

Cardiovascular Disease: Managing Heart Disease



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Disclosures



I have nothing to disclose.



Outline

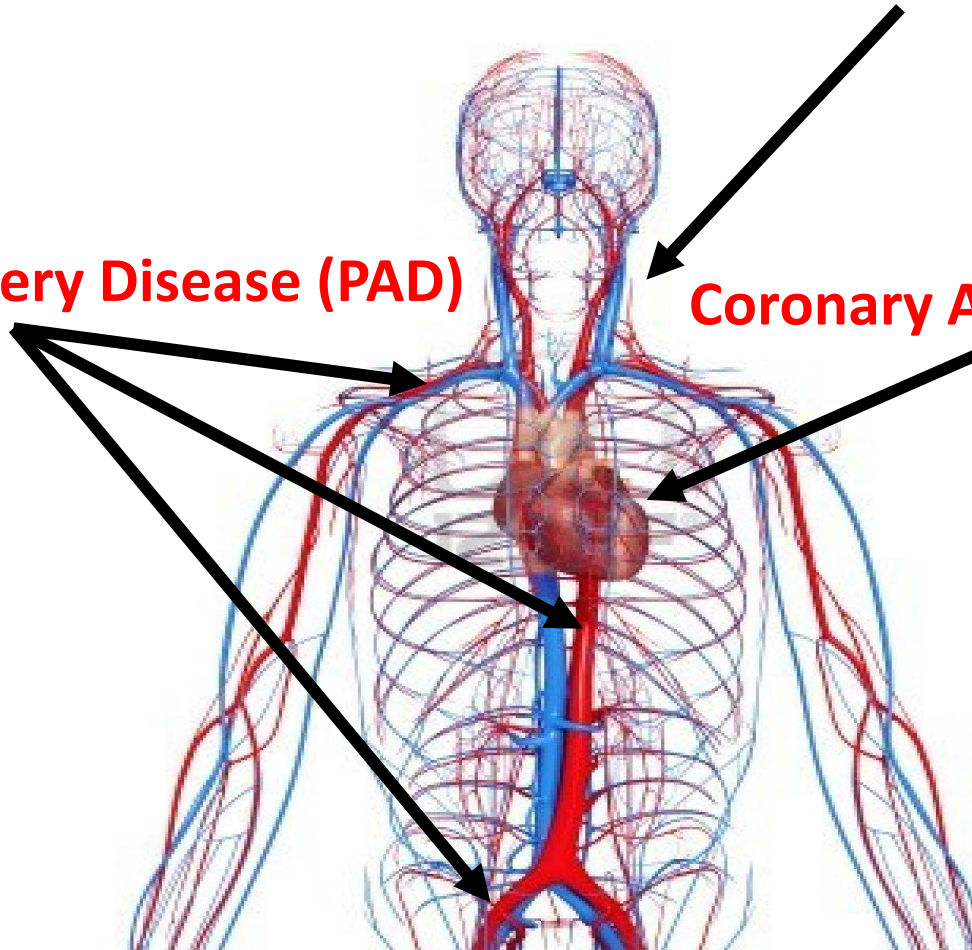
What is/are...

- What is Cardiovascular Disease and its manifestations?
- Risk Factors?
- Progression of the disease?
- Testing and Screenings?
- Medical Management vs Intervention?
- Medication Adherence?

Cardiovascular Disease

Cerebrovascular Disease (CVD)

Coronary Artery Disease (CAD)



Peripheral Artery Disease (PAD)

Cost of Coronary Artery Disease and Cardiovascular Disease

Historically,

- 17,600,000 Americans adults have a **history of CAD.**
- 8,500,000 American adults have a **history of MI.**
- 400,000 **deaths** annually (approx. 1 of every 6 deaths).
- 300,000 **die from their initial Acute Coronary Syndrome (ACS) event.**

Today...

- 785,000 will have their initial cardiac event.
- 470,000 will have a recurrent event.
- 195,000 will have a silent cardiac event.
- Estimated direct and indirect costs for Cardiovascular Disease – **\$503.2 billion.**
- Estimated direct and indirect costs for Coronary Artery Disease – **\$177.1 billion.**

What is Cardiovascular Disease and its manifestations?

- **Coronary heart disease** (CHD) is a narrowing of the blood vessels that supply blood and oxygen to the heart
- Coronary heart disease is usually caused by a condition called **atherosclerosis**, which occurs when fatty material and a substance called plaque build up on the walls of your arteries. This causes them to get narrow. As the **coronary arteries narrow**, blood flow to the heart can slow down or stop. This can cause **chest pain** (stable angina), **shortness of breath**, **heart attack**, and other symptoms.

ACC / AHA Guidelines for Assessing Cardiovascular Risk in Adults

- New Guidelines include the **assessment for risk of stroke as well as heart attack**
- Prediction or risk should be **gender and ethnicity specific** in both African-American and Caucasian men and women
- **Lifetime and short-term (10-year) risk assessments** for developing atherosclerosis and heart disease as well as stroke
- Most **heart attacks and strokes could be prevented** if patients knew their risk and the steps to take to reduce their risk.

Cardiovascular Disease Risk Factors

- **History** of CAD/PAD
- **Male Sex**
- **History** of TIA/CVA
- **Smoking**
- **Hypertension**
- **Diabetes Mellitus**
- **Dyslipidemia**
 - Low HDL < 40
 - Elevated LDL / TG
- **Family History** - event in first degree relative
 - ≤ 55 male, ≤ 65 female
- **Chronic Kidney Disease**
- **Obesity**
- **Lack of** regular physical activity
- **Diet** poor in fruits, vegetables, and fiber
- **Age** ≥ 45 male, ≥ 55 female

Stress and Heart disease



- Stress causes the body to release a hormone called “adrenaline”.
- Adrenaline causes your heart and breathing to rate to speed up and your blood pressure to rise.
- The chronic stress on the heart rate and blood pressure may damage the walls of the arteries.



Overweight vs Obesity

GOOD INDICATION OF HEALTHY OR UNHEALTHY WEIGHTS IN MEN AND WOMEN

- < 18.5 : Under Weight
- < 25 : Healthy Weight
- $25 - 29.9$: Over Weight
- > 30 : Obesity



Cardiovascular Care

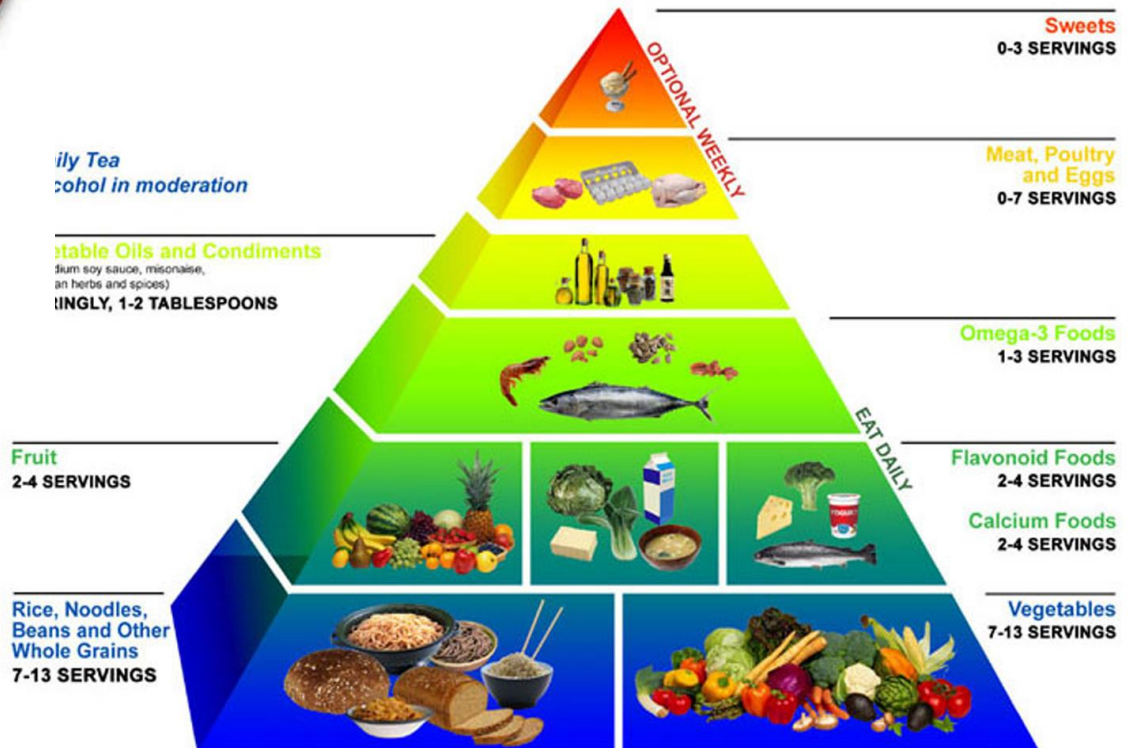
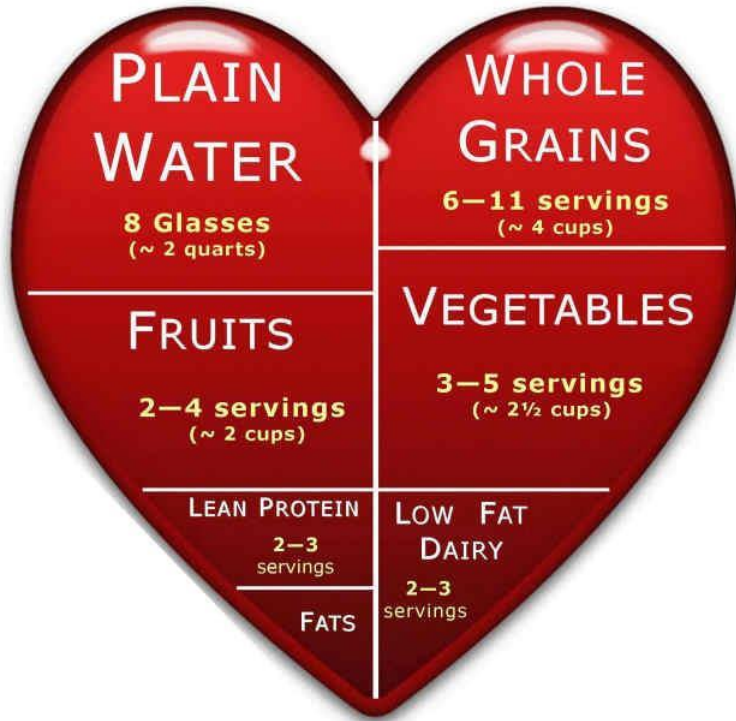
- Blood Pressure
 - Goal < 135/85
 - Maximize use of beta-blockers and ACE-I
- Lipids
 - LDL < 100 (70) ; TG < 200
 - Maximize use of statins; consider fibrates/niacin first line for TG > 500; consider omega-3 fatty acids, CoEnzyme Q10
- Diabetes
 - HbA1c < 7%

Cardiovascular Care

- Smoking cessation
 - Cessation-class, medications, counseling
- Physical activity
 - Goal 30 - 60 minutes daily
 - Risk assessment prior to initiation
- Diet
 - DASH diet, Mediterranean diet, fiber, omega-3 fatty acids
 - <7% total calories from saturated fats



Cardiovascular Diet



Diet

USDA Food Pyramid (2025 proposal)

sponsored by the
**Association of American Corporations for
Freedom of Choice in Food (AAC-FCF)**

Fruit and Vegetable-Based Snacks
1-2 SERVINGS

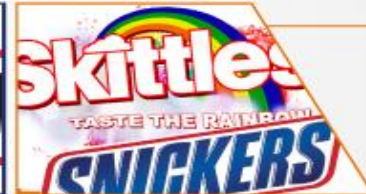


Pasta / Rice / Wonderbread
2-3 SERVINGS



Coca Cola / PowerAid / Sodas / Energy Drinks
2-3 SERVINGS

**Yogurt / Cheese
Ice Cream / Milkshakes**
3-5 SERVINGS



**Snickers / Snack Crackers
Granola Bars / Candy**
2-4 SERVINGS



Meats and Fast Food
6-11 SERVINGS

Smoking,



...and Smoking



Risk factors???



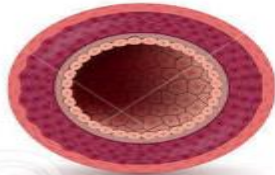
Risk Factors that Can't Be Changed



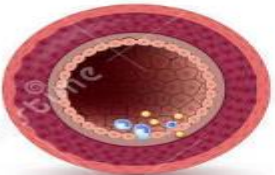
- ♥ Age
- ♥ Gender: Male
- ♥ Heredity – Family History
- ♥ Race
- ♥ Previous CAD, PVD or CVA

Progression of Coronary Artery Disease

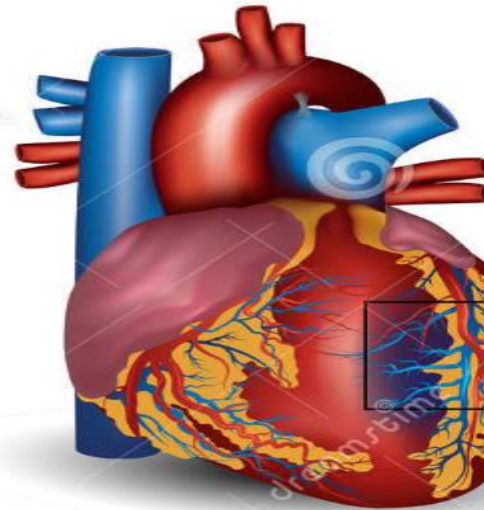
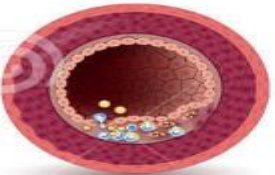
NORMAL ARTERY



**ENDOTHELIAL
DISFUNCTION**

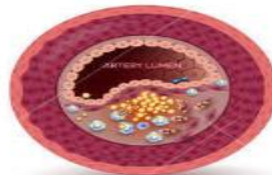


**FATTY STREAK
FORMATION**

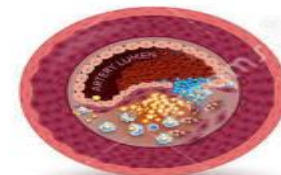


HEART MUSCLE DAMAGE

**STABLE (FIBROUS)
PLAQUE FORMATION**



**UNSTABLE
PLAQUE FORMATION**

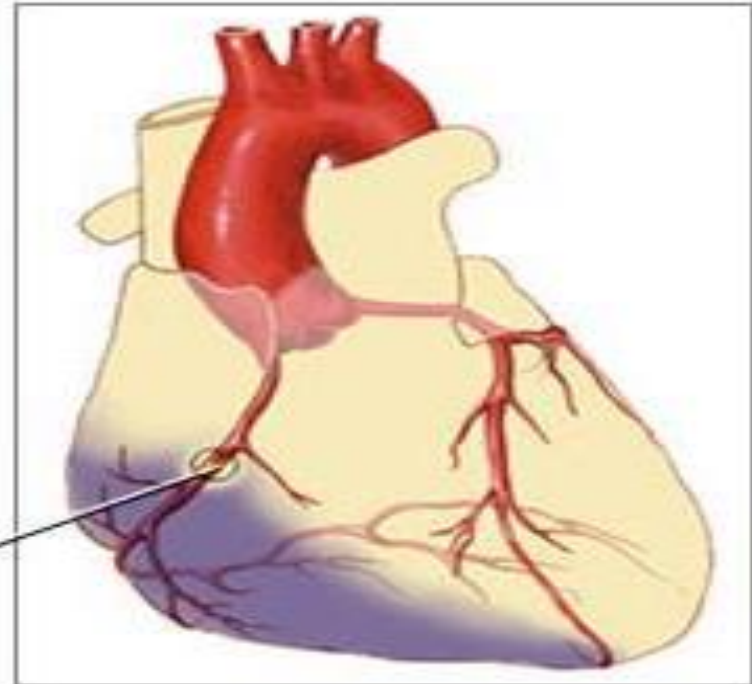


Damage from Coronary Artery Occlusion



Plaque build up in the coronary artery blocking blood flow and oxygen to the heart

Damage and death to heart tissue shown in purple



Cardiac Screening – *See your Doctor*

- Know your personal and family history
- Routine medical appointments
- Talk to your health care provider
- Know your medications and drug allergies
- Take charge of your health
- Get appropriate screening



Testing and Screening

- See physician for **H&P**
 - Family Practice, Internal Medicine, Cardiologist
- **EKG**
- **Blood work**
 - glucose, cholesterol, cardiac enzymes
 - biomarkers : natriuretic peptide biomarker (BNP) for GDMT to prevent development of Left Ventricular dysfunction or new HF
- **Stress test**
- **ECHO**
- **B/P**
- **Cardiac catheterization**

Treatments and Therapy



Cardiovascular Medical Therapy

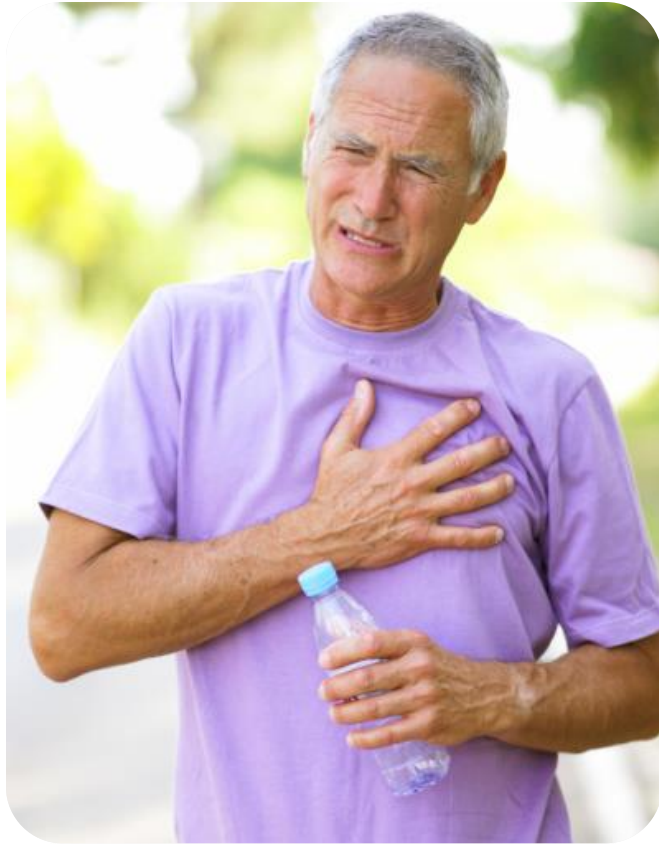
- Antiplatelet agents / (DAPT)
 - Aspirin
 - Brilinta/Plavix/Effient
- Lipid lowering agent
 - High-dose Statin (Lipitor, Crestor)
- Antihypertensive agent
 - Beta blocker
 - ACE-I/ARB
- Appropriate therapy for risk factors
 - Glucose Management
 - Smoking Cessation
 - Diet control
 - Stress Management



Time for an Intervention



Heart Attack Symptoms - MEN



Chest pain

Discomfort in other areas of the upper body

- One or both arms
- Back, neck or jaw
- Stomach

Shortness of breath

Other signs

- Cold sweat
- Nausea
- Lightheadedness
- Fatigue

Heart Attack Symptoms - **WOMEN**

As with men, **chest pain or discomfort**

More likely- ***other symptoms:***

- Shortness of breath
- Nausea/vomiting
- Back or jaw pain
- Not feeling right
- Fatigue
- Palpitations
- Musculoskeletal complaints
- Hot flashes

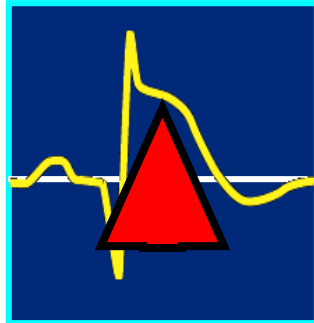


Treatment modalities

- Medical Management: Treat symptoms
- Angioplasty / Stent
- Surgery

STEMI and ACS

STEMI



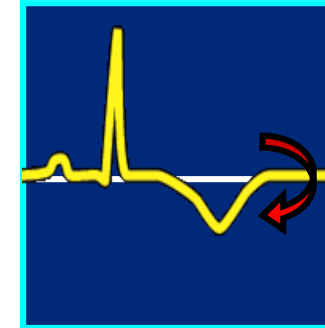
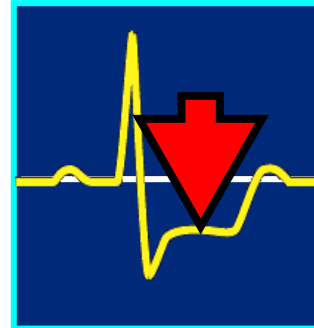
Presumed prognosis: very high risk of in-hospital death

Treatment goal: prevent death by restoring coronary blood flow

Fibrinolytic therapy

Direct PCI

NSTEMI/Unstable Angina



Presumed prognosis: low risk of in-hospital death, unless MI develops

Treatment goal: stabilize with aspirin heparin +/- GIIb/IIIa & monitor for MI development

+ Cardiac enzymes

Scheduled PCI

- Cardiac Enzymes

High-risk features

Low-risk features

Manage medically

The Continuum

**Unstable
Angina**



NSTEMI



STEMI

Non-occlusive
thrombus

Non-specific
EKG

Normal cardiac
enzymes

Occluding thrombus
sufficient to cause
tissue damage & mild
myocardial necrosis

ST depression +/-
T wave inversion on
EKG

Elevated cardiac
enzymes

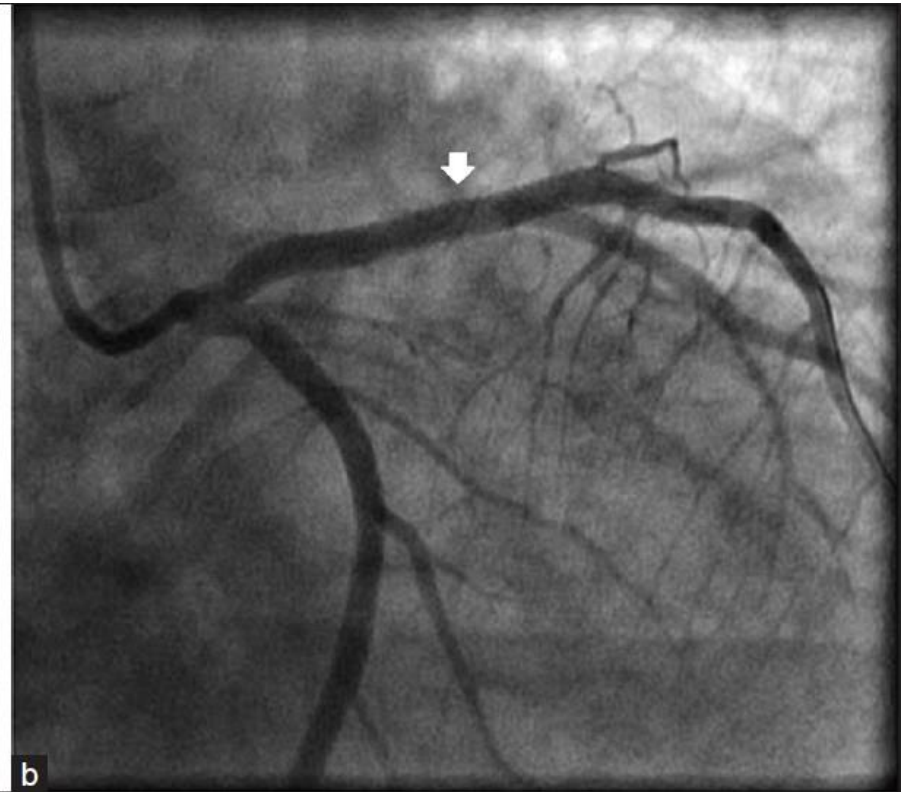
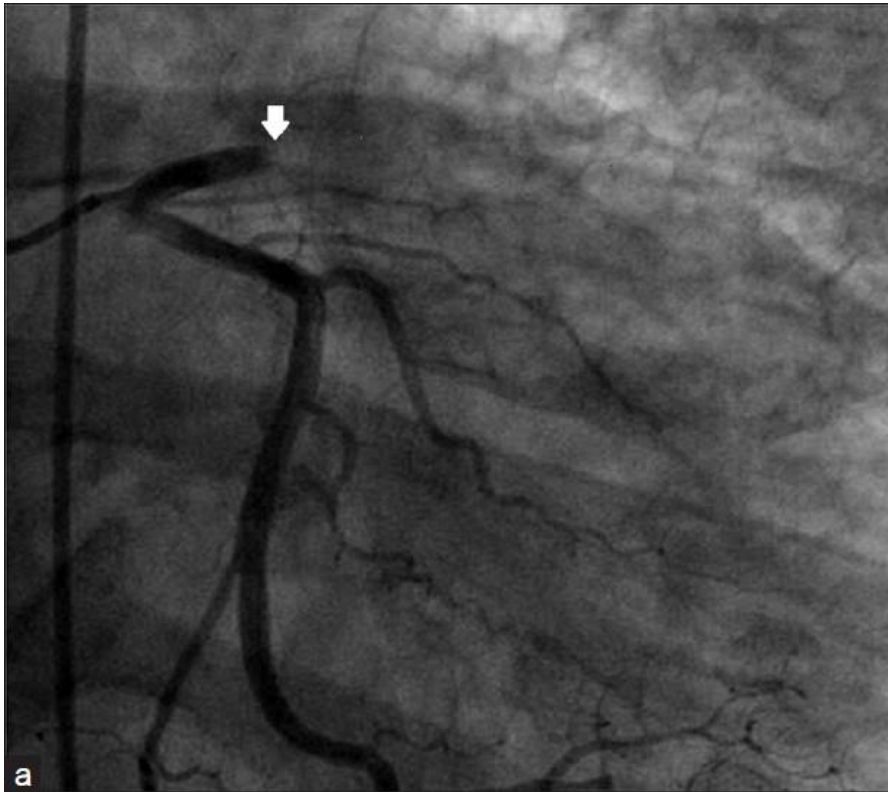
Complete thrombus
occlusion

ST elevations on
EKG or new LBBB

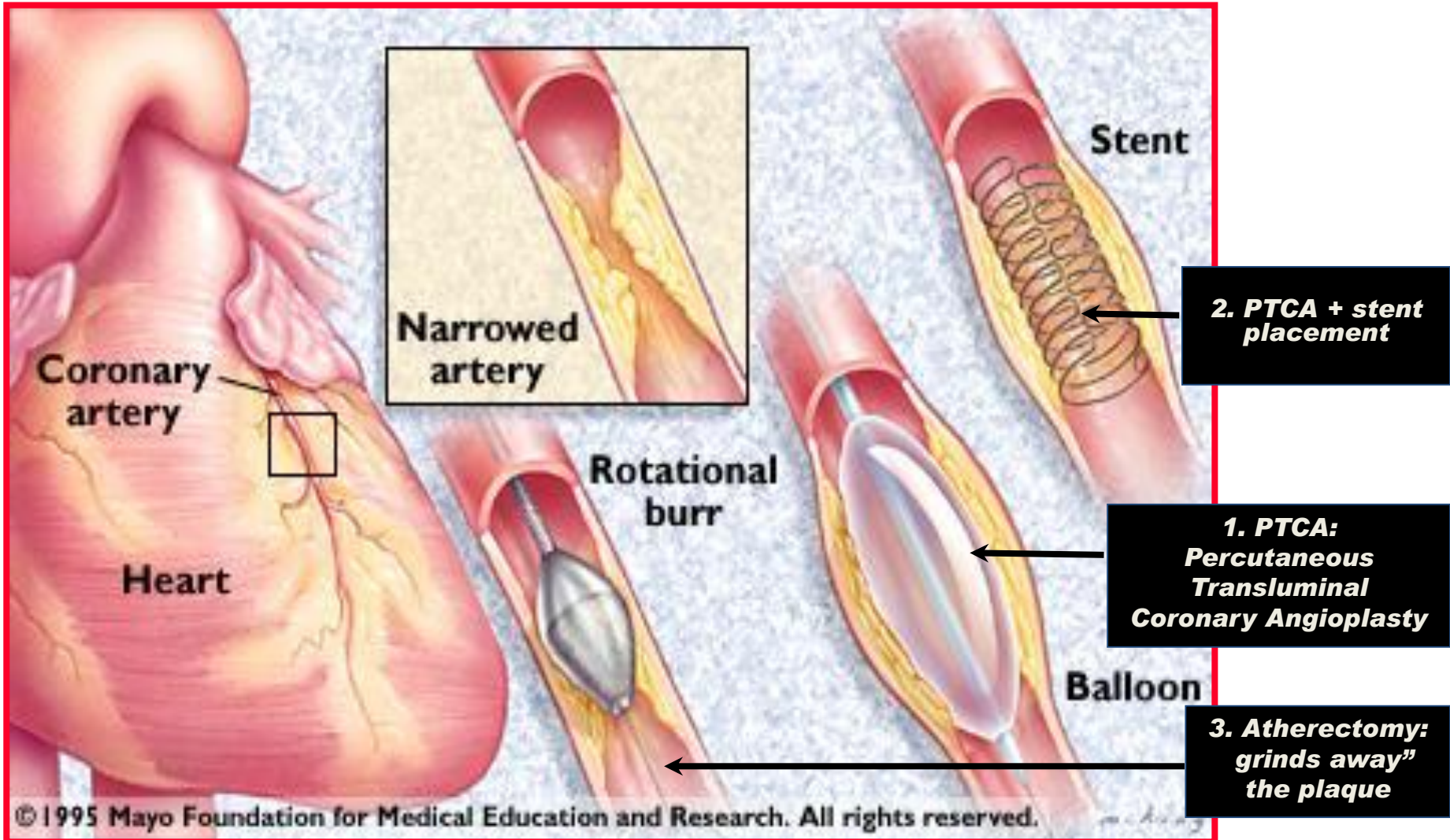
Elevated cardiac
enzymes

More severe
symptoms

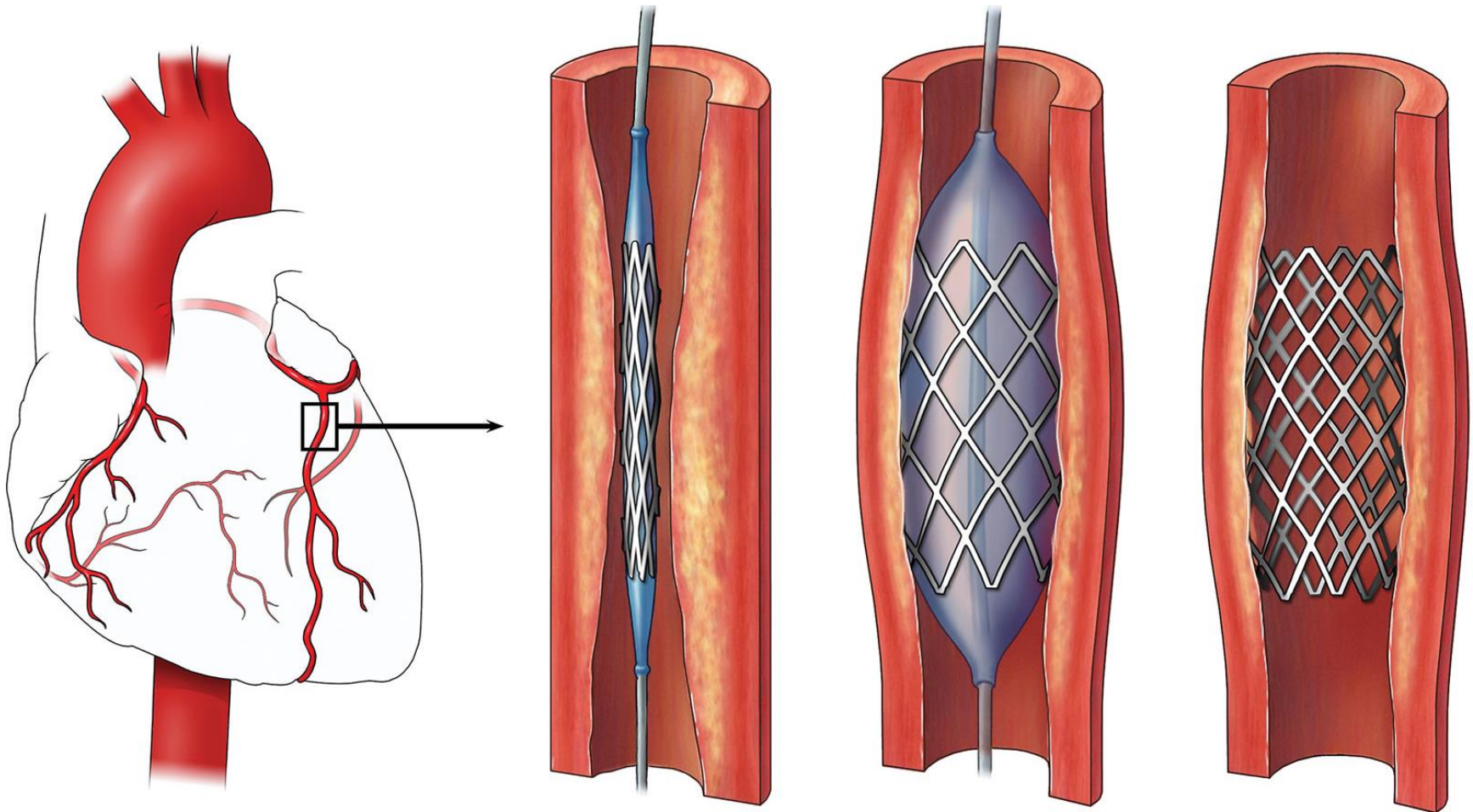
STEMI PCI



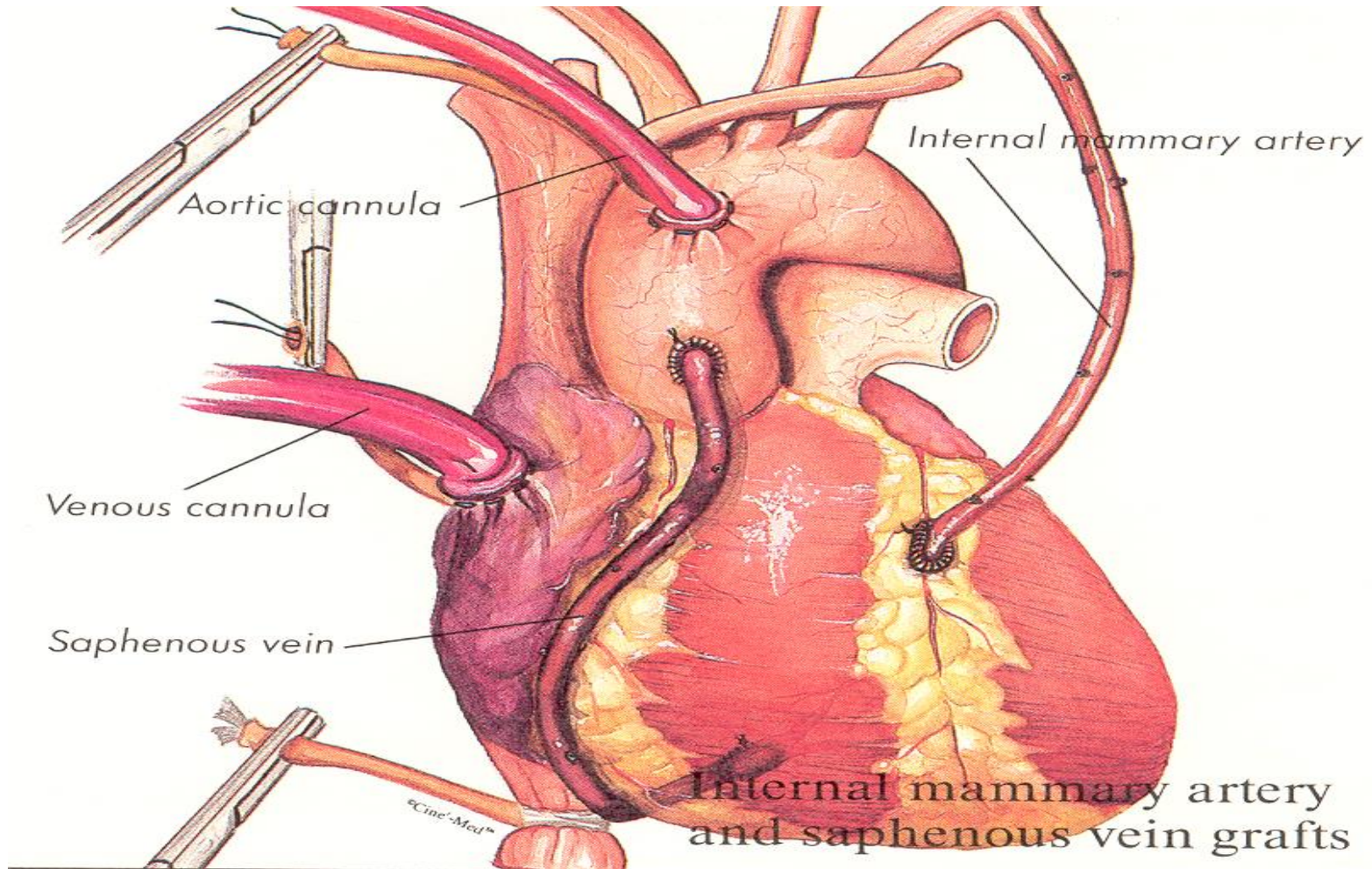
Percutaneous Coronary Interventions (PCI)



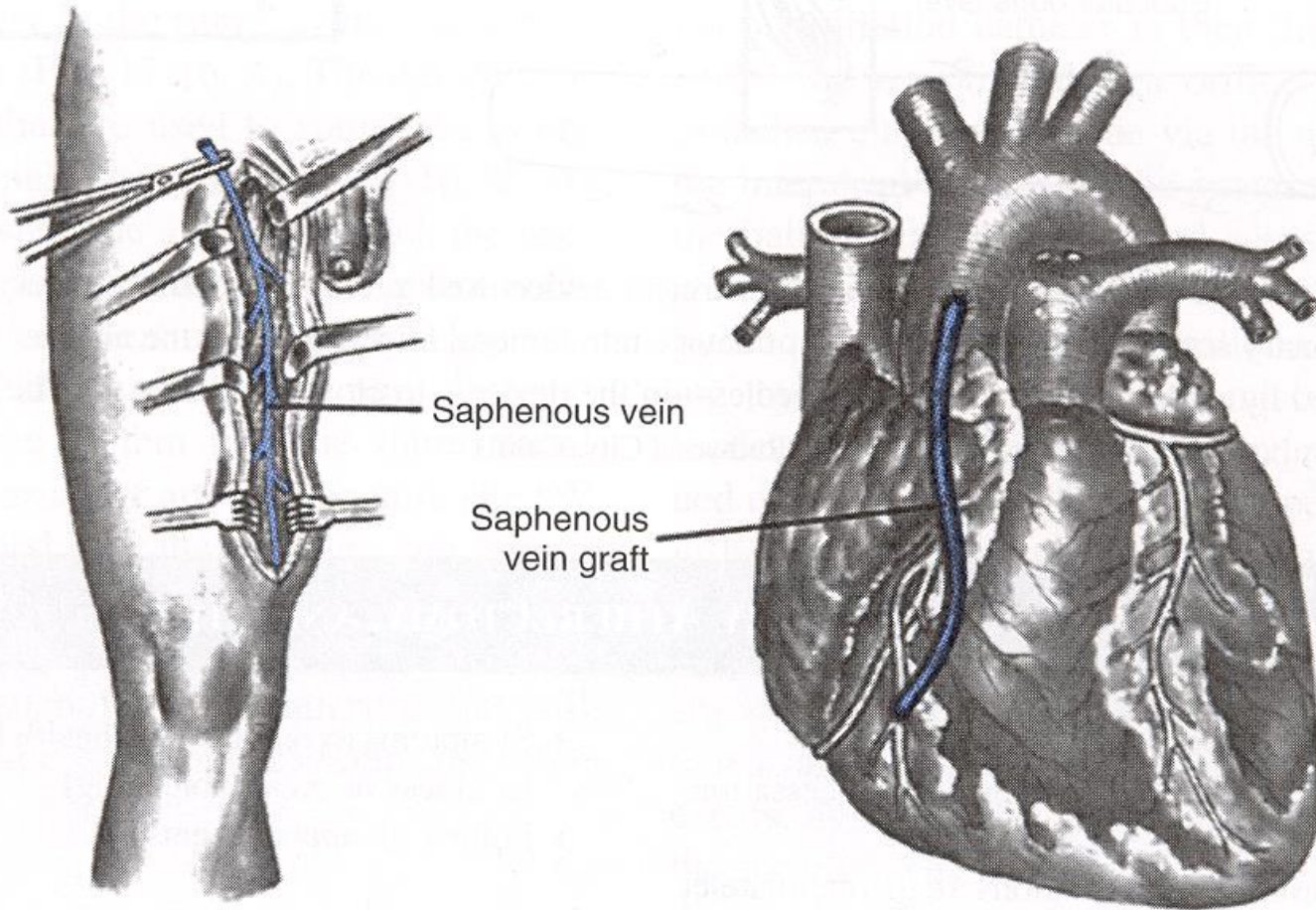
Percutaneous Coronary Intervention (*PCI*) for ACS and STEMI



Coronary Artery Bypass Grafting



Endovascular Vein Grafting



TIME IS MUSCLE

- Reduce patient symptoms
- Decrease amount of myocardial necrosis
- Preserve heart function
- Prevent major adverse cardiac events
- Treat life threatening complications



Medication Adherence

Medications have led to dramatic advances in the treatment and prevention of many cardiovascular diseases. Combined with heart healthy life style changes --- people are living longer and feeling better!

Medication Non-adherence (not taking the medication as prescribed) is the leading cause of frequent doctor visits, hospital admissions, hospital readmissions and increased medical costs.

1 in 2 medications are not taken as prescribed
Up to half of patients prescribed a statin, will discontinue the medication within a year

Non-adherence accounts for 50% of treatment failures AND 125,000 deaths annually

Medication Education

Patients need to understand the importance of each medication and its affect on cardiovascular disease

Reducing risk of developing / progressing heart disease:

- Statins: lower cholesterol
- Ace Inhibitors / ARB: managing high blood pressure by widening or relaxing blood vessels

Treating existing heart problems & manage symptoms:

- Heart blockages, post heart attack, heart valve disease, heart failure

Medication Adherence

Compliance and provider follow up is key to chronic disease management

- **Pharmaceutical Companies: Prescription drug cards for reduced costs and free for the first month**
- **Pharmacies: Reduced prescription costs for certain medications**
- **Drug cards**

High-risk for future cardiovascular disease?



High-risk for future cardiovascular disease?



Thank You

