

Mini Medical School Cardiology

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Center

Accolades

- ❖ **Thomson Top 100 Cardiovascular Hospitals in the United States (2009, 2005)**
- ❖ **The Leapfrog Group's Leapfrog Award**
- ❖ **Evidence-Based Acute Myocardial Infarction Care**
 - ❖ BMC is consistently recognized nationally as a top performer in AMI care. BMC is one of 141 hospitals nationally to achieve this rating out of 4,609 hospitals in the U.S.
- ❖ **Evidence-Based Heart Failure Care**
 - ❖ Our observed mortality rate of 3% is markedly lower than expected. Reduced readmission rates
- ❖ **Coronary Bypass Graft Surgery**
 - ❖ Over the last 12 years, risk-adjusted mortality rates have consistently remained lower than expected. *Best ranked in Massachusetts.*
- ❖ **Interventional Cardiology**
 - ❖ For angioplasty patients – Baystate Medical Center is in the top 10% of hospital's nationwide.

What is a Cardiologist

- ❖ -Someone who diagnoses and treats disorders of the heart and blood vessels
 - Heart Attack
 - Abnormal Rhythms
 - Heart Failure
 - High Blood Pressure
 - Fainting

Heart Facts

- ❖ “Normal” adult heart weighs ~ 1.5-2 lb
- ❖ Beats 60-100/min
 - 144,000 times/day
 - 53 million times/year
 - 4.2 billion times in a lifetime
- ❖ Pumps 60-80 cc at a time
 - 5 quarts a minute
 - 1800 gallons/day
 - 659,000 gallons/year
 - 5.3 million gallons in a lifetime
 - Actually double those pumping numbers!

Heart Facts

World's Greatest Pump!

Collecting Chambers

Pumping Chambers

Fuel Supply System

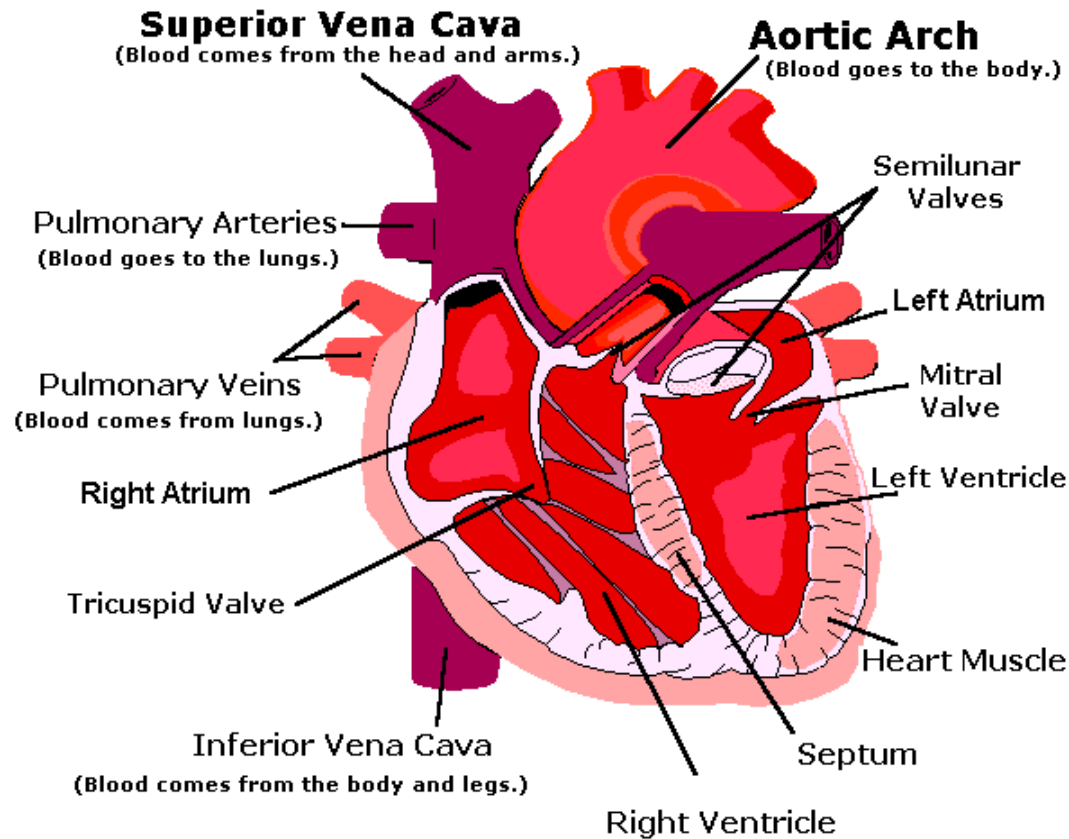
Timing System

Valves (to keep blood flowing in the right direction)

With that background it all makes sense!

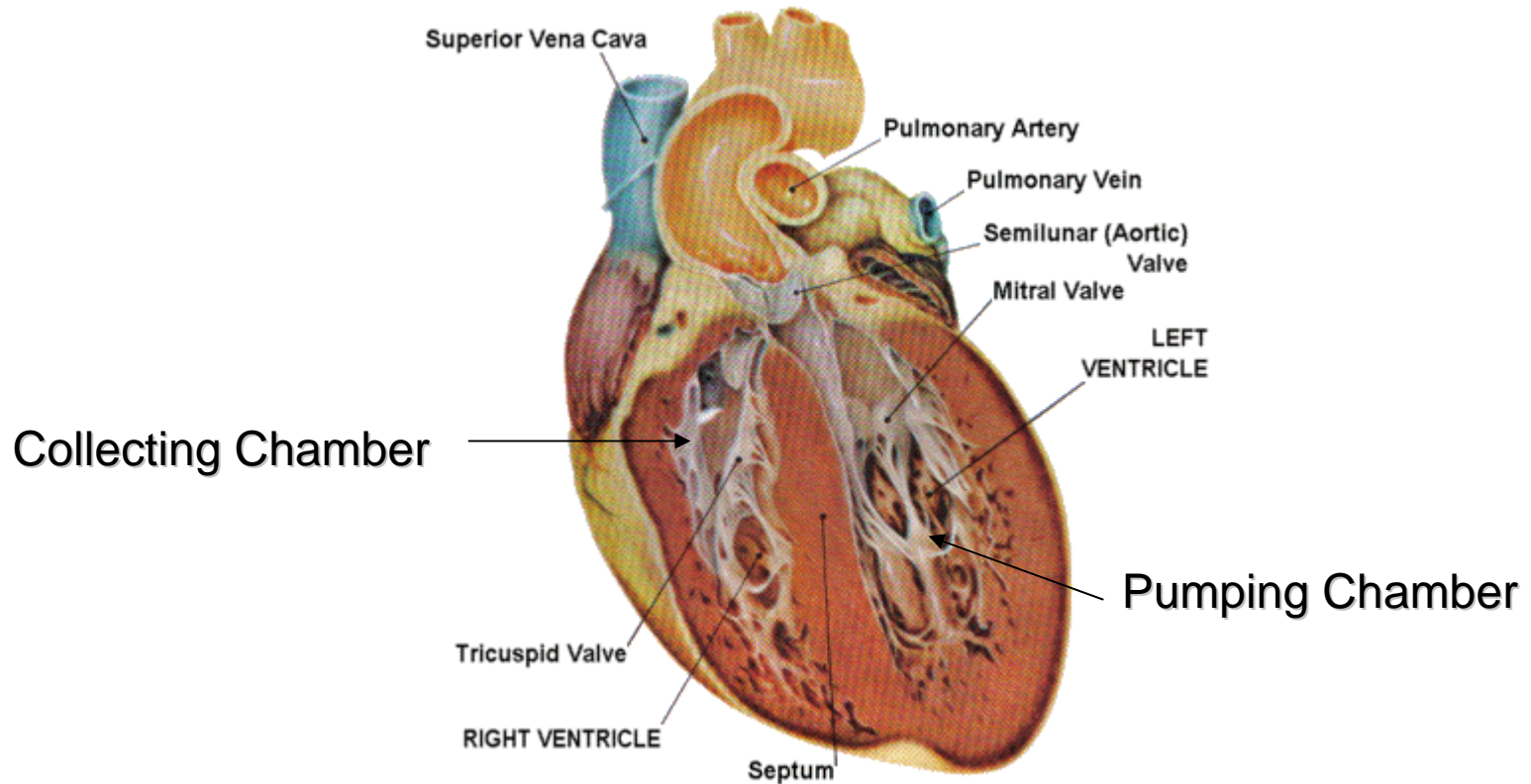
Mini Medical School

The Heart



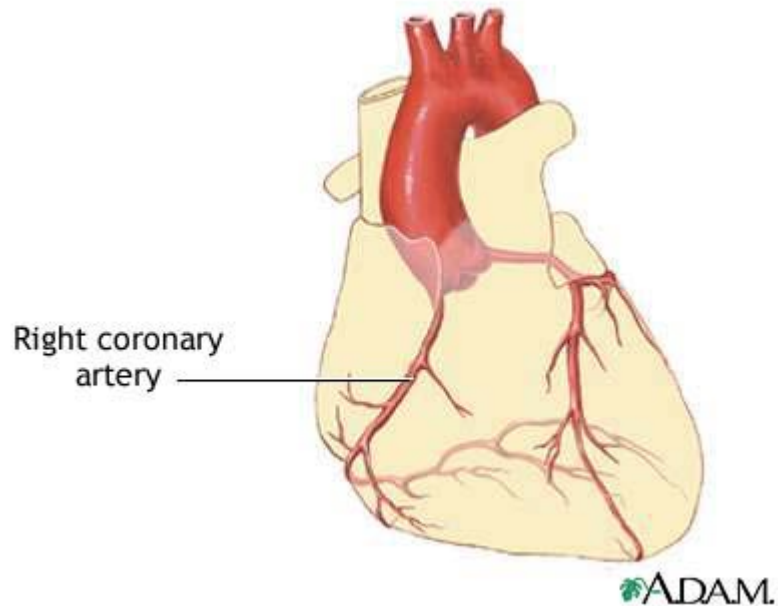
Anatomy

Chambers-Collect/Pump



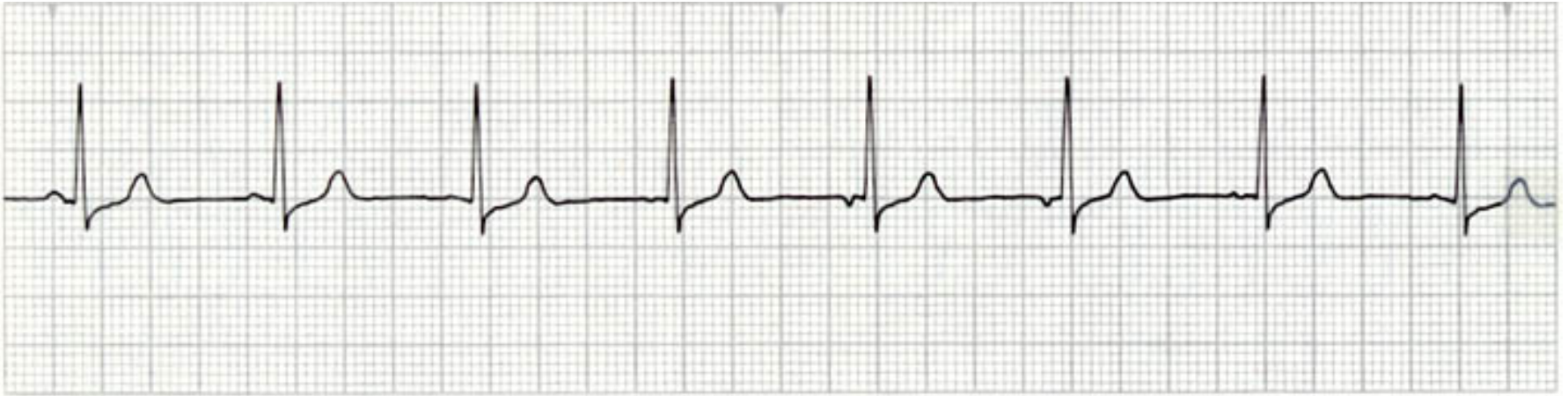
Anatomy

Fuel Supply

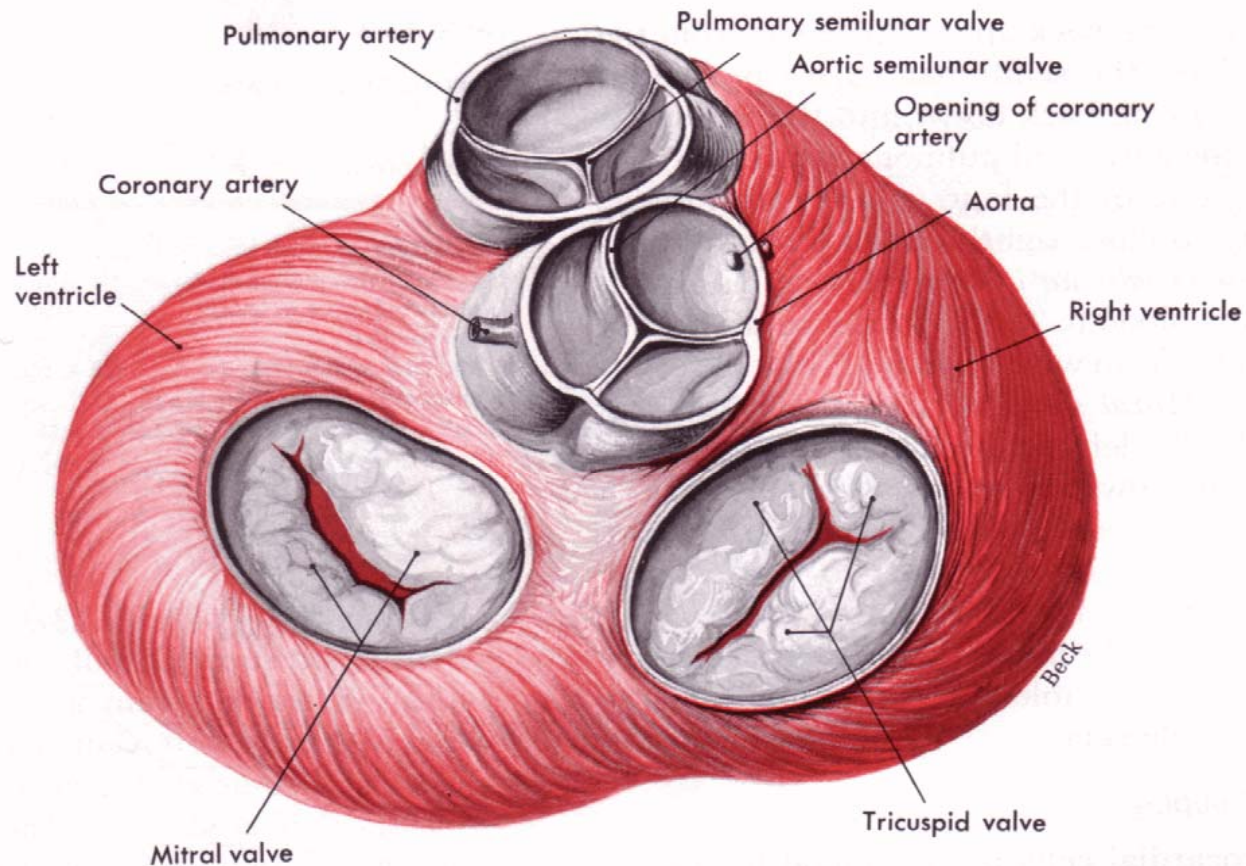


Anatomy

Timing Mechanism



Anatomy Valves



The valves of the heart viewed from above. The atria are removed to show the mitral and tricuspid valves.

Anatomy Valves

“Artificial” Heart Valves

Biological valve
(human or porcine)



Mechanical valve



ADAM.

Heart Disease

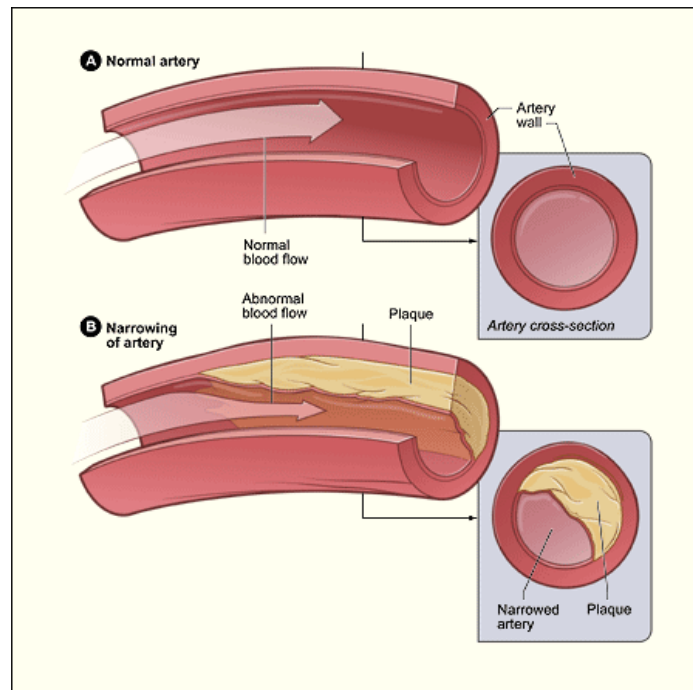
❖ Problems with:

- Arteries-Coronary Artery Disease
- Timing-Arrhythmias, Heart Block
- Valves-Stenosis (tight), Regurgitation (leak)
- Pumping Chamber-Heart Failure
- Plumbing/Architecture-Congenital/Structural

Fuel System

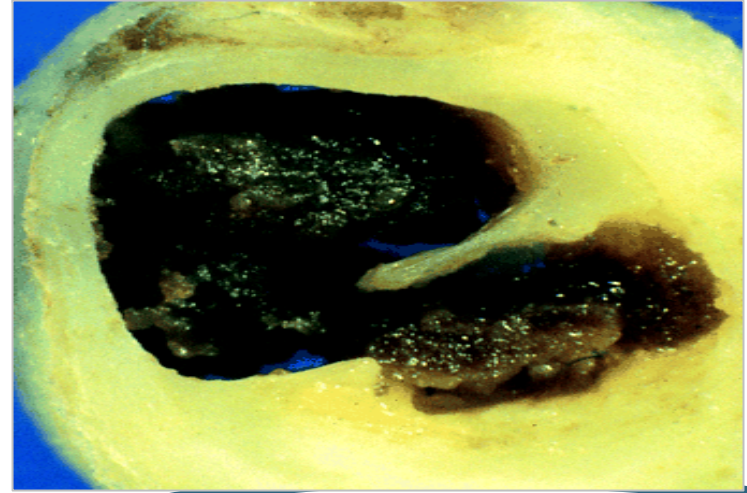
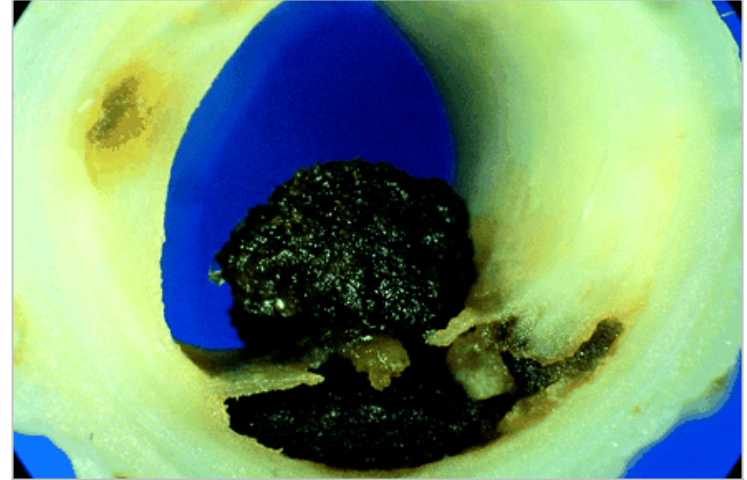
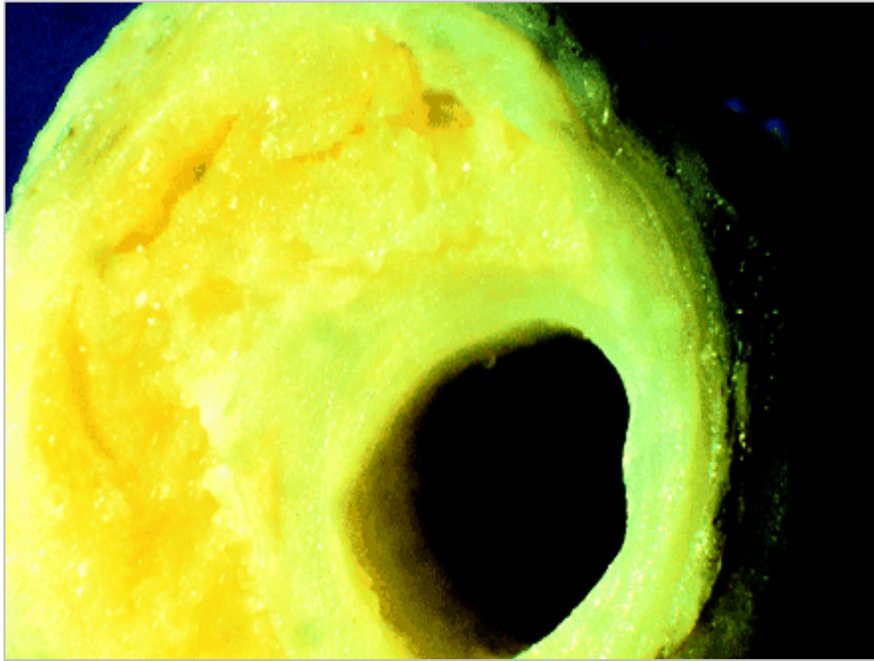
Coronary Artery Disease

- ❖ Usually due to “Atherosclerosis” (cholesterol)



Fuel System

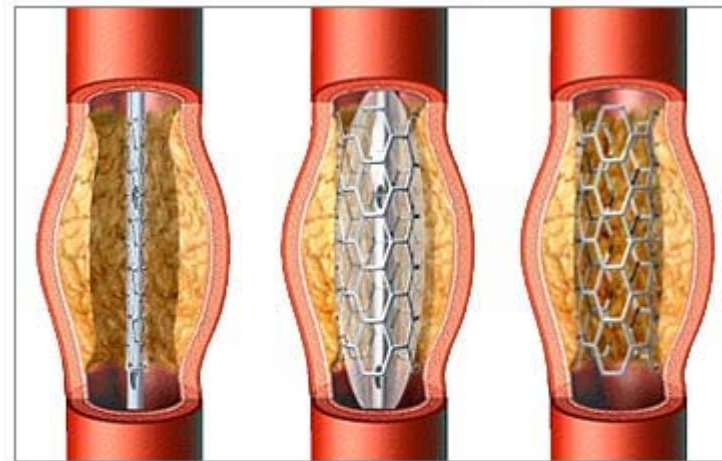
Coronary Artery Disease



Fuel System

Coronary Artery Disease

STENT/ANGIOPLASTY



Stent
insertion

Stent
expansion

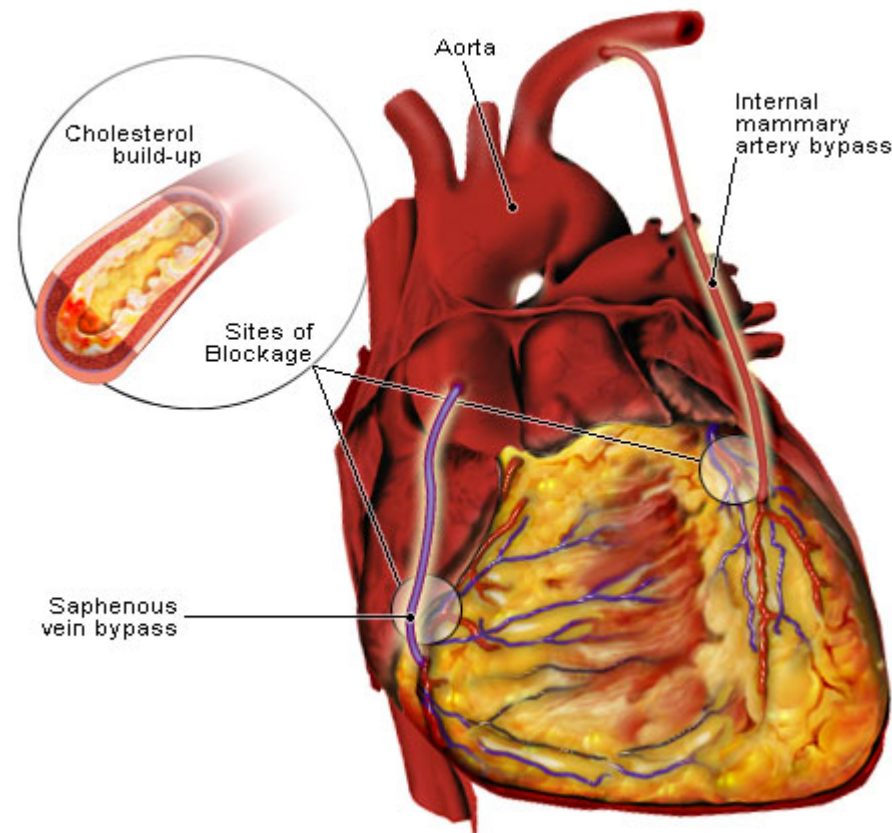
Stent remains in
coronary artery

ADAM.

Fuel System

Coronary Artery Disease

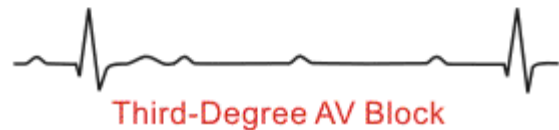
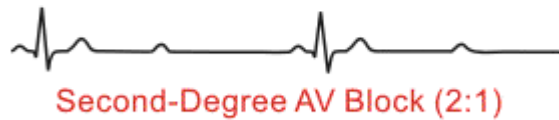
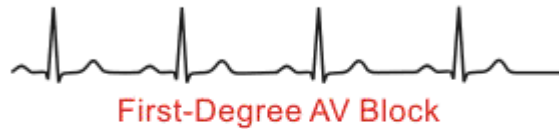
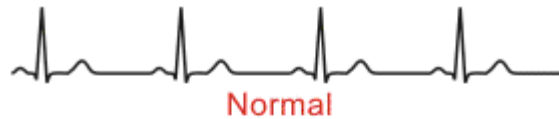
Coronary Artery Bypass



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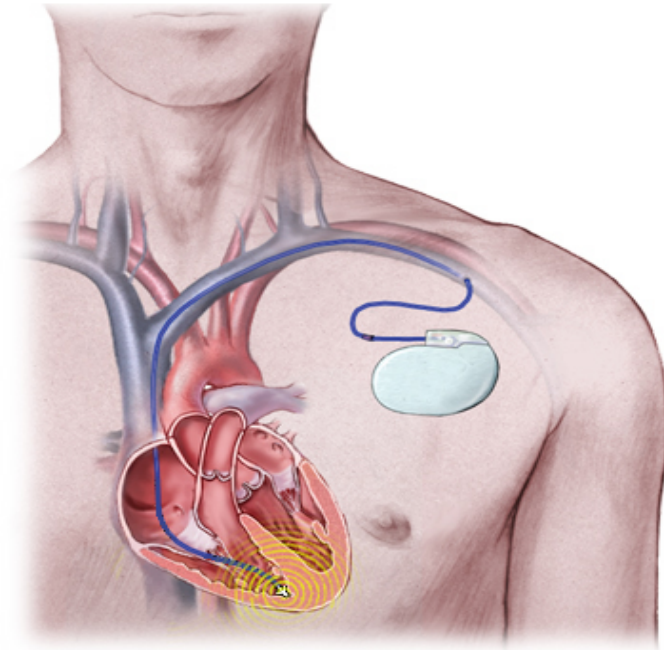
Timing Mechanism Arrhythmias

Heart Block



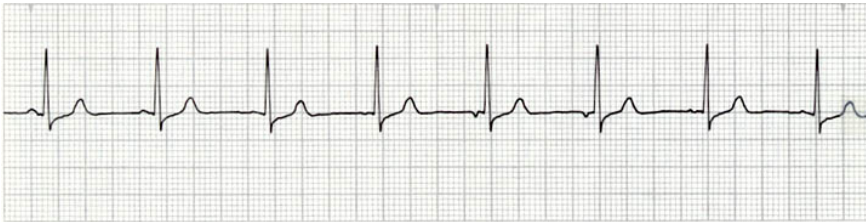
Timing Mechanism Arrhythmias

Pacemaker

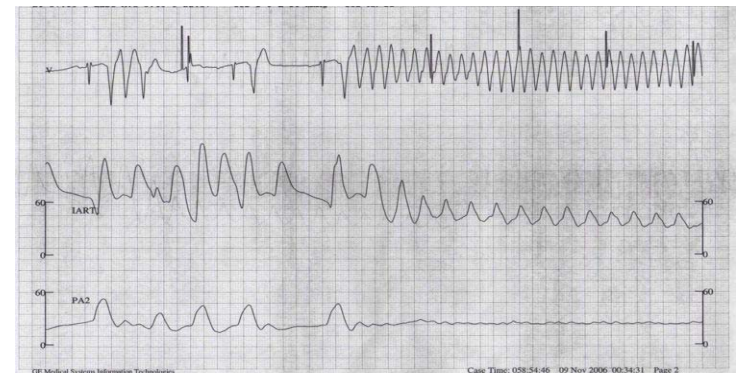


Timing Mechanism Arrhythmias

Healthy



Really Bad



Bad

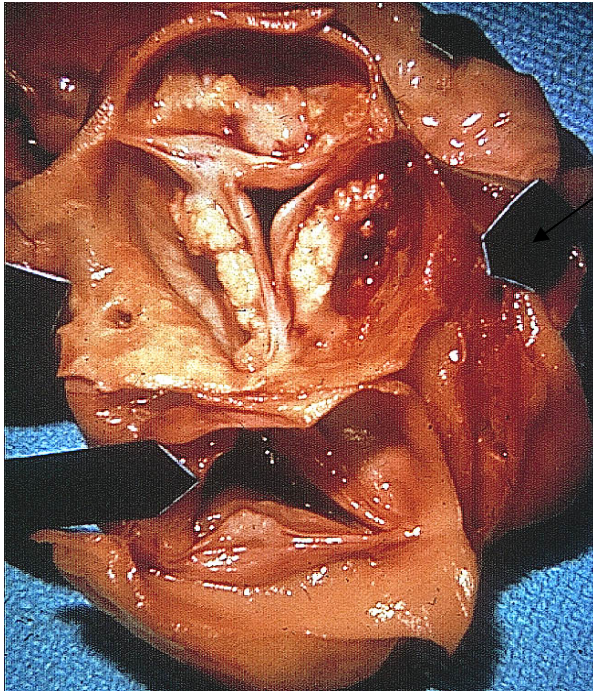
Ventricular tachycardia



Valves

❖ Tighten/Constrict

❖ Leak



Valves

- ❖ Valve Replacement/Repair
 - Surgery
 - “Percutaneous” (cath lab) emerging

Biological valve
(human or porcine)



Mechanical valve



ADAM.

Valve Surgery



TAVR



Controlled expansion of the prosthesis.

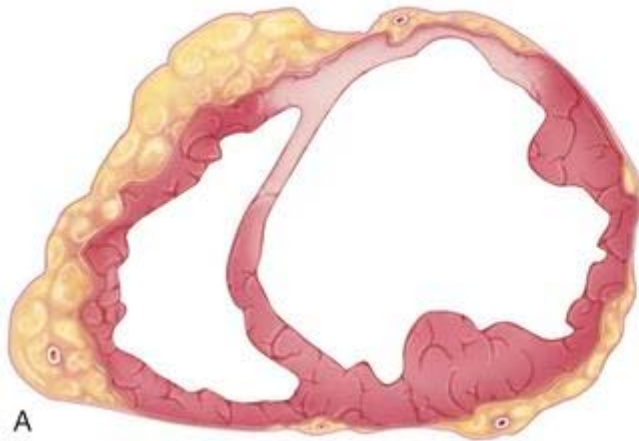


Control angiogram after a successful ReValving[™] procedure.

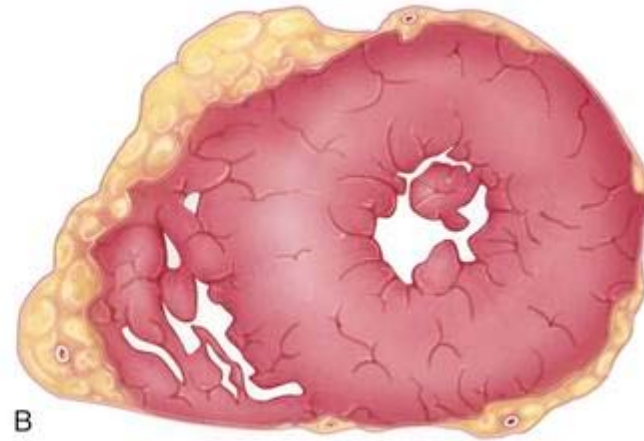
Pump Failure

Congestive Heart Failure

Too Thin/Scarred



Too Thick



Pump Failure

Congestive Heart Failure

❖ Medicines

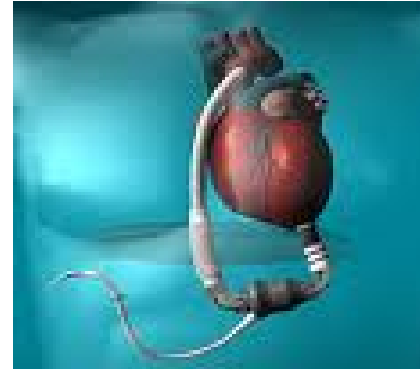
- Make it easier to pump
- Improve the fuel supply
- Fix the valves

Pump Failure

Congestive Heart Failure

❖ Replace the Pump

- Transplant
- VAD-VP Cheney



What's a Heart Attack?

Heart Attack

❖ Depends

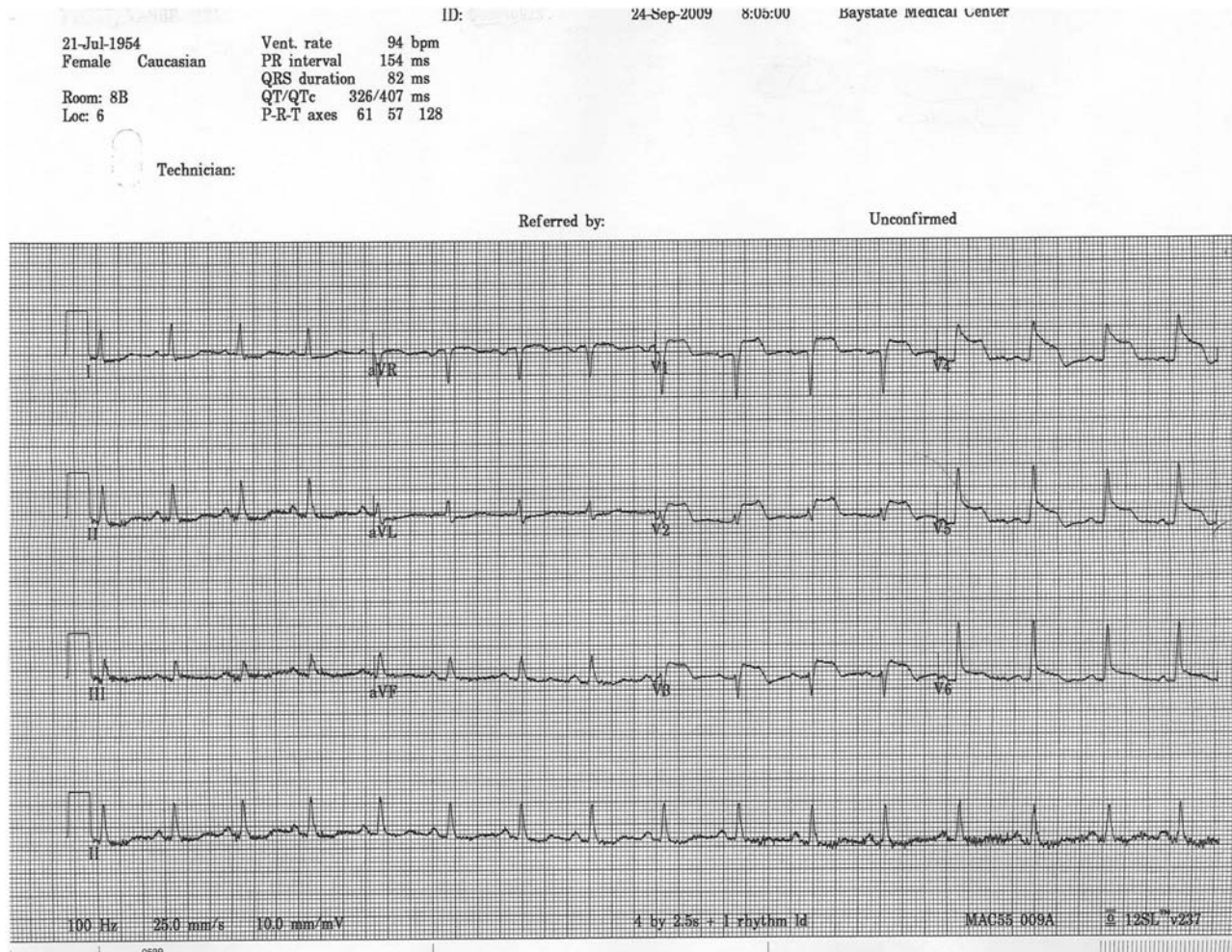
- Usually a Myocardial Infarction
 - Occlusion of a Coronary Artery
- Can Refer to
 - Arrhythmia-Sudden Cardiac Death
 - Broken Heart Syndrome

Heart Attack

❖ RH

- 65 y/o man with high blood pressure
 - Monday night develops chest pain, resolves in an hour
 - Tuesday night gets the same pain walking the dog.
Takes dog home, pain resolves
 - Wednesday night, develops similar pain and back pain @ 9 PM
 - Proceeds to Holyoke ER

Heart Attack



RH

- ❖ Baystate called @ 11:30 PM
- ❖ CT scan done to exclude torn aorta
- ❖ Patient transferred to Baystate Cath Lab ~ 1 AM

RH

- ❖ Echo- decreased pump function
- ❖ Discharged four days later.

Questions