Heart of the Matter: Boosting Cardiac Wellness in the Legal Community

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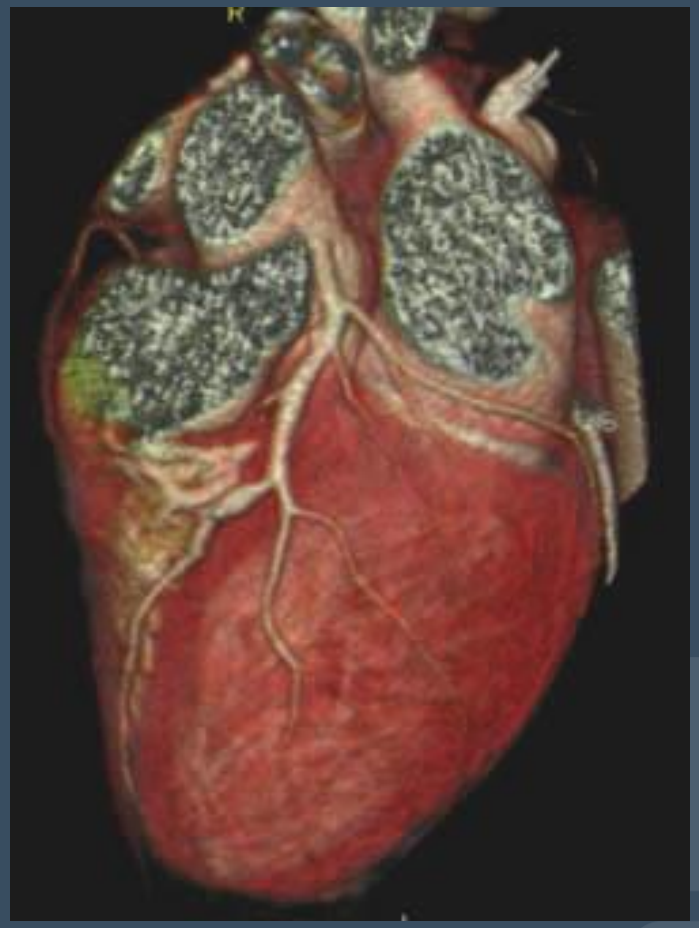
Introduction to Cardiology

Aspects of Heart Function

Heart Systems

- “Pump”
  - Musculature
  - Valves
- “Plumbing”
  - Coronary arteries
- “Electrical”
  - Conducting tissue



Normal Heart Anatomy

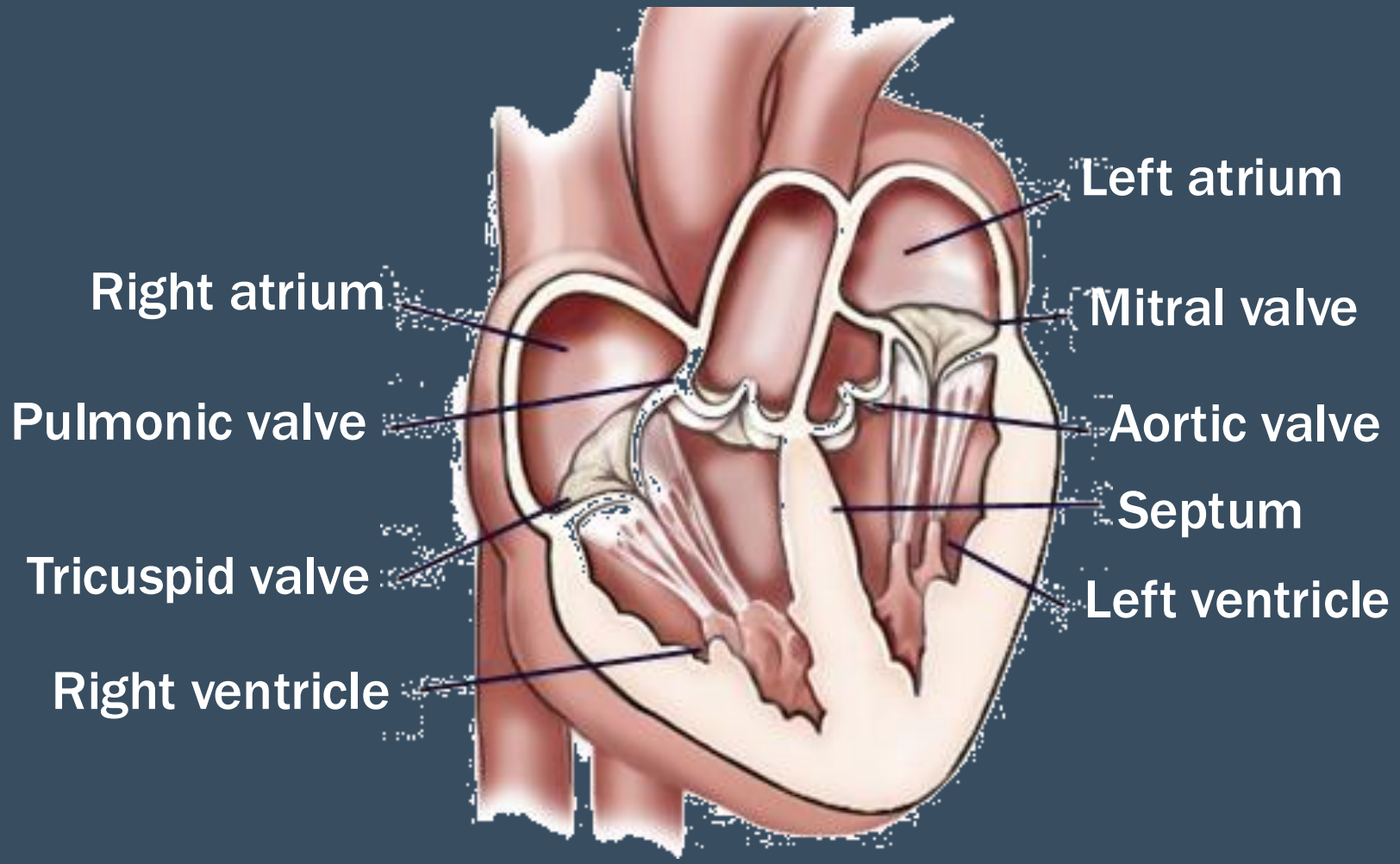
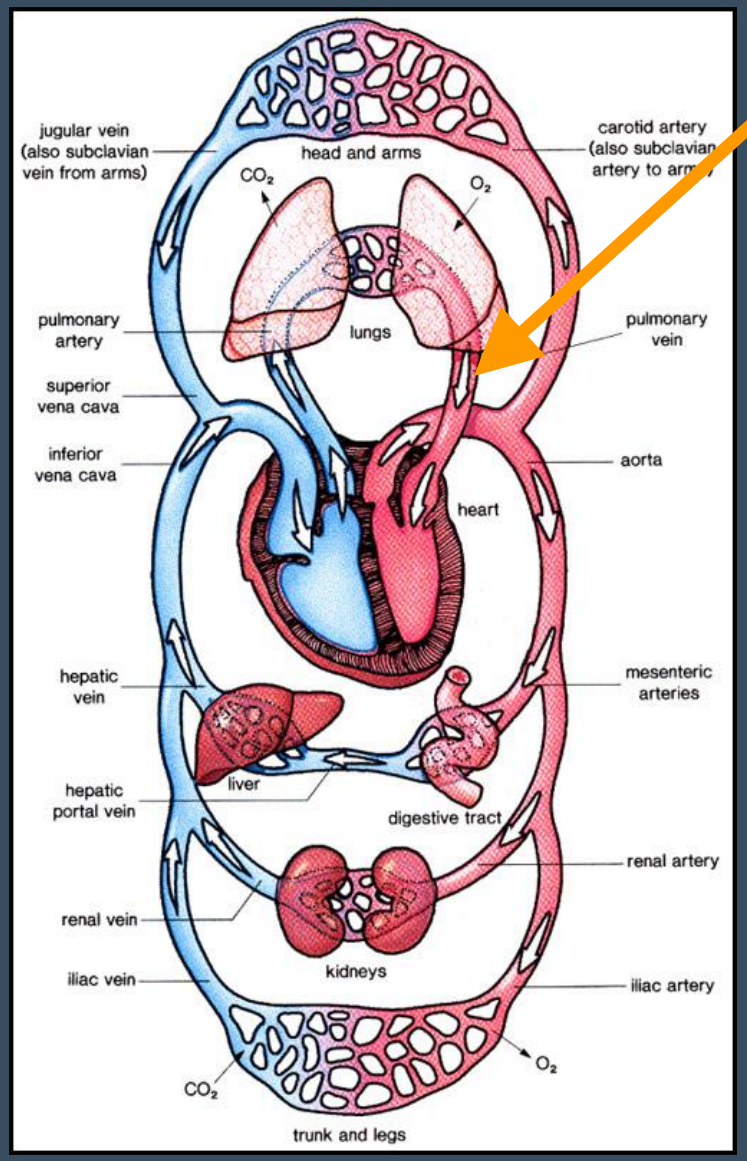
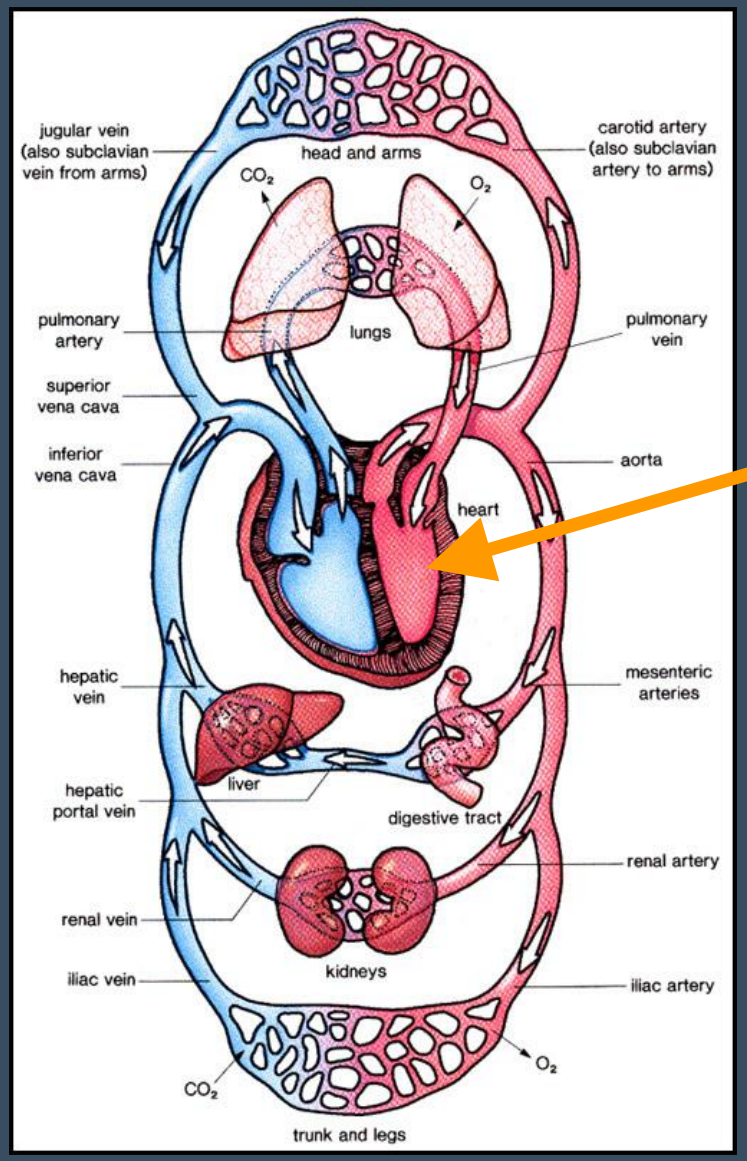


Image courtesy of www.clevelandclinic.org



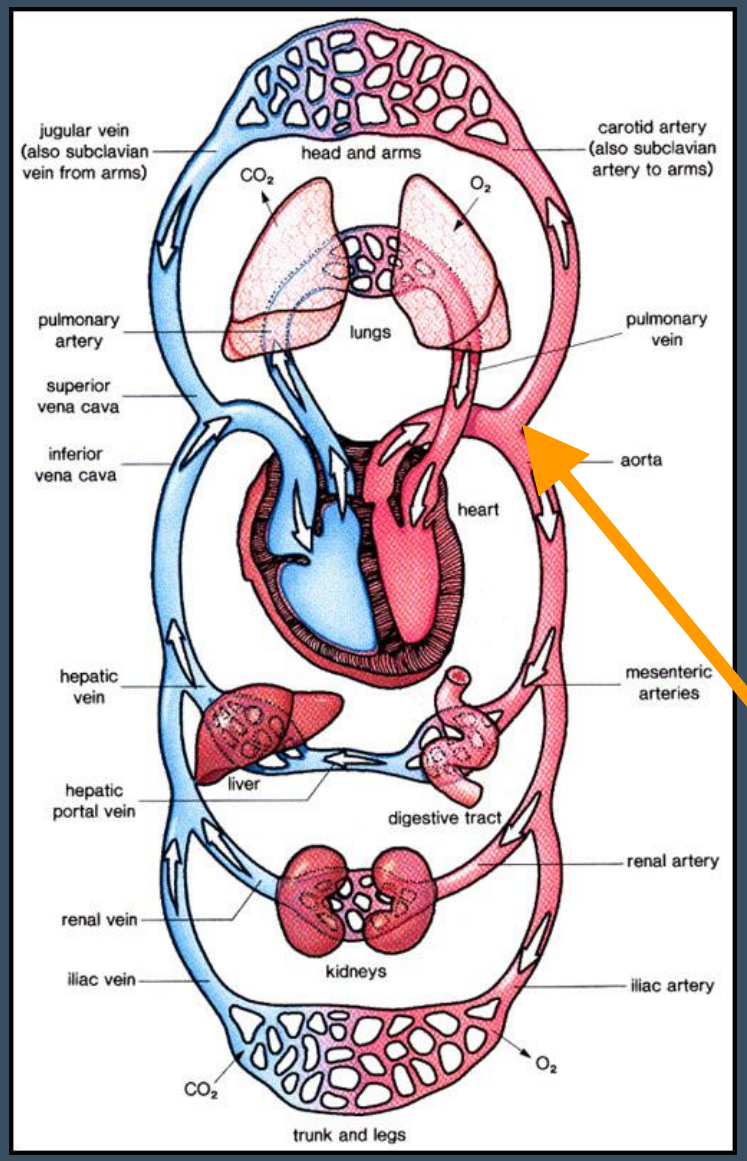
1. Blood saturates with oxygen from the lungs and returns to the heart (left atrium)

Image courtesy of teachnet.ie



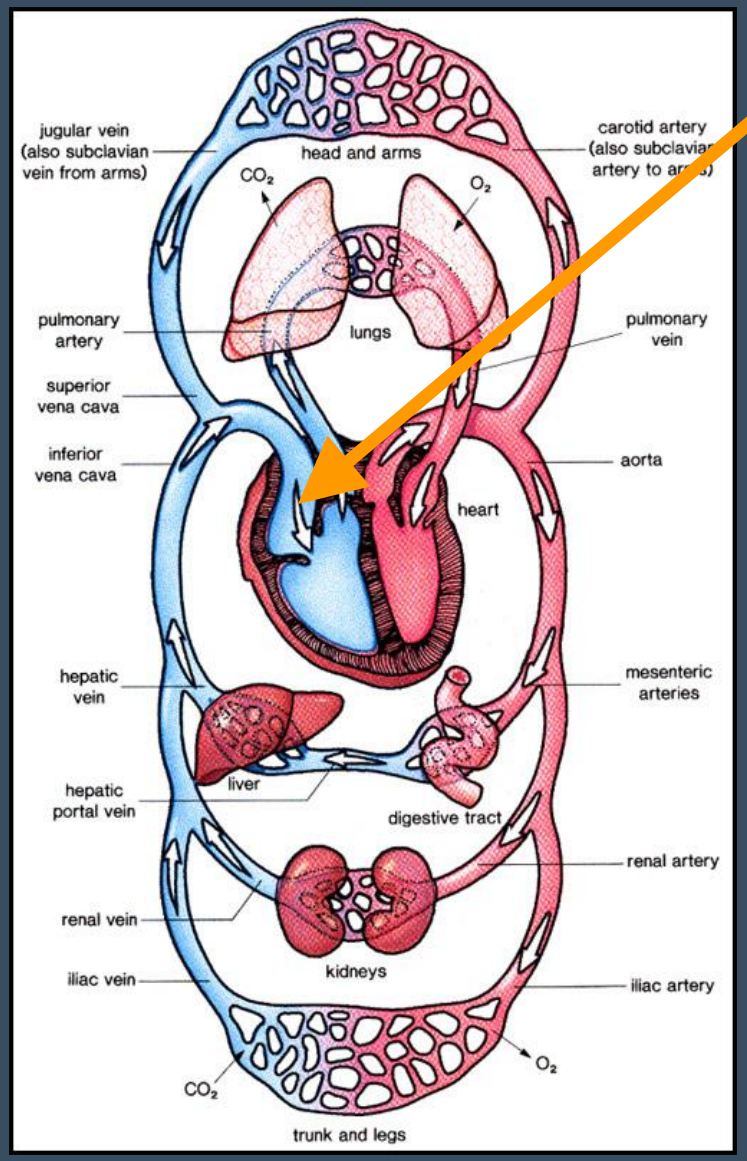
1. Blood saturates with oxygen from the lungs and returns to the heart (left atrium)
2. Blood passes to the main pumping chamber (left ventricle)

Image courtesy of teachnet.ie



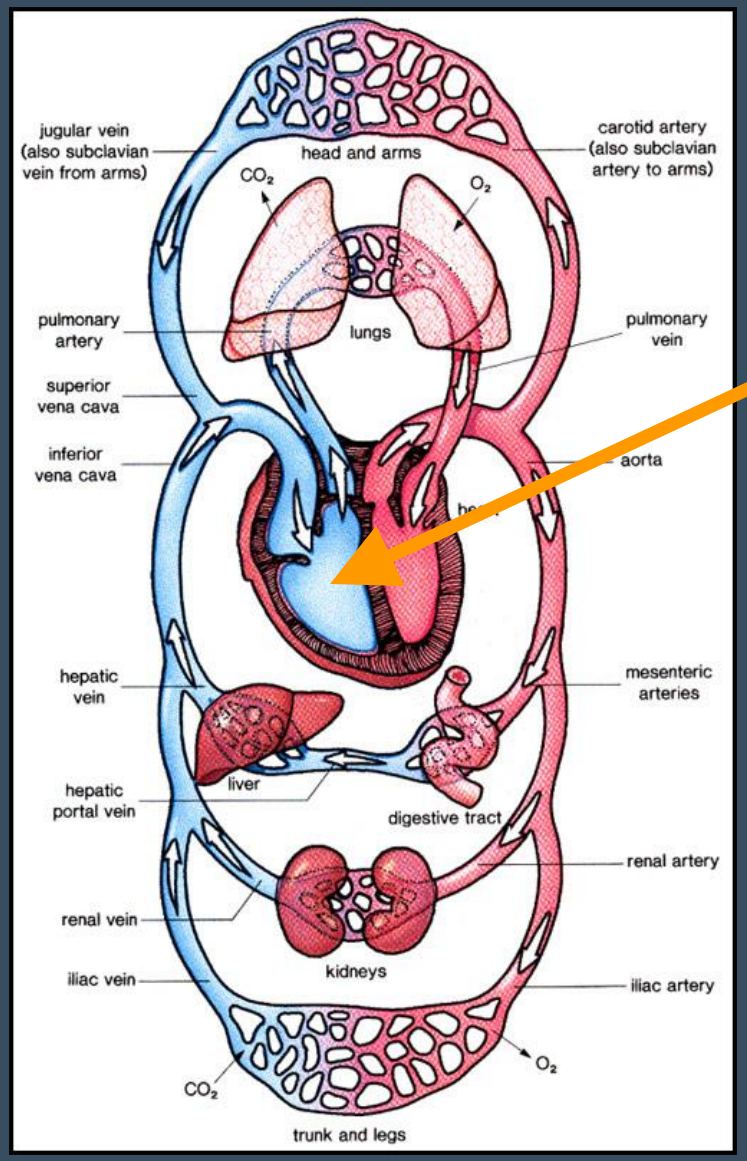
1. Blood saturates with oxygen from the lungs and returns to the heart (left atrium)
2. Blood passes to the main pumping chamber (left ventricle)
3. Blood is pumped out to the other organs through the arteries and delivers oxygen

Image courtesy of teachnet.ie



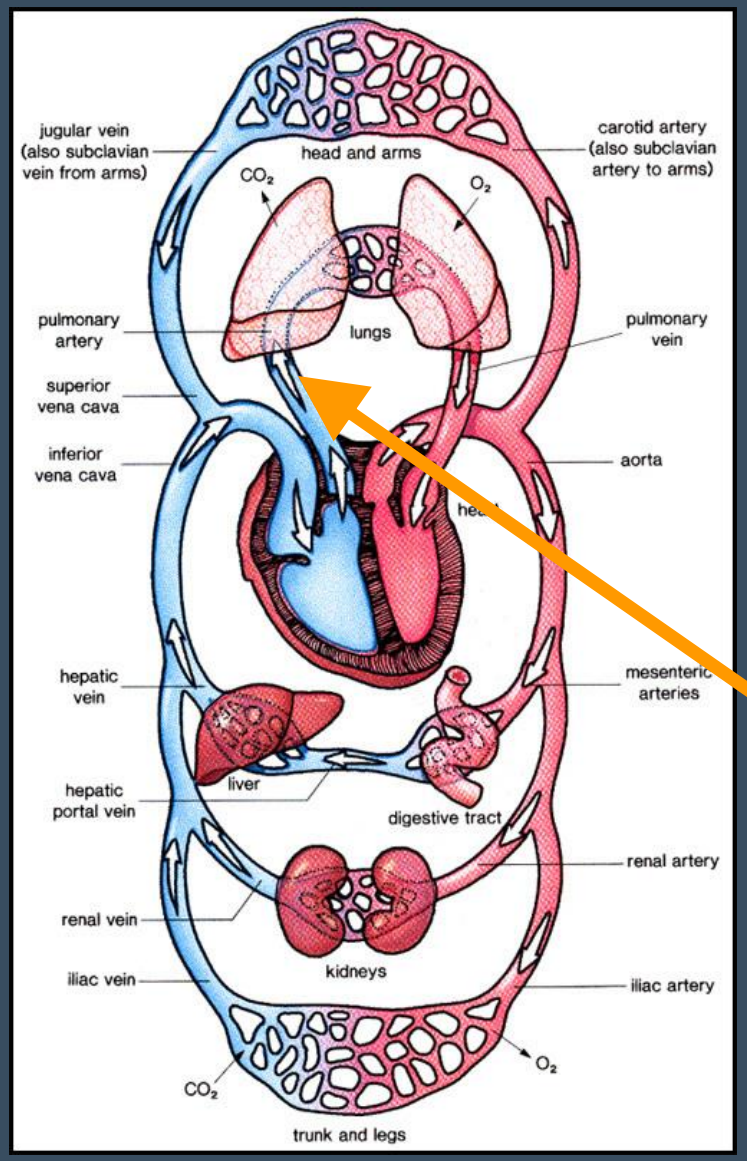
4. Blood returns from the organs to the heart (right atrium)

Image courtesy of teachnet.ie



4. Blood returns from the organs to the heart (right atrium)
5. Blood passes to the secondary pumping chamber (right ventricle)

Image courtesy of teachnet.ie



4. Blood returns from the organs to the heart (right atrium)
5. Blood passes to the secondary pumping chamber (right ventricle)
6. Blood is pumped back to the lungs to refill with oxygen

Image courtesy of teachnet.ie

Coronary Arteries

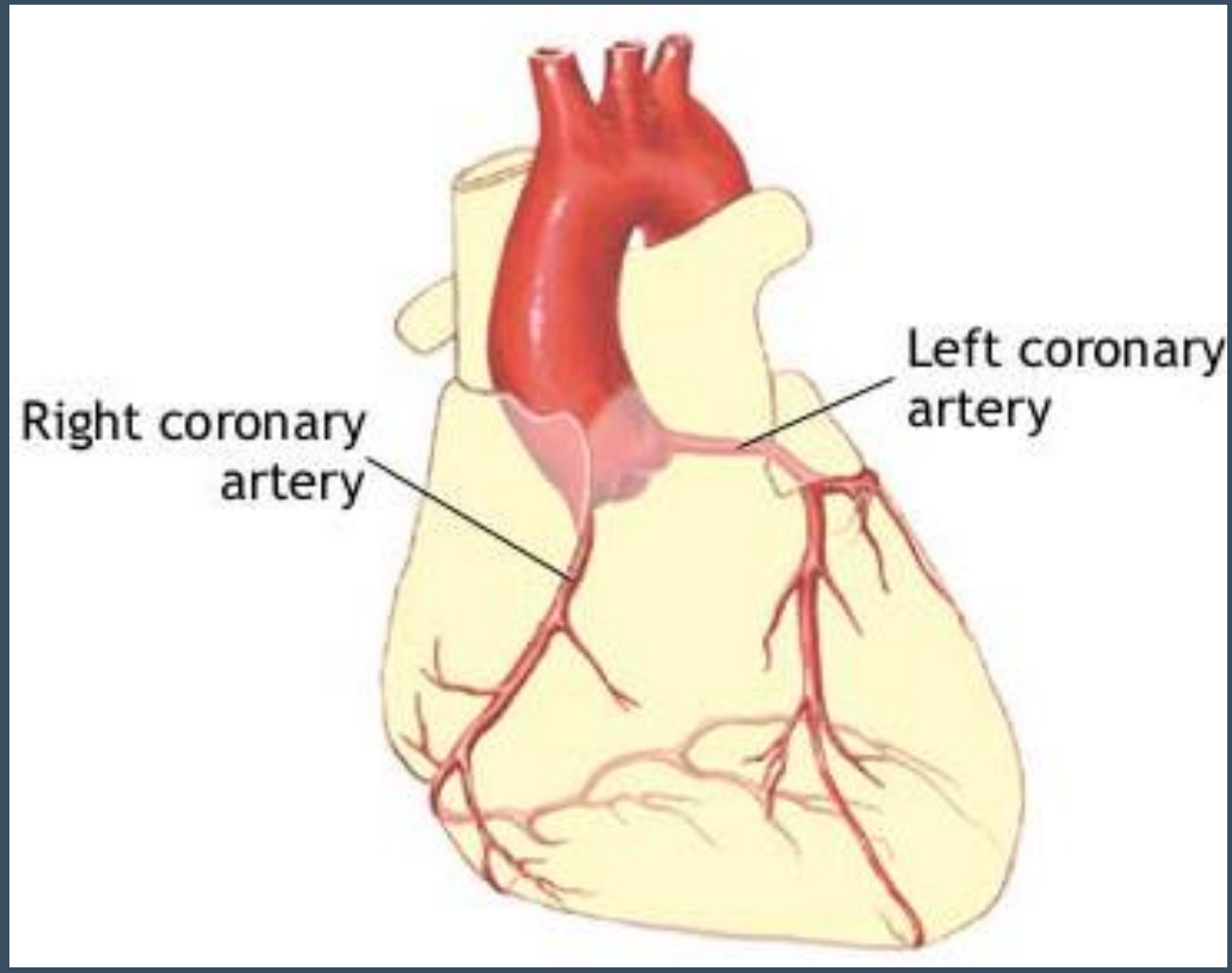
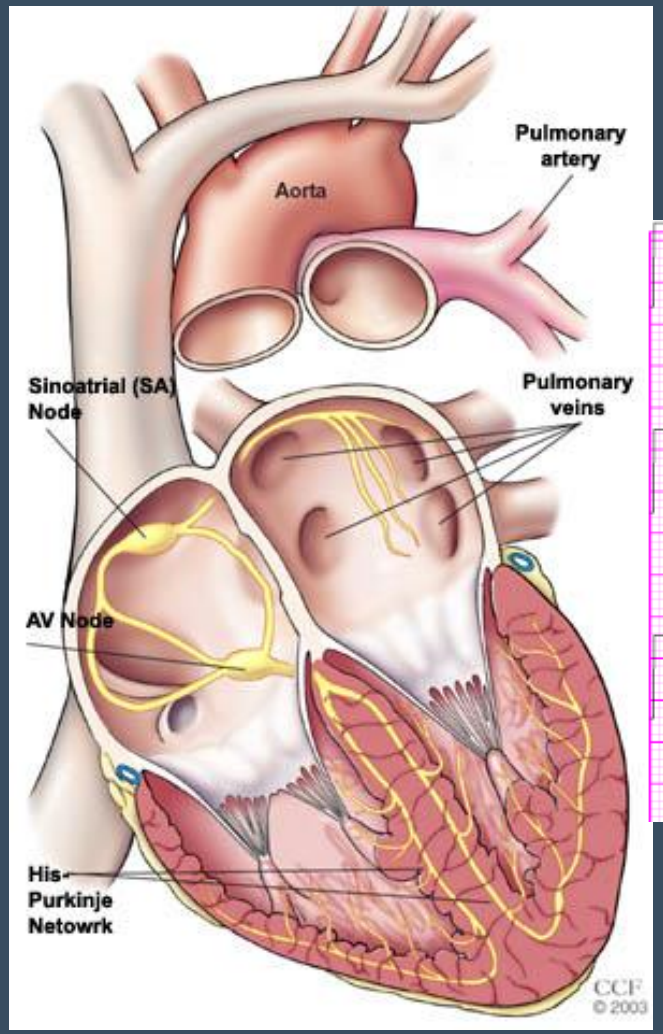


Image courtesy of www.nlm.nih.gov

Electrical System of the Heart



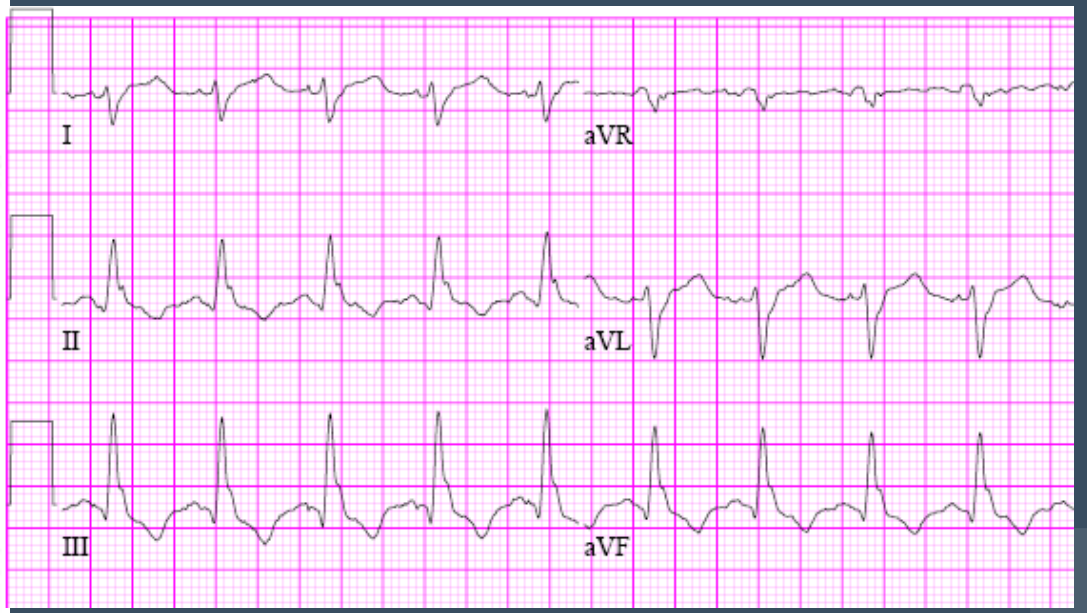


Image courtesy of www.clevelandclinic.org

Heart Disease

Scope and At-Risk Populations

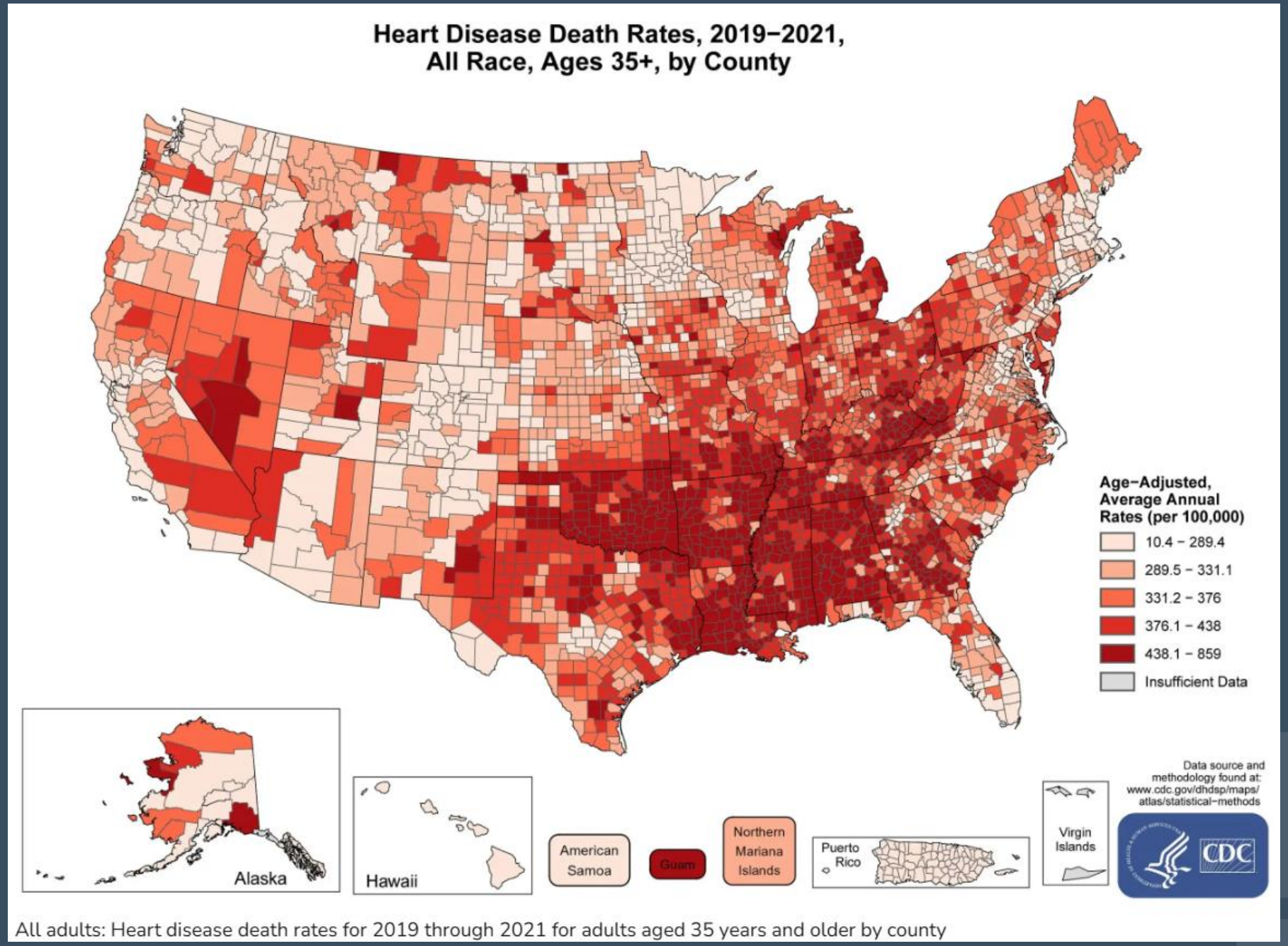


Image courtesy of www.cdc.gov

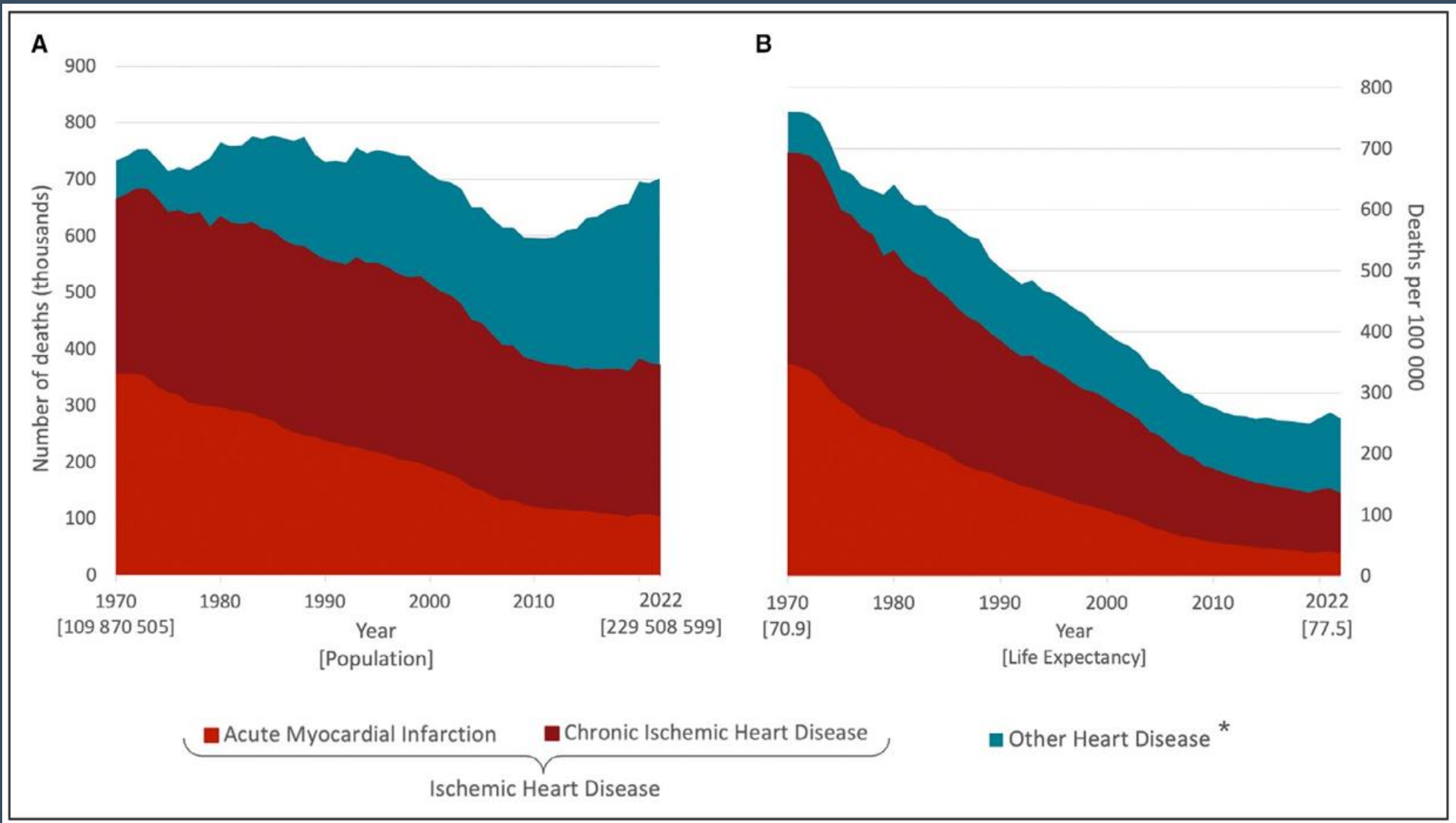


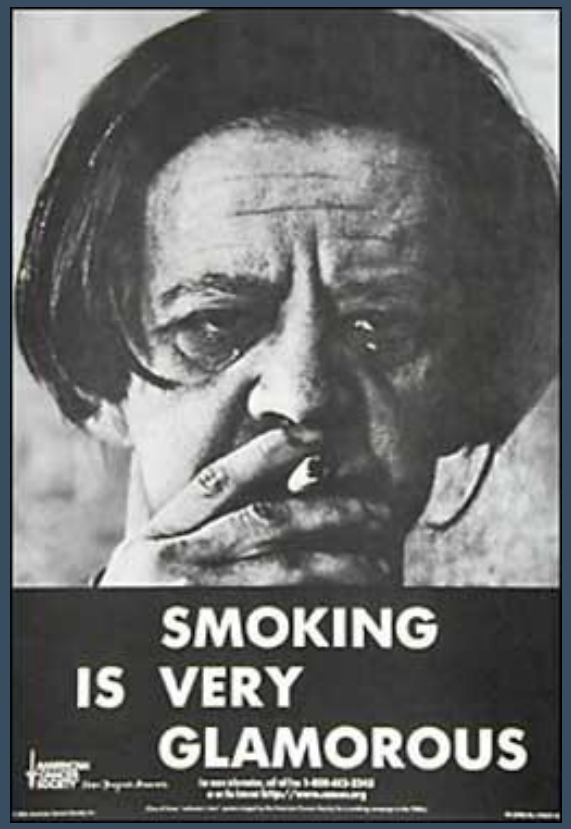
Figure 1. Absolute and age-adjusted mortality for ischemic and other heart disease in the United States, 1970 to 2022.
Absolute (**A**) and age-adjusted (**B**) mortality for ischemic heart disease (acute myocardial infarction in bright red, chronic ischemic heart disease in dark red) and other heart disease (blue) from 1970 to 2022 in the United States. * See Figure 2 for other heart disease subtypes.

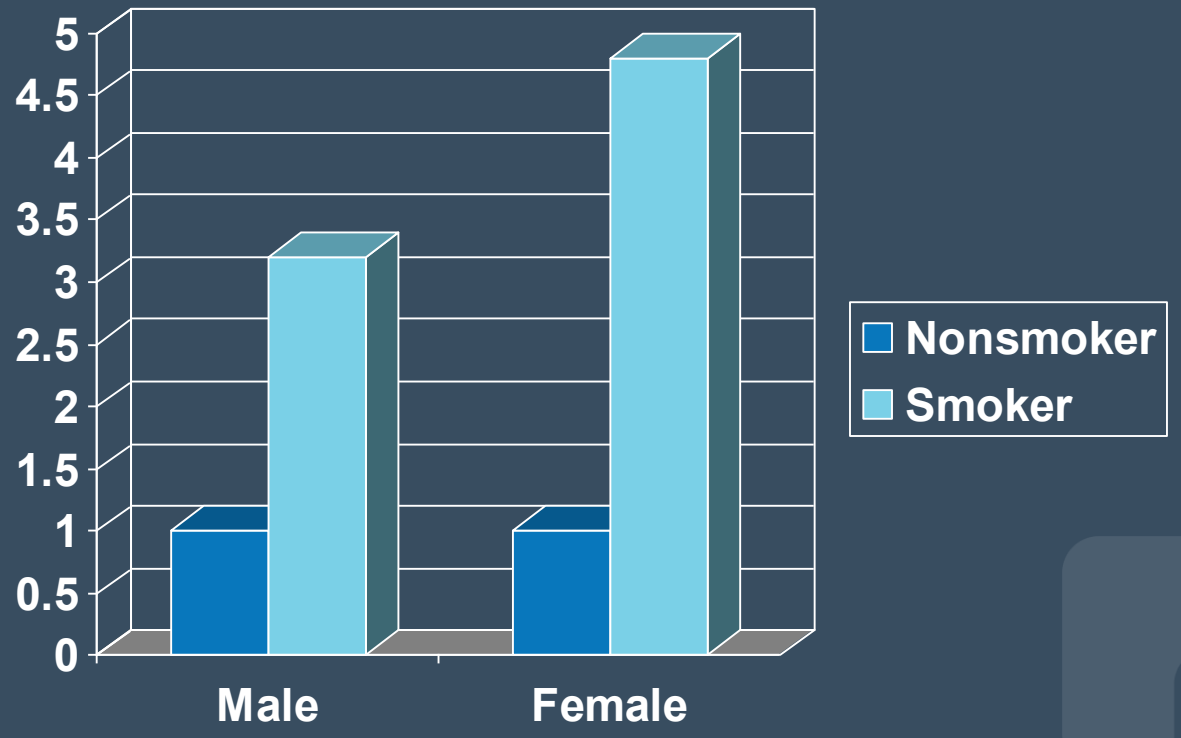
King SJ et al, J Am Heart Assoc. 2025

Risk Factors for Heart Disease

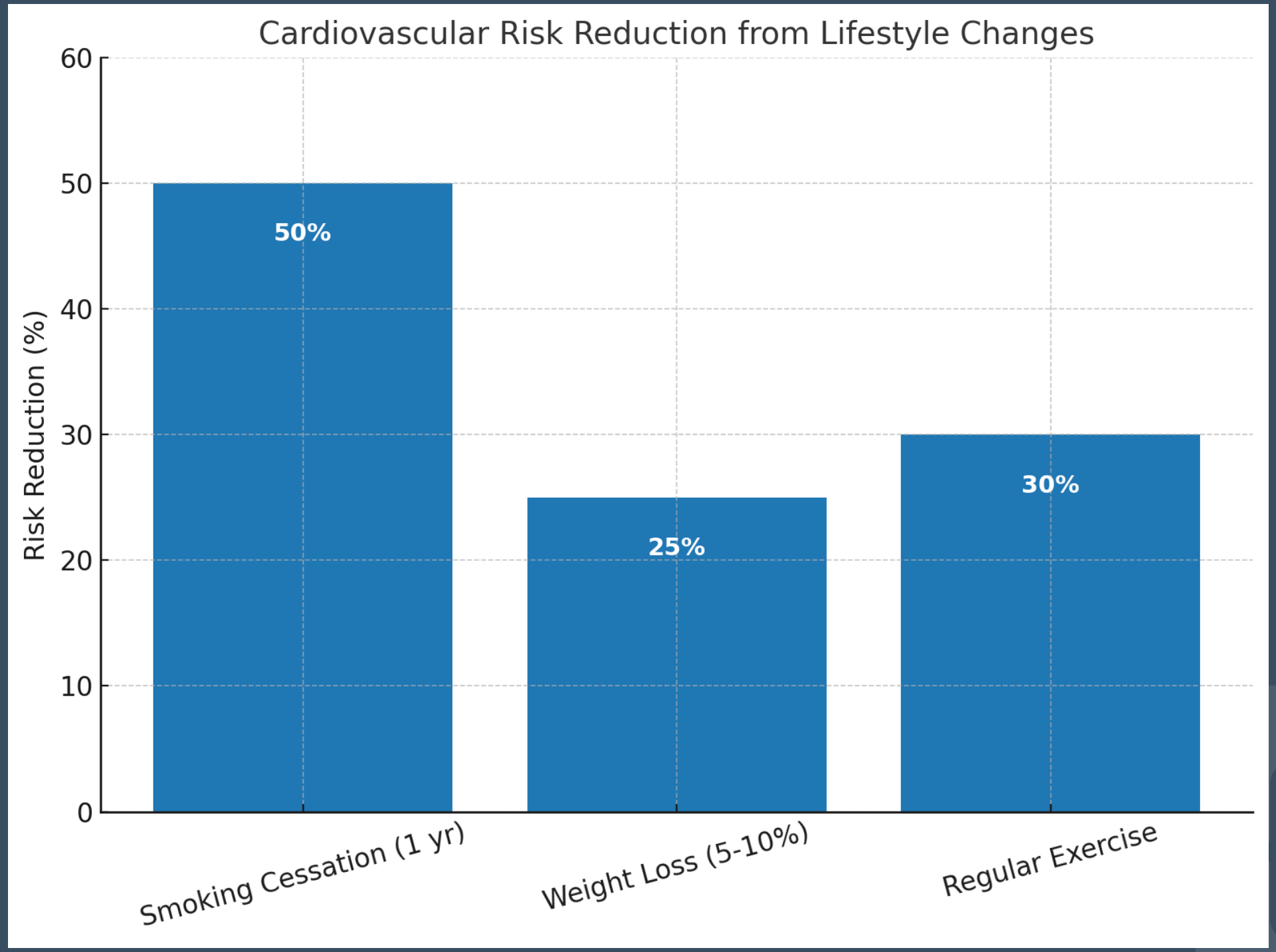
- Who gets heart disease?
  - High Blood Pressure
  - Cigarette Smoking
  - Family History
  - High Serum Cholesterol
  - Obesity
  - Sedentary Lifestyle
  - Male Gender

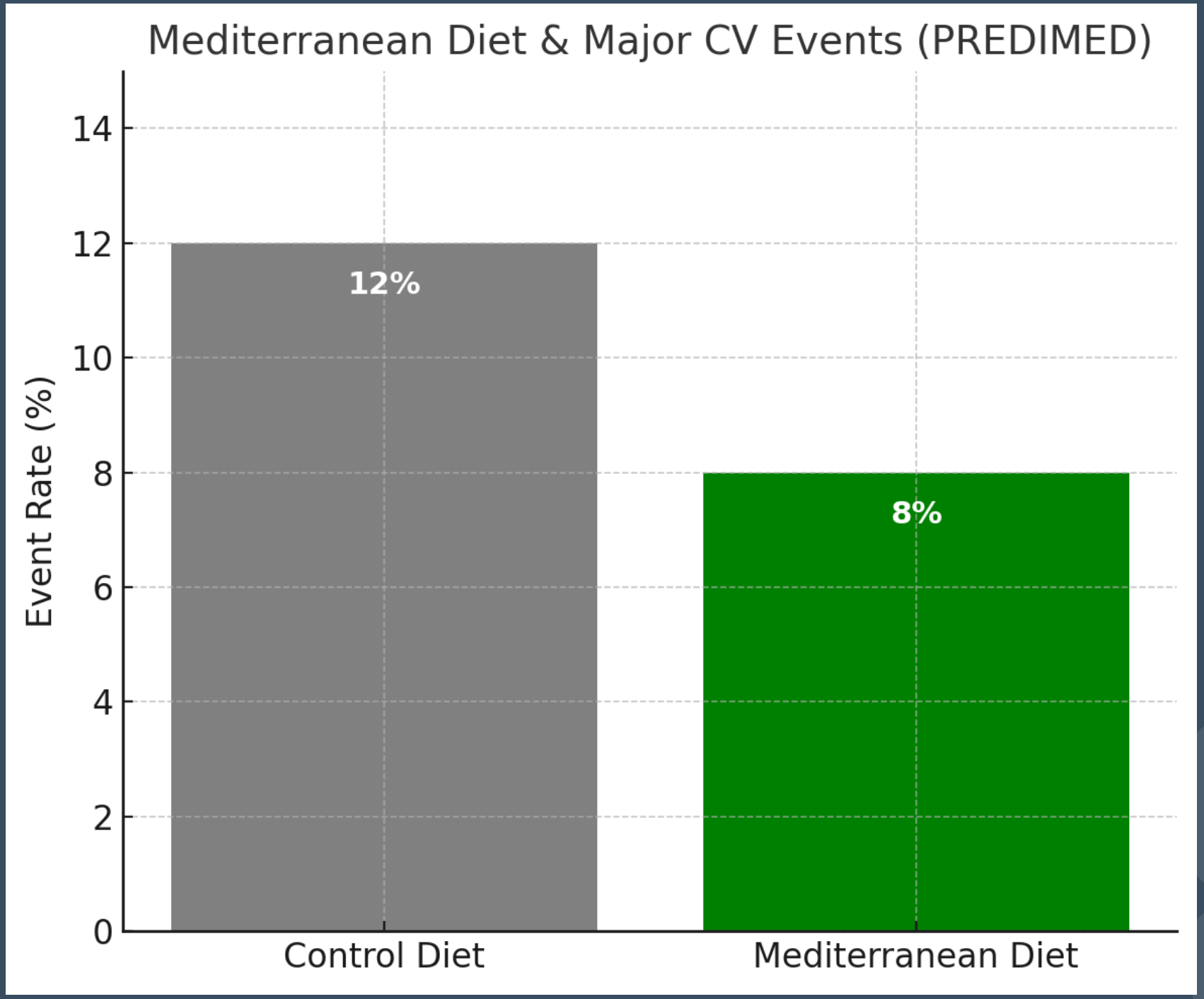
Relative Risk of Myocardial Infarction by Smoking Status and Gender

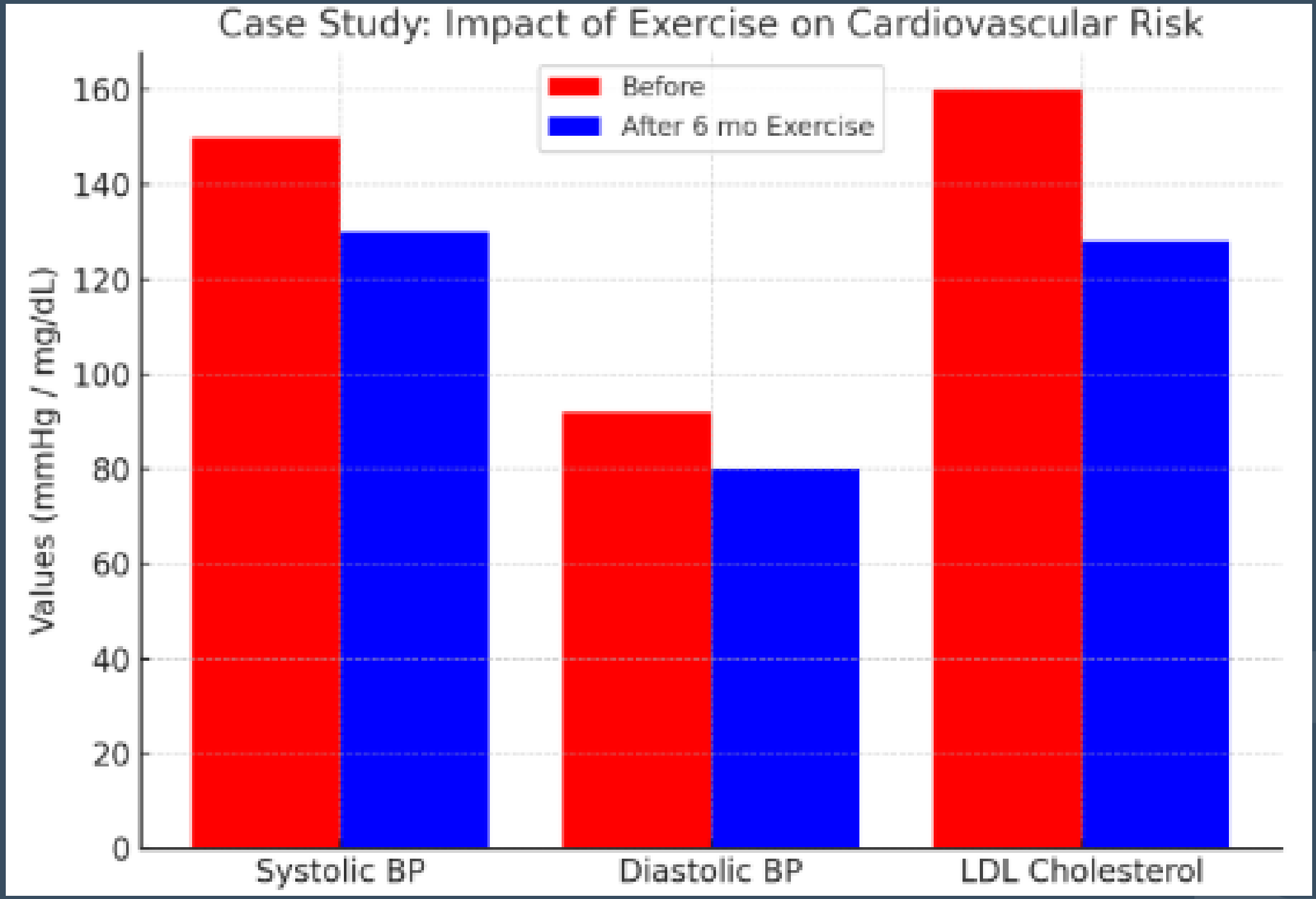




Measure the part of the abdomen that enters the room first


Cardiovascular Risk Reduction from Lifestyle Changes
Risk Reduction (%)
0
10
20
30
40
50
60
50%
25%
30%
Smoking Cessation (1 yr)
Weight Loss (5-10%)
Regular Exercise

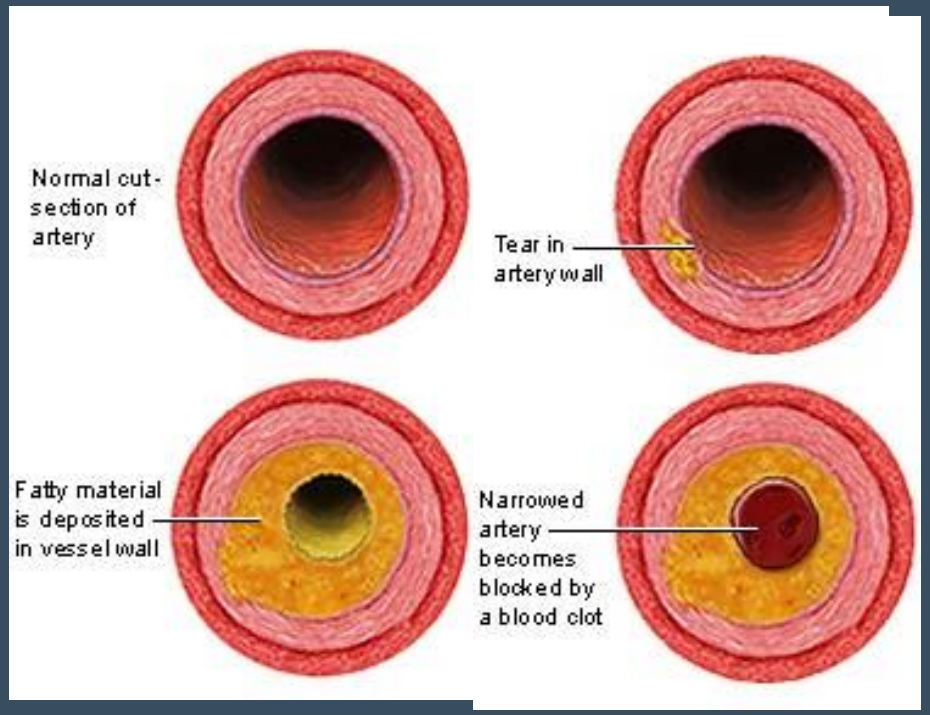

Mediterranean Diet & Major CV Events (PREDIMED)
Event Rate (%)
0
2
4
6
8
10
12
14
12%
8%
Control Diet
Mediterranean Diet


Case Study: Impact of Exercise on Cardiovascular Risk
Before
After 6 mo Exercise
Values (mmHg / mg/dL)
0
20
40
60
80
100
120
140
160
Systolic BP
Diastolic BP
LDL Cholesterol

Heart Disease

Screening and Prevention

Coronary Artery Disease



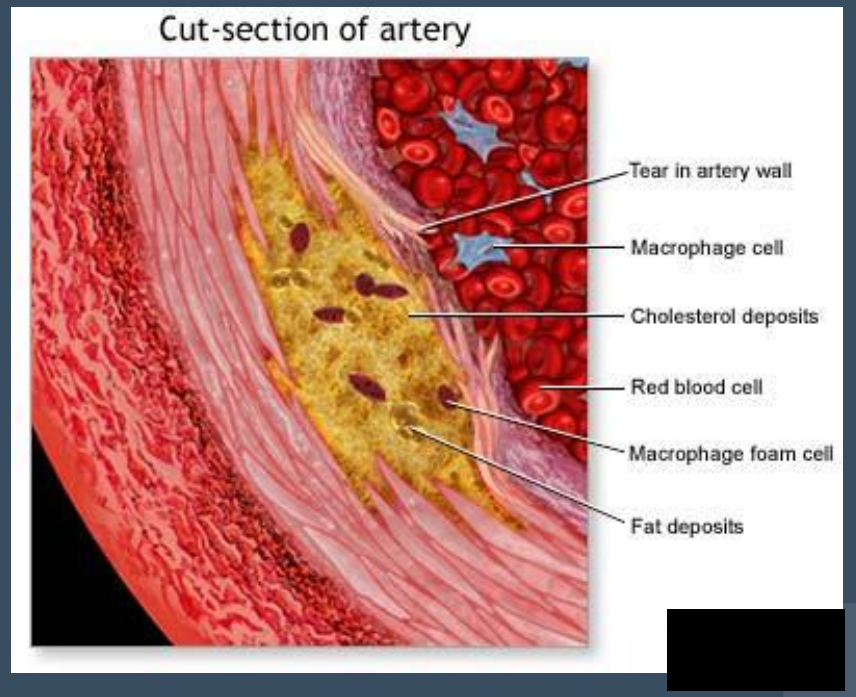
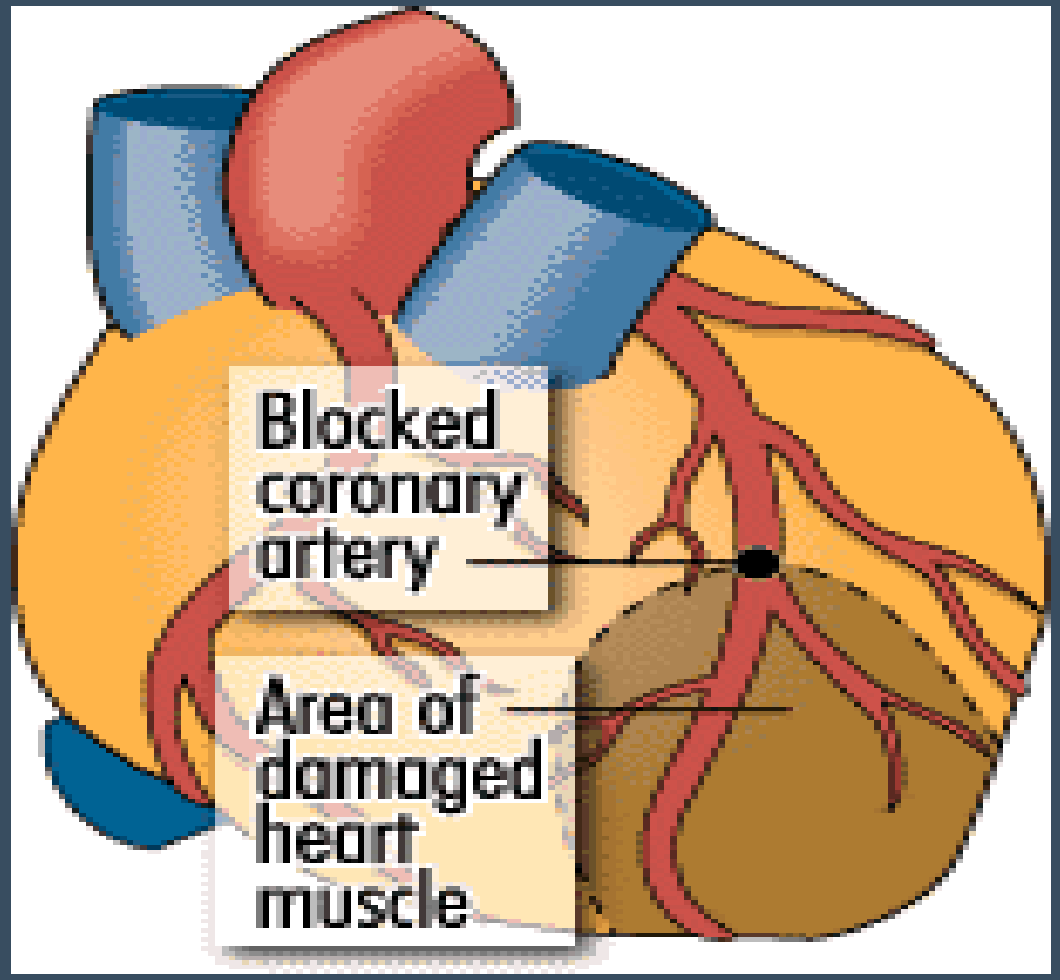


Image courtesy of www.nlm.nih.gov

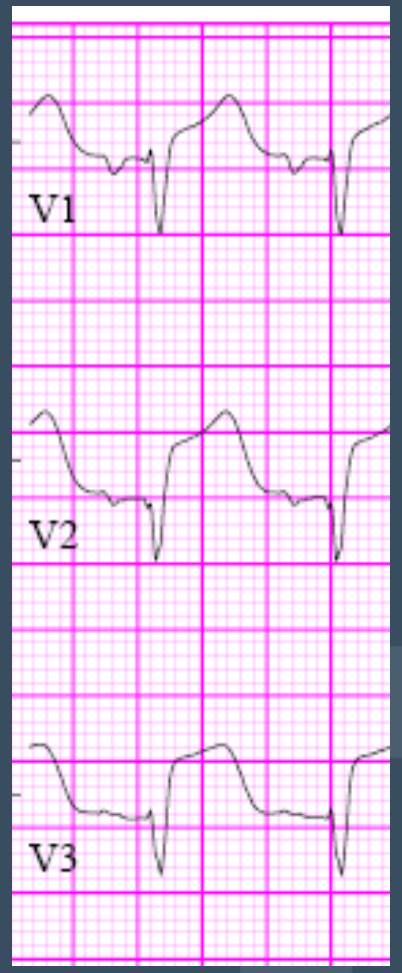
How a Heart Attack Happens . . .

Myocardial Infarction



Signs and Symptoms of Heart Disease

- Chest discomfort or pressure
  - "*an elephant sitting on my chest*"
- Shortness of breath
- Palpitations
- Swelling of feet, ankles, or legs
- Dizziness or light-headedness
- Rapid weight gain



What people *expect* a heart attack to be like

- Crushing chest pain
- Sudden, intense
- Falling to the floor—like in the movies

What a heart attack can *really* be like

- Early vague symptoms (especially in women) that slowly intensify
- Pain or discomfort can be relatively mild, intermittent
- Variety of symptoms may signal danger
  - Shortness of breath
  - Nausea/vomiting
  - Sweating
  - Light-headedness

Vascular Disease: Official Screening Guidelines

- Abdominal aortic aneurysm
  - one-time ultrasound in men (age 65-75) who have ever smoked
- Aspirin
  - discuss with patients at increased risk
- High blood pressure
  - annually in everyone 18 or older
- Abnormal cholesterol
  - all men age > 35, women age > 45

Coronary Calcium Scoring

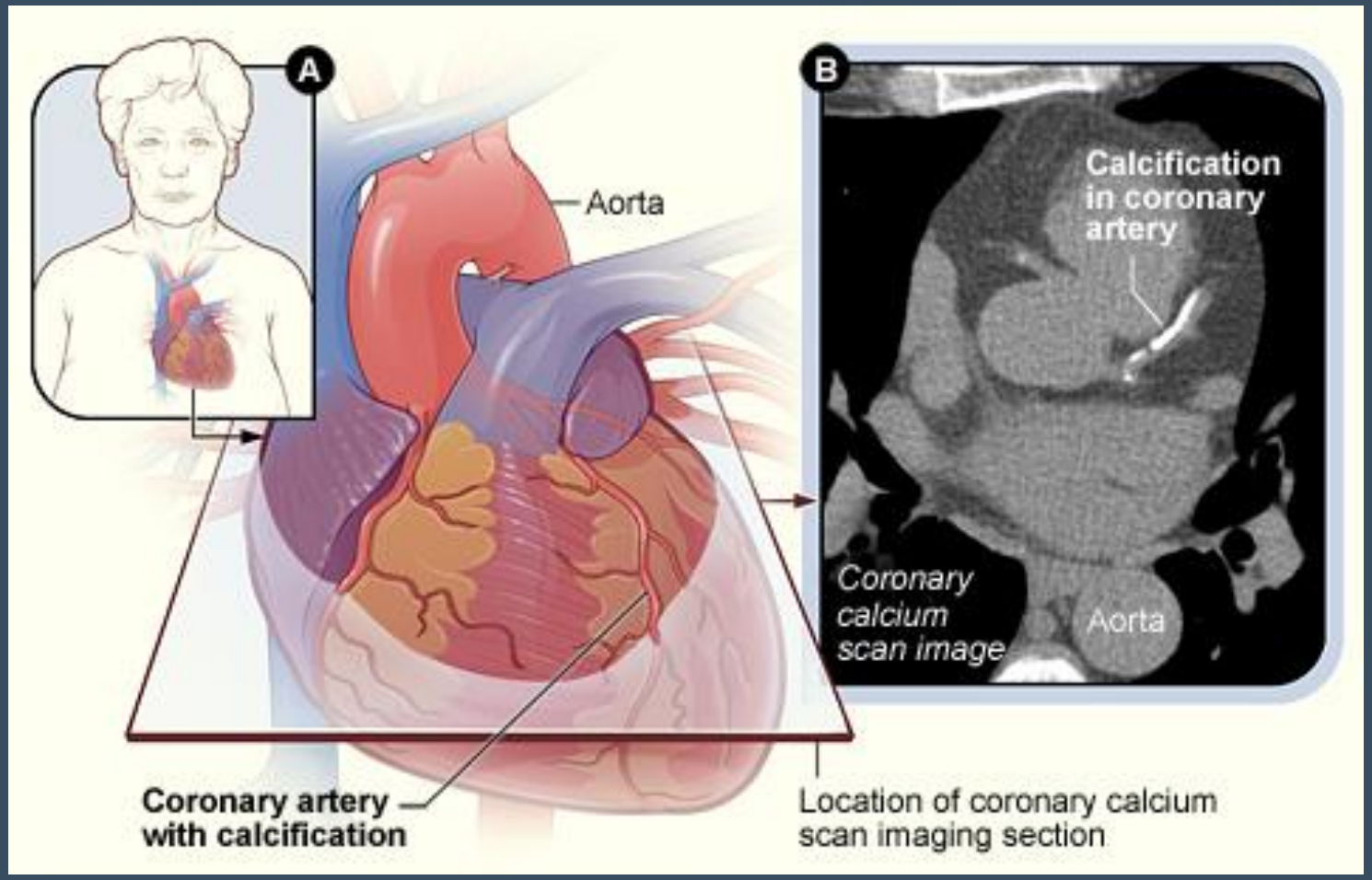
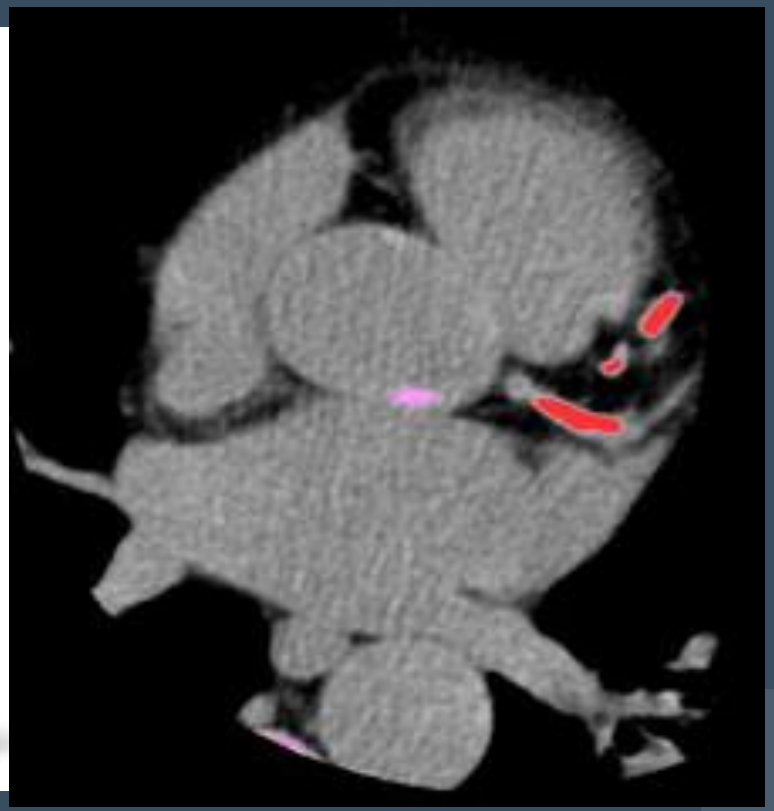


Image courtesy of www.nhlbi.nih.gov

Coronary Calcium Scoring



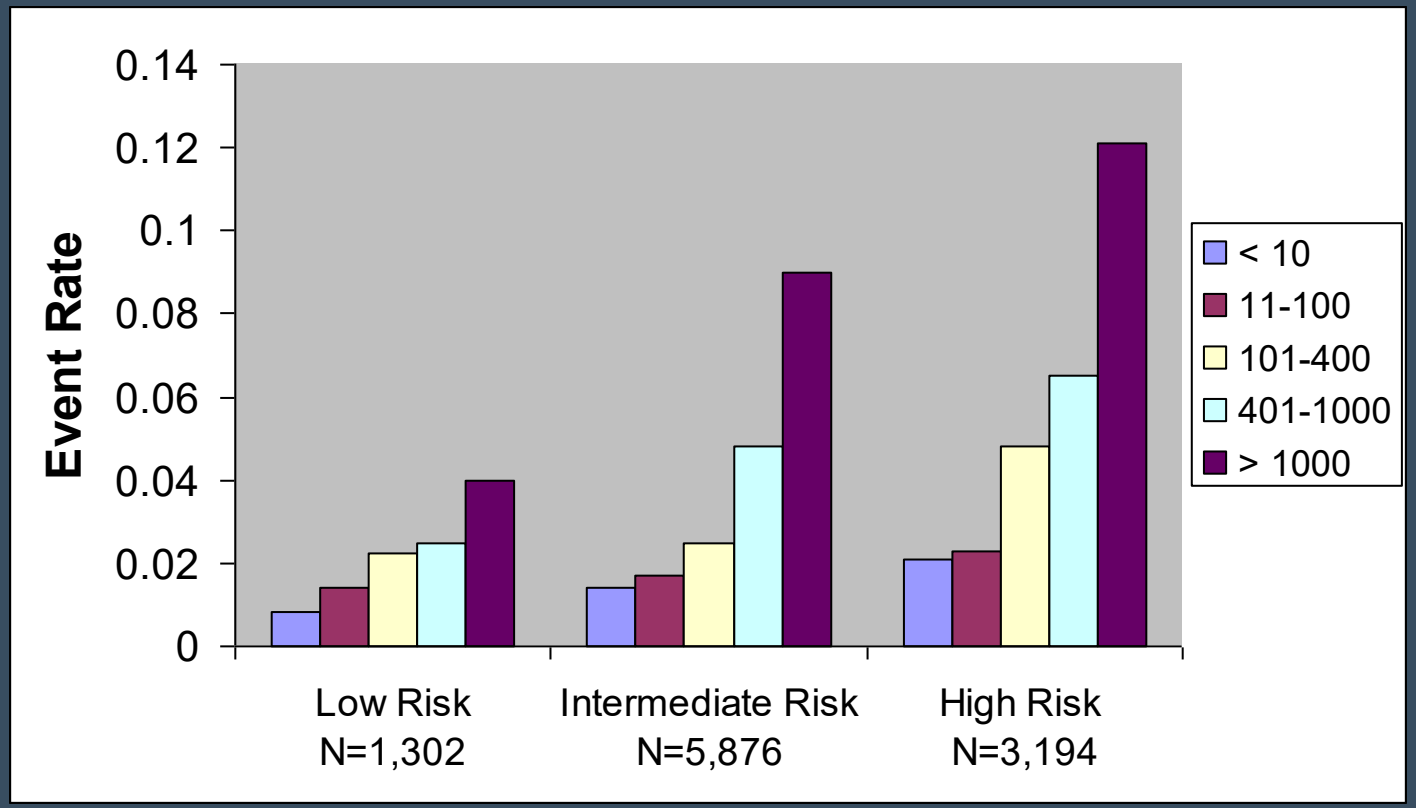
Images courtesy of
www.healthcare.philips.com and
www.rochestermedicalcenter.com

Coronary Calcium Scoring in Asymptomatic Patients

- Calcium score predicts all-cause mortality independent of standard risk factors and with more power
- No calcium → > 99% survival at 10 years
- The more calcium detected, the higher the risk of death over a 10-year period

Budoff MJ et al. *JACC* 2007; 49:1860

Risk by Calcium Score after Risk by Framingham Assessment



Shaw LJ et al. *Radiology* 2003; 228:826

Preventing Heart Disease

American Heart Association “Simple 7”

1) Get active
2) Eat better
3) Lose weight
4) Stop smoking
5) Control cholesterol
6) Manage blood pressure
7) Reduce blood sugar

Key Takeaways

- Heart disease remains prevalent
- Prevention is possible
- More accurate risk assessment is available
- Treating risk factors reduces risk significantly
- Lifestyle changes often have greater benefits than

Cleveland Clinic

Every life deserves world class care.