANGED

- INCREASING AGE:

  83% of people who die of coronary artery disease are 65 and older.

- HEREDITARY:

  1. Family history of heart disease.
  2. Race-African Americans ,Mexican Americans,native Hawaiins & some Asian Americans.

MAJOR MODIFIABLE RISK FACTORS

- Tobacco smoke
- High blood cholesterol
- High Blood Pressure
- Physical Inactivity
- Obesity and Overweight
- Diabetes Mellitus

(Stress and alcohol are other factors)

SMOKING

- Increased risk for atherosclerosis of the coronary, cerebral, and peripheral arteries.
- Endothelial cell dysfunction, lipid abnormalities, thrombosis, and the anti-estrogenic effect .
- Major risk factor for acute coronary thrombosis and sudden cardiac death
- Risk for acute coronary heart disease is about 2 times higher in smokers than in nonsmokers.

SMOKING

- The effect seems to be more pronounced (women < 45 years of age)
- Quantity of tobacco smoked.
- In younger women it is the predominant risk factor for sudden cardiac death .
- Associated with increased risk of stroke in both men and women.

Second- hand smoking

- Risk of death caused by ischemic heart disease in nonsmokers exposed to secondhand smoke is increased by approximately 30%.
- The effect seems to be dose related, and the detrimental effect may be greater on women than men .

SMOKING CESSATION

FDA has approved several medications to help you quit smoking:

- Bupropion SR (Zyban)—Available by prescription.
- Nicotine gum—Available over–the–counter.
- Nicotine inhaler—Available by prescription.
- Nicotine nasal spray—Available by prescription.
- Nicotine patch—Available by prescription and over-the-counter.
- Nicotine lozenge (Commit)—Available over–the–counter.
- Varenicline tartrate (Chantix) —Available by prescription.

See your health care provider for advice

SMOKING CESSATION IN WOMEN MAY BE ENHANCED BY OTHER MODALITIES THAN JUST A GRADED NICOTINE REDUCTION

LDL Cholesterol Levels

- Less than 100 mg/dL — Optimal
- 100 to 129 mg/dL — Near Optimal
- 130 to 159 mg/dL — Borderline High
- 160 to 189 mg/dL — High
- 190 mg/dL and above — Very High

LDL level at which to consider drug therapy

CATEGORIES	LDL LEVEL	GOALS
People without coronary heart disease and with fewer than two risk factors	190 mg/dL or higher	160 mg/dL or lower
People without coronary heart disease and with two or more risk factors	160 mg/dL or higher	130 mg/dL or lower
People with coronary heart disease	130 mg/dL or higher	100 mg/dL or lower

HDL cholesterol level

- In the average woman - 50 to 60 mg/dL.
- Low HDL - Less than 40 mg/dL
- Smoking, being overweight and being sedentary can all lower HDL cholesterol
- High blood triglycerides usually have lower HDL cholesterol and a higher risk of heart attack and stroke.
- Progesterone, anabolic steroids and male sex hormones (testosterone) also lower HDL .
- Female sex hormones raise HDL cholesterol

Triglyceride Level Classification

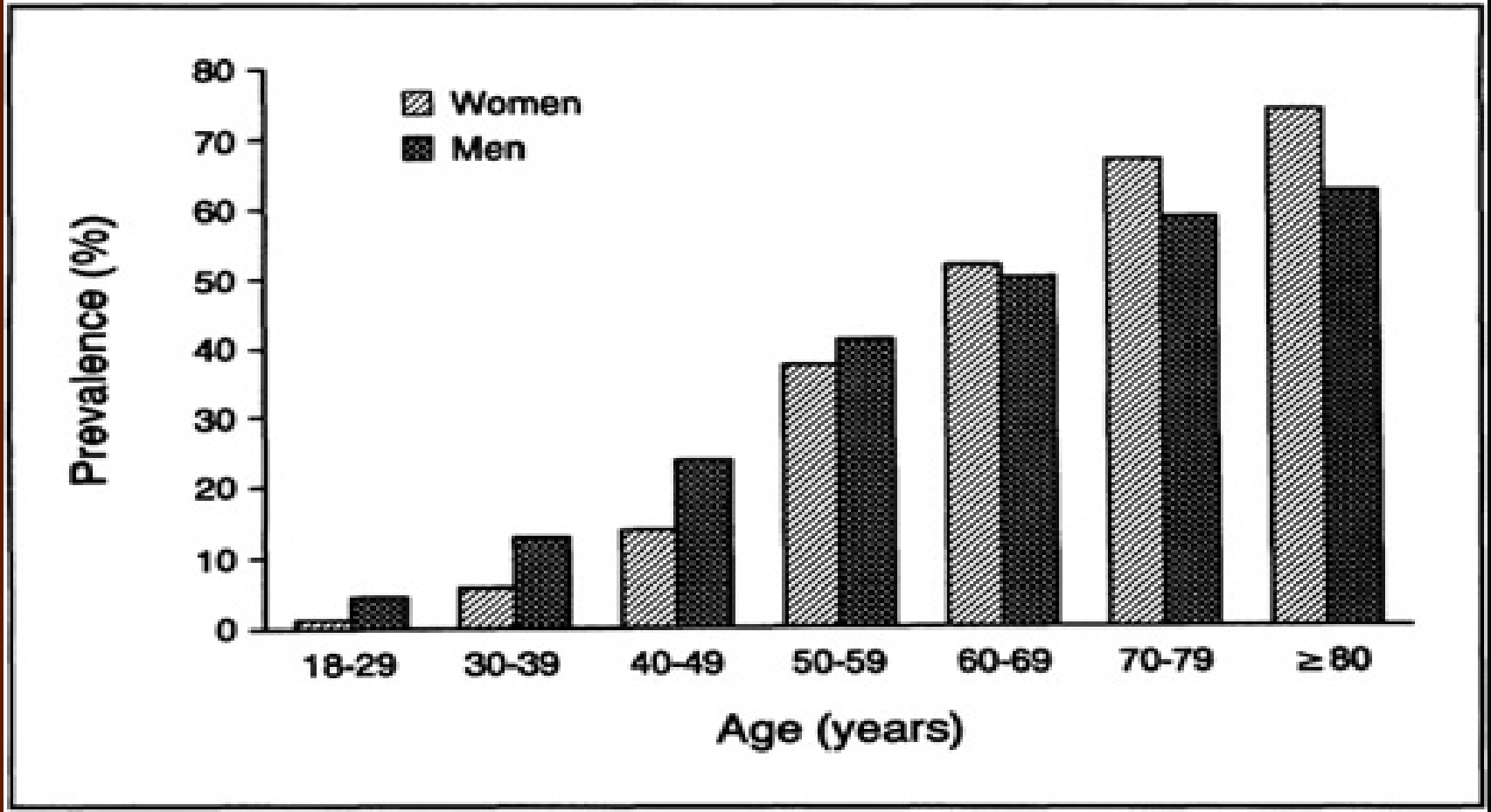
- Less than 150 mg/dl — Normal
- 150–199 mg/dL — Borderline high
- 200–499 mg/dL — High
- 500 mg/dL or higher — Very high

TRIGLYCERIDES

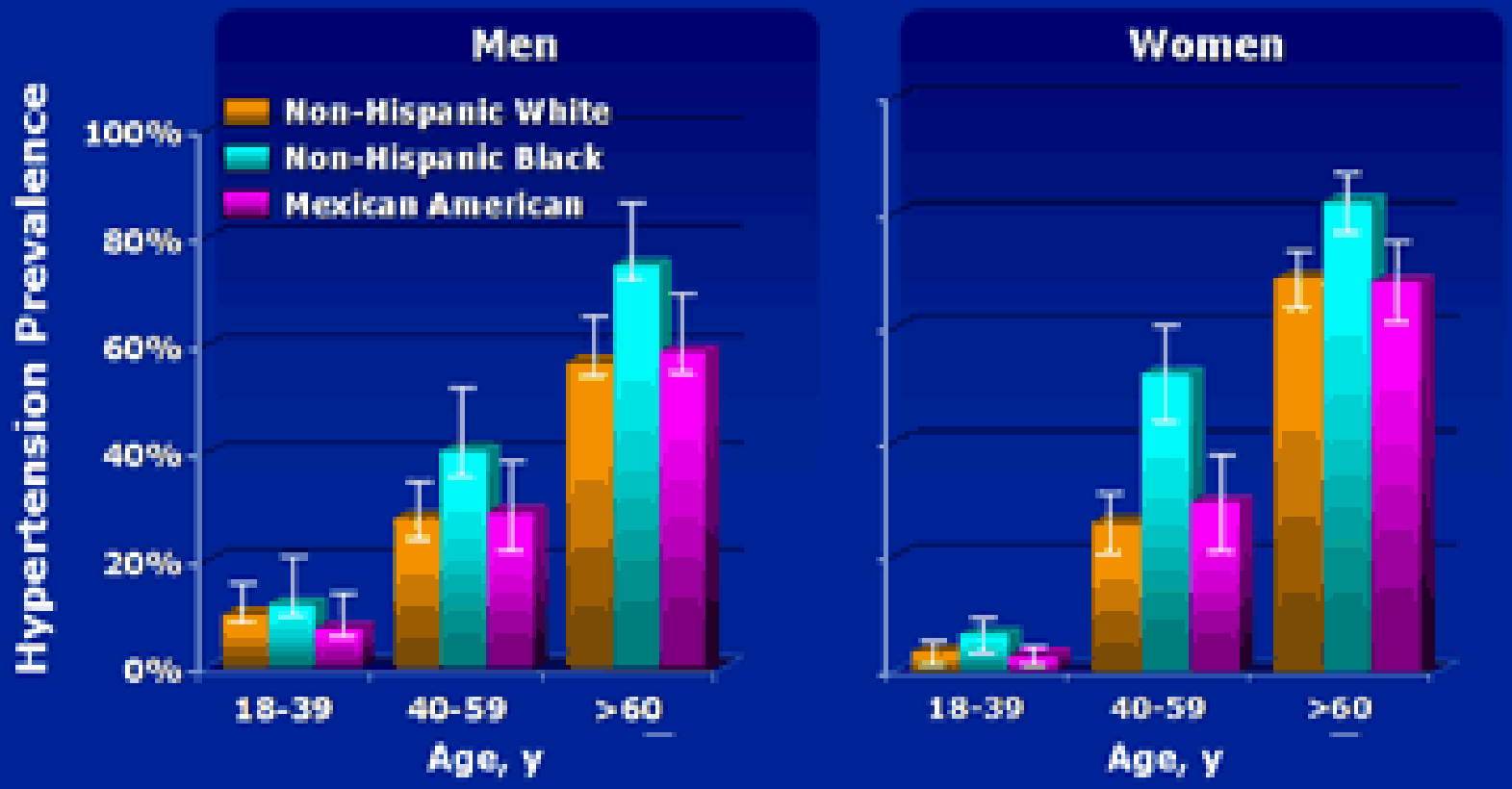
- High triglycerides indicates underlying diseases or genetic disorders.
- Weight control is key.
- Eating foods low in saturated fat, trans fat and cholesterol.
- Regular exercise, smoking cessation and decreasing alcohol consumption.

HYPERTENSION

- From the Mayo clinic proceedings



Hypertension Prevalence by Age and Race/Ethnicity in Men and Women



Based on NHANES 1999-2000.
Error bars indicate 95% confidence intervals. Data are weighted to the US population.

Hajjar I, Kotchen TA. JAMA. 2003;290:199-206.

Slide Source
Hypertension Online
www.hypertensiononline.org

Percent of Adults Aged 20 Years and Older With Hypertension or Taking Blood Pressure–Lowering Medication

All Women	30.6%
White	28.5%
African American	43.5%
Mexican American	27.9%

HYPERTENSION

- High blood pressure (Hypertension) is defined as systolic>140 and diastolic>90
- Normal blood pressure - less than 120 mmHg / 80 mmHg.
- Measured on at least 2 doctors visit
- Treated with both lifestyle modifications and medications.

BLOOD PRESSURE

Blood Pressure Categories	Ranges for Most Adults (systolic/diastolic mm Hg)
Optimal Blood Pressure	< 120/80
Pre-hypertension	<120 to 139/ 80 to 89
Mild HTN (Stage 1)	< 140 to 159/ 90 to 99
Moderate-Severe (Stage 2)	> 160/100

(NOTE: *139/89 or below should be the minimum goal for everyone. People with diabetes should strive for 130/80 or less.)*

EFFECTS OF HTN

- Stroke
- Mental Problems and Dementia
- Heart Disease
- Kidney Disease
- Retinopathy.
- Bone Loss
- Sexual Dysfunction

BODY MASS INDEX

- Body Mass Index (BMI) is a number calculated from a person's weight and height .
- Formula: weight (lb) / [height (in)]$_2$ x 703
- At the same BMI, women tend to have more body fat than men.

BODY MASS INDEX

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

Overweight and Obesity

Increased risk for many diseases including the following:

- Hypertension
- Dyslipidemia
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and respiratory problems
- Some cancers (endometrial, breast, and colon)

Clinical Identification of the Metabolic Syndrome

Measure (any 3 of 5 constitute diagnosis of metabolic syndrome)	Categorical cutpoints
Elevated waist circumference Men Women	Waist circumference ≥102 cm (≥40 in) ≥88 cm (>35 in)
Elevated triglycerides	≥150 mg/dL
Reduced HDL-C Men Women	<40 mg/dL <50 mg/dL
Elevated blood pressure	≥130/85 mmHg
Elevated fasting glucose	≥100 mg/dL

From: Circulation 2005;112:2735-2752

Weight and Cardiovascular Disease

- 30% of women >20 are overweight.
  Nearly 33% are obese.
- Minority women > 75% are overweight or obese.
- A 5-10% weight loss can improve cardiovascular risk factors.(HTN, Diabetes lipid profile etc)

EXERCISE

- All adults should set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity physical activity on most, and preferably all, days of the week.

ASSESS YOUR CARDIAC RISK

AHA GUIDELINES

ALOHA – SAY FAREWELL TO HEART DISEASE

ASSESS	**A**nd stratify women into risk categories**.**
LIFESTYLE	**M**odifications and changes
OTHER	Interventions should be prioritized according to risk categories and strength of the recommendation
HIGHEST	priority for risk intervention in clinical practice is based on risk stratification.

How Do I Estimate My Risk of Developing Heart Disease?

- Women are stratified into 3 groups
- Based on Framingham Risk Score and clinical diagnosis
- Risk is calculated based on the absolute probability of a having an acute coronary event in a 10 yr period
- Once categorized the AHA has specific recommendations.

Calculate 10-Year Risk for CHD Using the Framingham Risk Calculator (women)

Age	
Years	Points
20–34	–7
35–39	–3
40–44	0
45–49	3
50–54	6
55–59	8
60–64	10
65–69	12
70–74	14
75–79	16

Total Cholesterol (mg/dL)	Age (years) 20–39	40–49	50–59	60–69	70–79
<160	0	0	0	0	0
160–199	4	3	2	1	0
200–239	8	6	4	2	1
240–279	11	8	5	3	2
≥280	13	10	7	4	2
Cigarette Smoking					
Nonsmoker	0	0	0	0	0
Smoker	9	7	4	2	1

	Systolic Blood Pressure Untreated	Treated
<120	0	0
120–129	1	3
130–139	2	4
140–159	3	5
≥160	4	6

HDL-C (mg/dL)	Points
>60	–1
50–59	0
40–49	1
<40	2

Score = 4

Risk = <1%

CHD Risk	
Pts	10-y Risk (%)
<9	<1
9	1
10	1
11	1
12	1
13	2
14	2
15	3
16	4
17	5
18	6
19	8
20	11
21	14
22	17
23	22
24	27
≥25	≥30

NCEP 2001

CVD RISK GROUPS

RISK GROUP	10 YR ABSOLUTE RISK	CLINICAL FACTORS (additional)
High risk	>20%	CVA,PVD,AAA DM,CRF,CVD.
Intermediate risk	10-20%	First degree relatives with heart disease, metabolic syndrome etc
Lower risk	<10%	Eg; 1 risk factor

SETTING GOALS

FACTOR	GOAL
Total cholesterol	<200mg/dl
LDL(bad cholesterol)	<130mg/dl < 100 for diabetics,CVD
HDL ("Good") Cholesterol	>50 mg/dl
Triglycerides	<150 mg/dL
Blood Pressure	<120/80mmHg
Fasting Glucose	<100 mg/dL
Body Mass Index (BMI) Waist Circumference	<25 Kg/m² <35inches

AHA Guidelines: CV Prevention in Women

High-risk women (>20% risk)

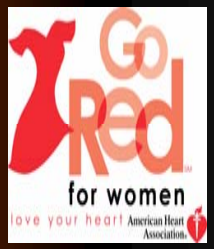
- **Class I recommendations**
  - **Smoking cessation**
  - **Physical activity/cardiac rehabilitation**
  - **Diet therapy**
  - **Weight maintenance/reduction**
  - **Blood pressure control**
  - **Lipid control/statin therapy**
  - **Aspirin therapy**
  - **Beta-blocker therapy**
  - **ACE inhibitor therapy (ARBs if contraindicated)**
  - **Glycemic control in diabetes**

AHA Guidelines: CV Prevention in Women

<u>High-risk women (>20% risk) (cont'd.)</u>

- **Class IIa recommendation**
  - **Evaluate/treat for depression**
- **Class IIb recommendations**
  - **Omega-3 fatty-acid supplementation**
  - **Folic acid supplementation**

AHA Guidelines: CV Prevention in Women



Intermediate-risk women (10% to 20% risk)

- **Class I recommendations:**
  - **Smoking cessation**
  - **Physical activity**
  - **Heart-healthy diet**
  - **Weight maintenance/reduction**
  - **Blood pressure control**
  - **Lipid control**
- **Class IIa recommendations:**
  - **Aspirin therapy**

AHA Guidelines: CV Prevention in Women

Lower-risk women (<10% risk)

- Class I recommendations:
  - Smoking cessation
  - Physical activity
  - Heart-healthy diet
  - Weight maintenance/reduction
  - Treat individual CVD risk factors as indicated

Estrogen plus progesterone

WHI STUDY (STOPPED IN 5.2 YRS)	**Risk**
Thromboembolism	Increased in 1yr
Cardiac Ischemic events	Increased in 1yr Remained high in 5yrs
Memory	Decreased
Breast Cancer	1-3 yrs-No increase Increased > 3yrs

Estrogen plus progesterone

BENEFITS

- Useful in short term, low dose amounts for relief of severe menopausal symptoms.
- Improved sleep.
- Improved osteoporosis.
- Decreased Colon Cancer
- Decreased genitourinary symptoms.

Estrogen

- Risks
  Increased thromboembolic events.
  Increased stroke.
  Increased Cancer of the Uterus

- No effect on heart disease ,breast cancer, memory or colon cancer.

- Benefits
  Osteoporosis improved.
  Improved menopausal symptoms

HORMONES AND HEART DISEASE

Class III Interventions (Not useful/maybe harmful)

- Hormone therapy

Combined estrogen plus progestin hormone therapy <u>should not be initiated to prevent CVD in postmenopausal women.</u>

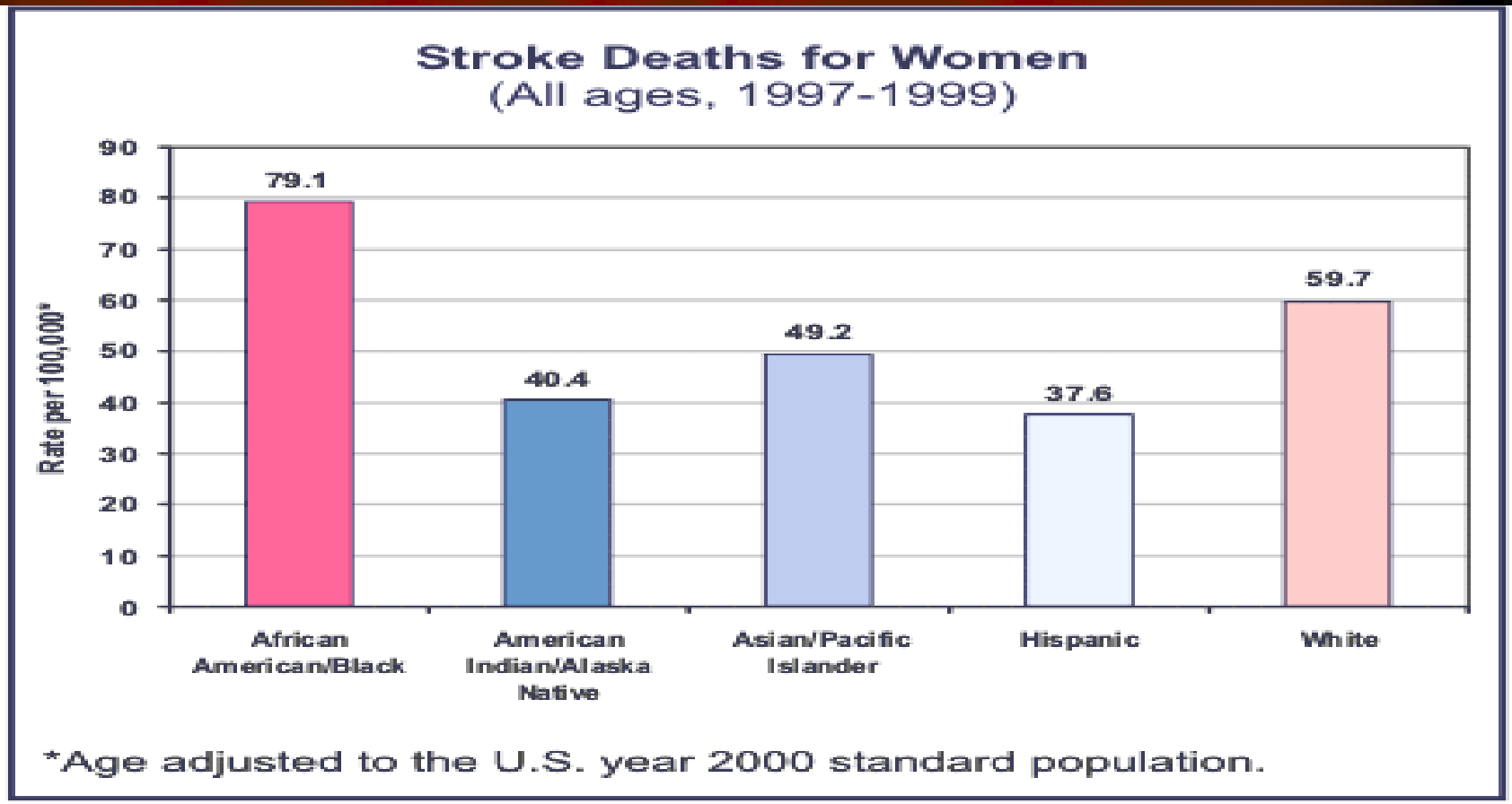
Combined estrogen plus progestin hormone therapy should <u>not be continued to prevent CVD in postmenopausal women.</u>

Other forms of menopausal hormone therapy (e.g., unopposed estrogen) should not be initiated or continued to prevent CVD in postmenopausal women pending the results of ongoing triaLS.

HEART DISEASE AND STROKE

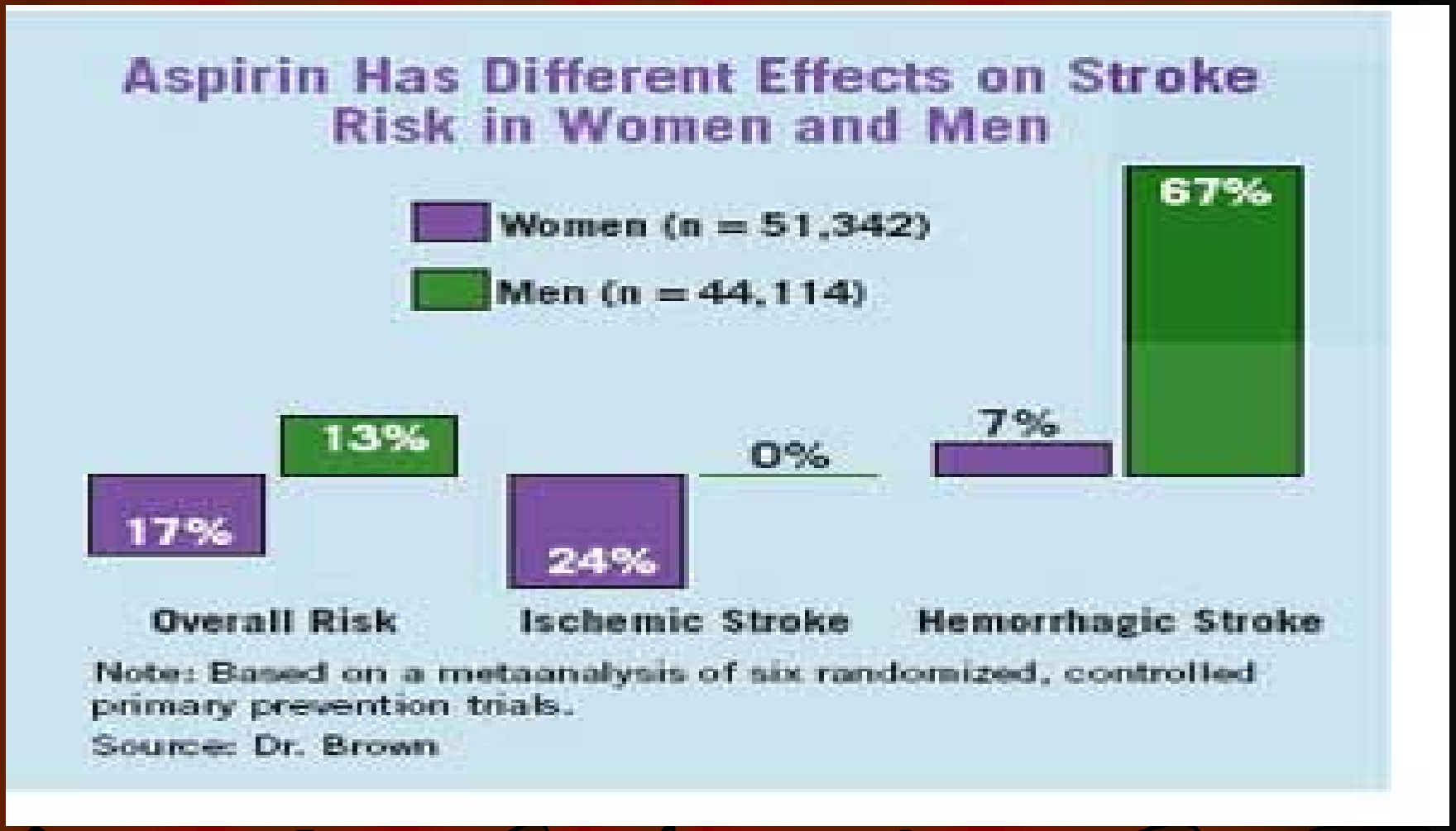
- Common risk factors; high blood pressure, atherosclerosis and diabetes.
- Risk is increased during surgical procedures involving the coronary arteries, including coronary bypass operations (2% to 5%) and angioplasty.
- Anti-clotting drugs used for treatment of heart disease slightly increase the risk for hemorrhagic **stroke**.
- A heart attack itself poses a high risk for **stroke ;**
  2.5% in the first six months
  5% per year thereafter.
- Patients with a higher risk tended to be older (over age 75), African American, history of a previous **stroke**, atrial fibrillation, HTN, diabetes, or peripheral artery disease.

STROKE



SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, *Healthy Women: State Trends in Health and Mortality*.

ASPRIN


Aspirin Has Different Effects on Stroke Risk in Women and Men
Women (n = 51,342)
Men (n = 44,114)
17%
13%
24%
0%
7%
67%
Overall Risk
Ischemic Stroke
Hemorrhagic Stroke
Note: Based on a metaanalysis of six randomized, controlled primary prevention trials.
Source: Dr. Brown

UPDATED 2007 GUIDELINES

- Weight loss or maintenance
  Minimum of 60–90 minutes of moderate-intensity activity (e.g., brisk walking) on most, and preferably all, days of the week.
- Reduce saturated fat intake to less than 7 percent of calories if possible.
- Omega-3 fatty acid - fish at least twice a week, a capsule supplement of 850-1000 mg of EPA (eicosapentaenoic acid)
- DHA (docosahexaenoic acid) in women with heart disease, / 2 to 4 grams for women with high triglycerides.

UPDATED 2007 GUIDELINES

- Hormone replacement therapy ,folic acid, Vitamin E,C, Beta-carotene not recommended for primary prevention.
- Low dose aspirin therapy may be considered in women age 65 or older regardless of CVD risk status (if benefits are likely to outweigh other risks).
- Upper dosage of aspirin for high-risk women increases to 325 mg per day.
- Reduce LDL cholesterol to less than 70 mg/dL in very high-risk women with heart disease.

WOMEN AND HEART DISEASE

Protect your heart