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AUGUST 20 -22, 2010

HOTEL ZAZA, HOUSTON, TEXAS

CARDIOVASCULAR FELLOWS BOOTCAMP 2010

GET THE BASICS

BASIC CARDIAC HEMODYNAMICS

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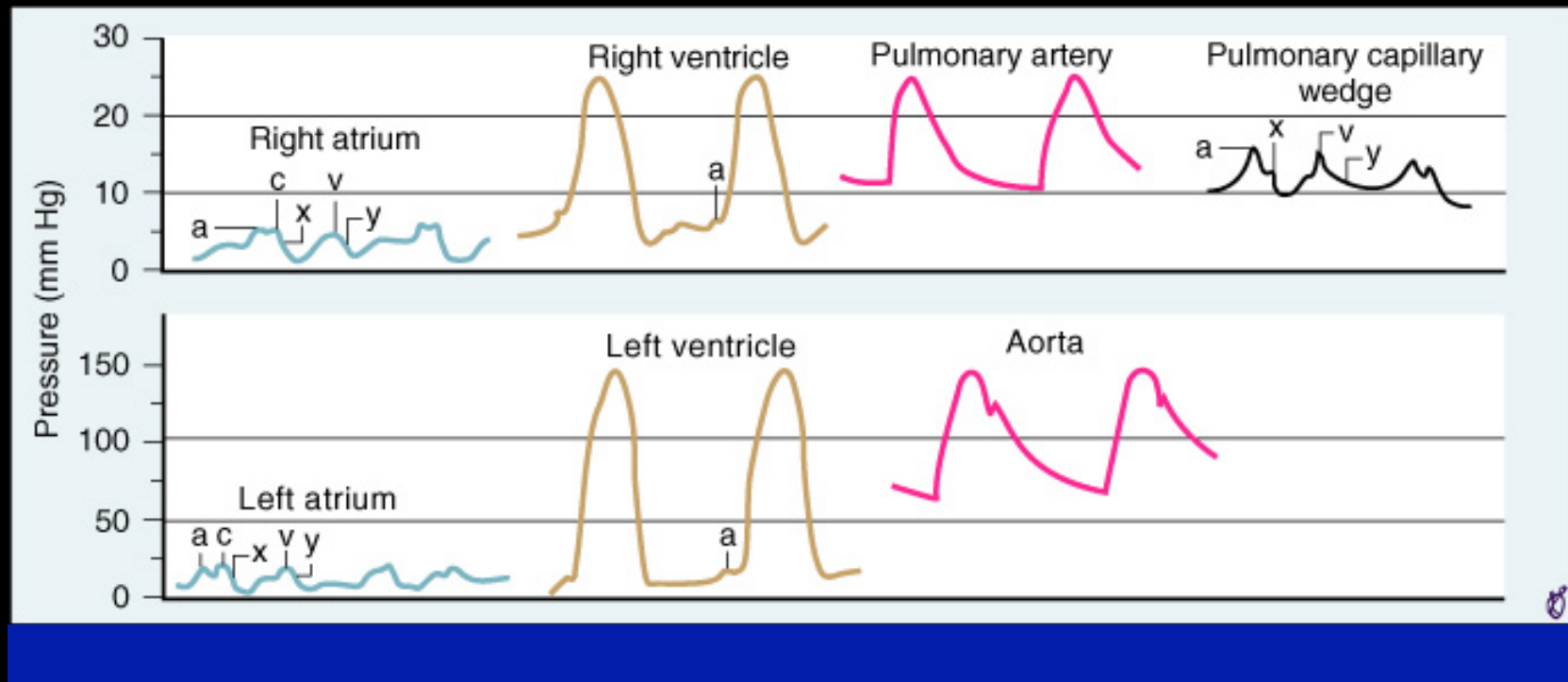


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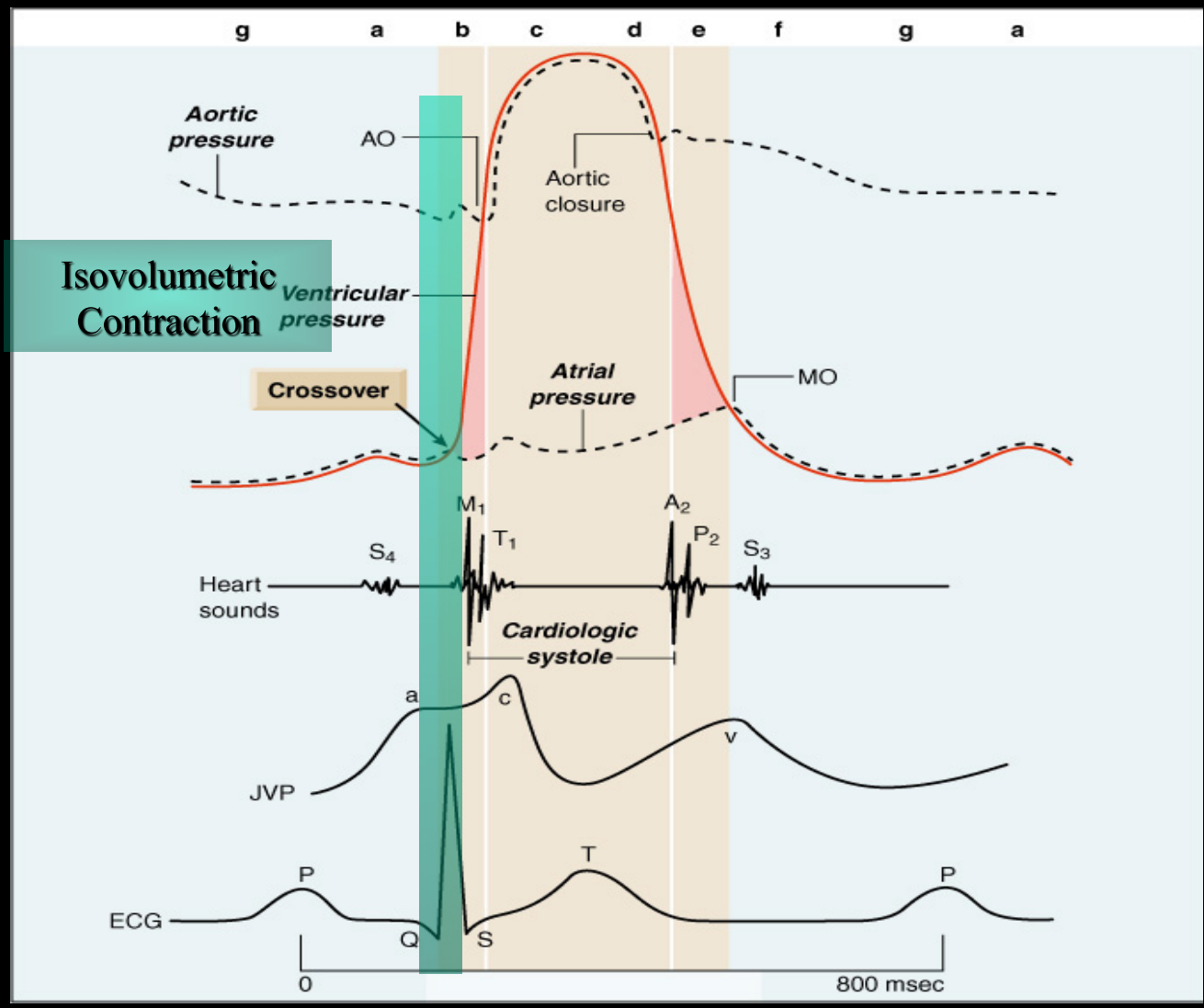
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NORMAL INTRACARDIAC PRESSURES



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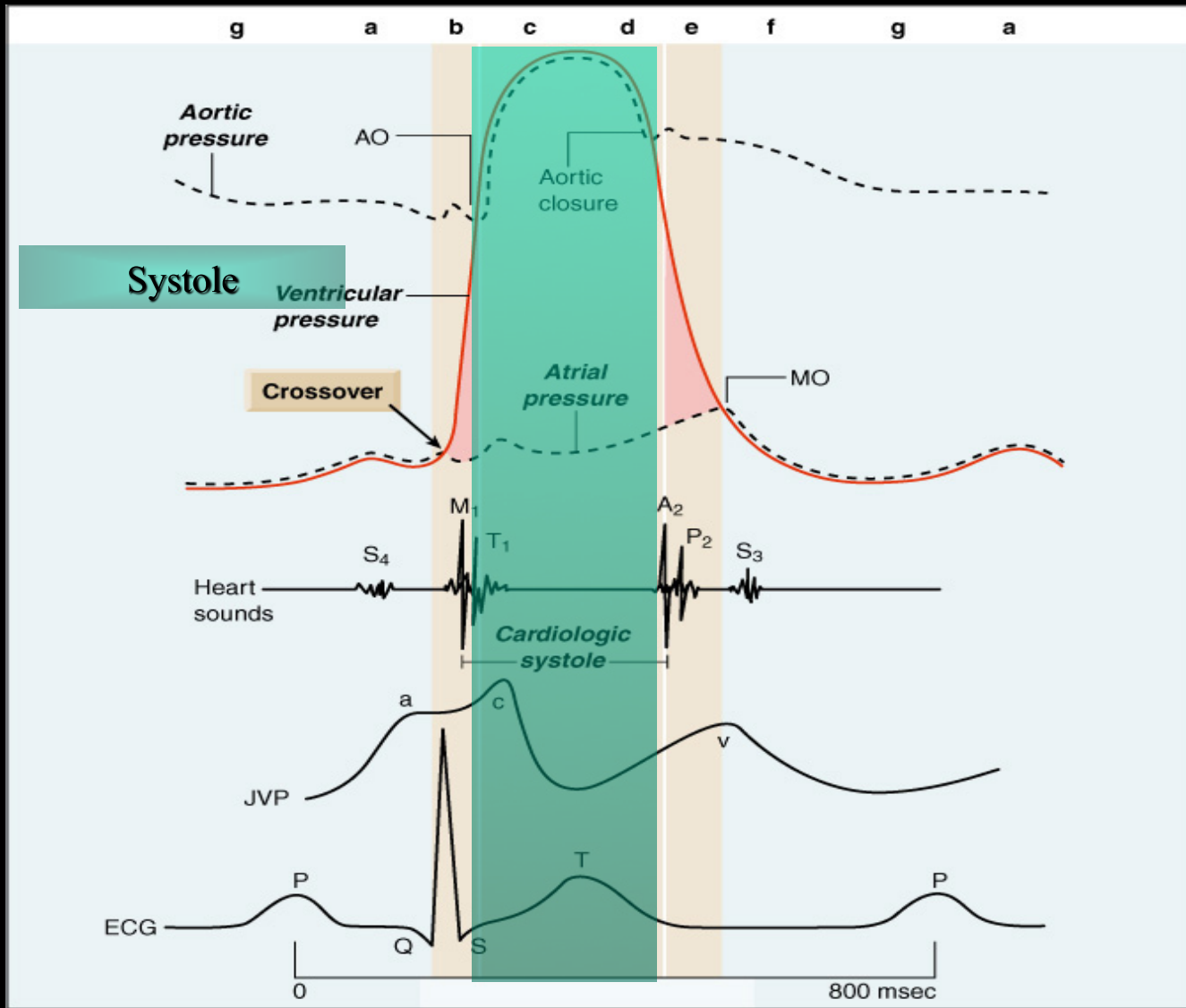
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**Isovolumetric
Contraction**

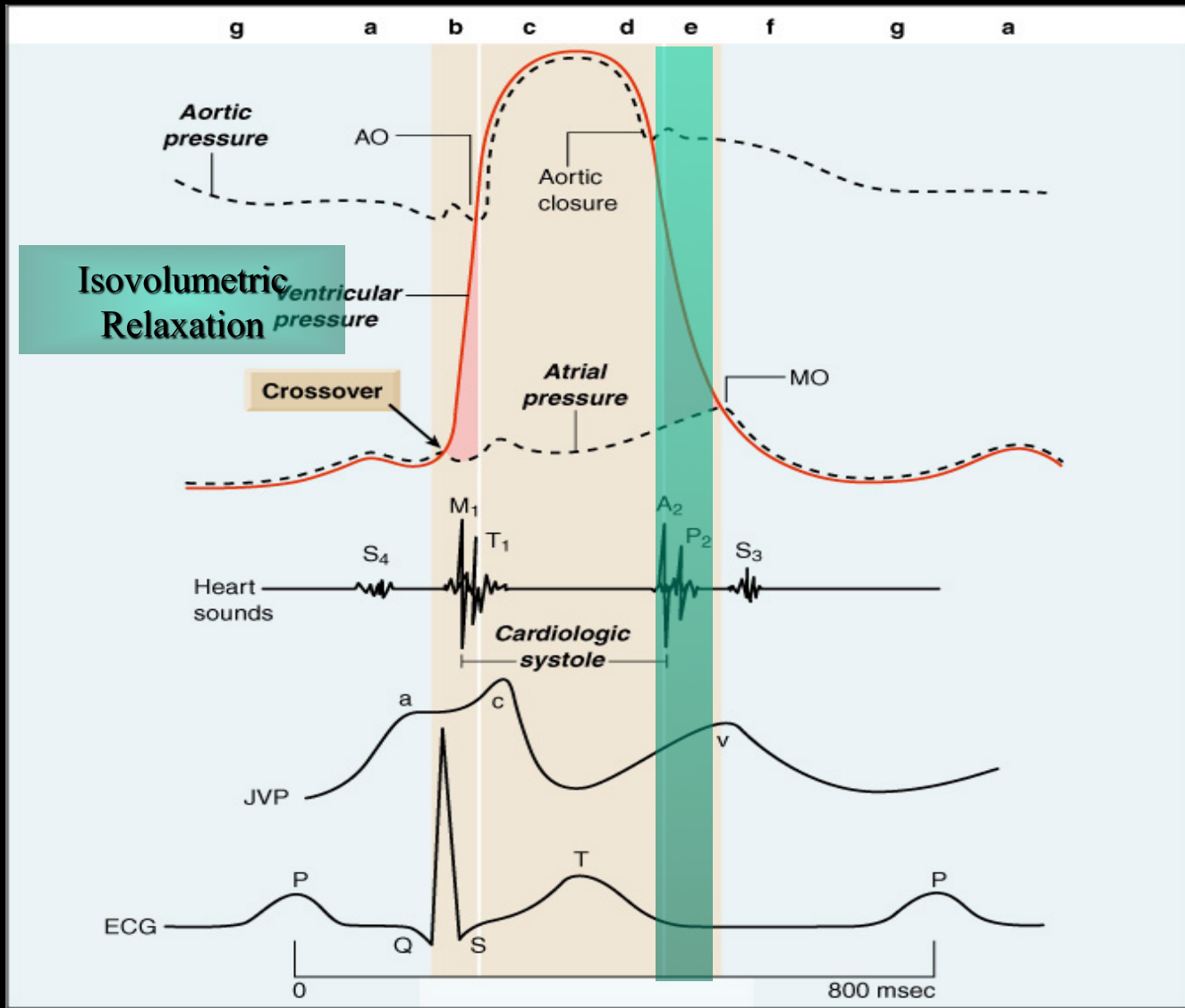
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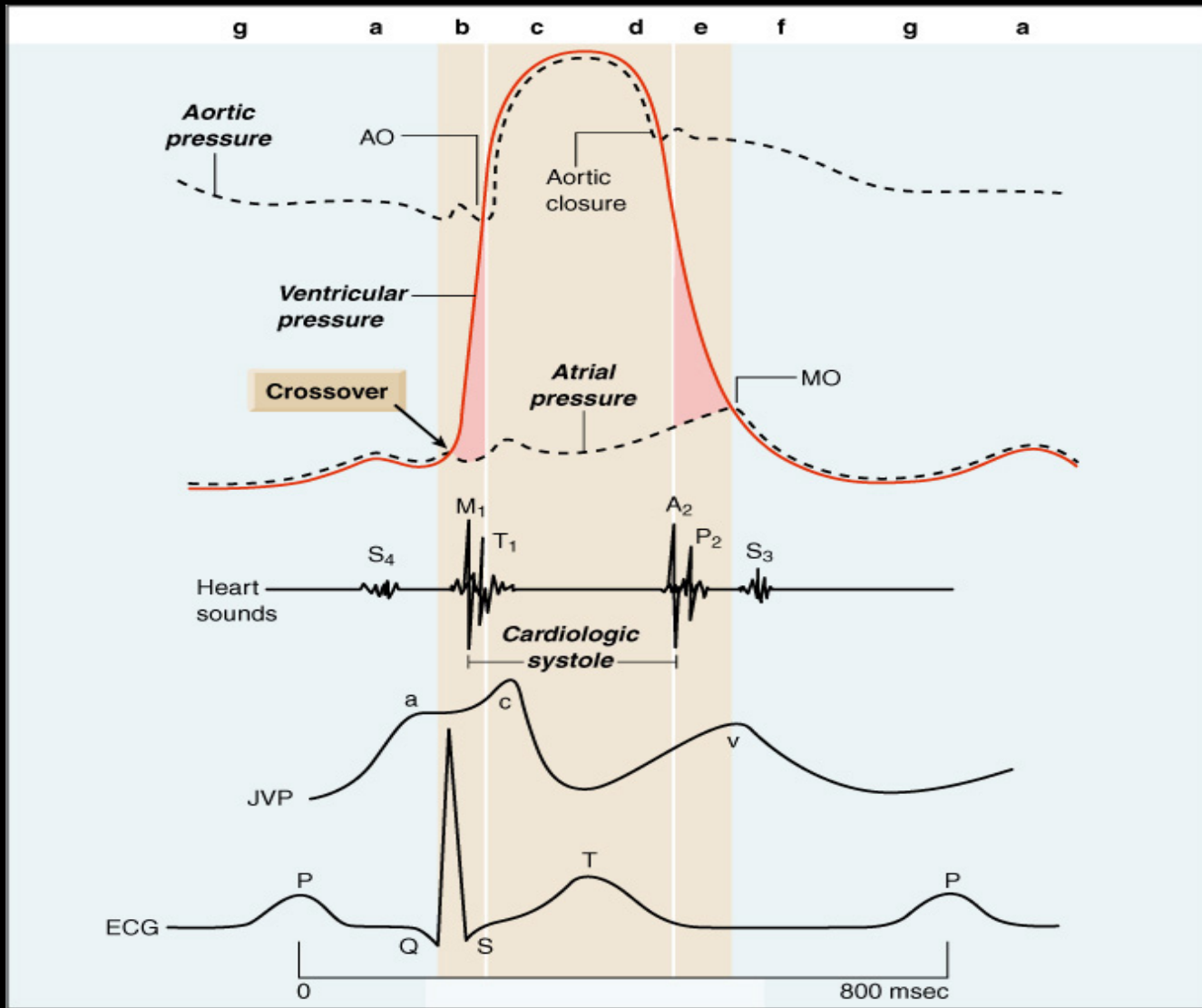
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BASIC CARDIAC HEMODYNAMICS

Determinants of Stroke Volume

▲
Preload

▼
Afterload

▲
Contractility

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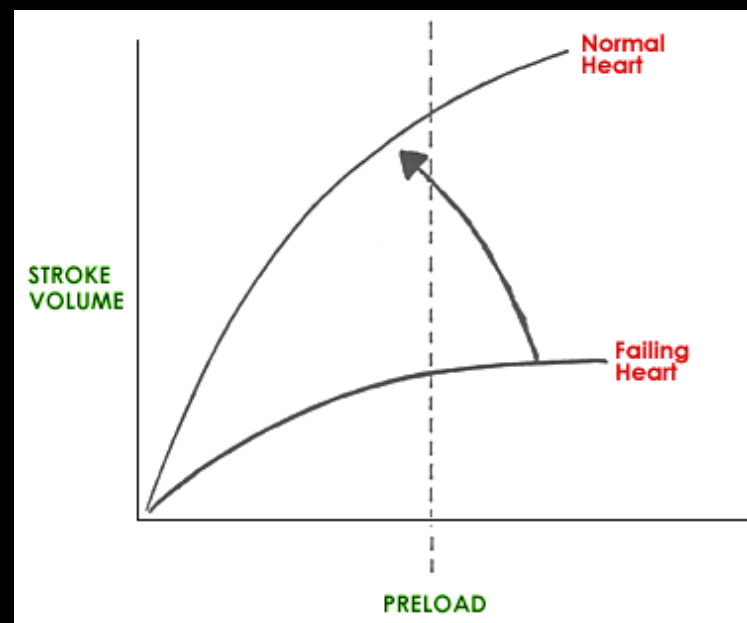
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BASIC CARDIAC HEMODYNAMICS

- Preload

- Stretch of ventricular wall. (Usually related to volume)

- Starling's Law



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PRELOAD

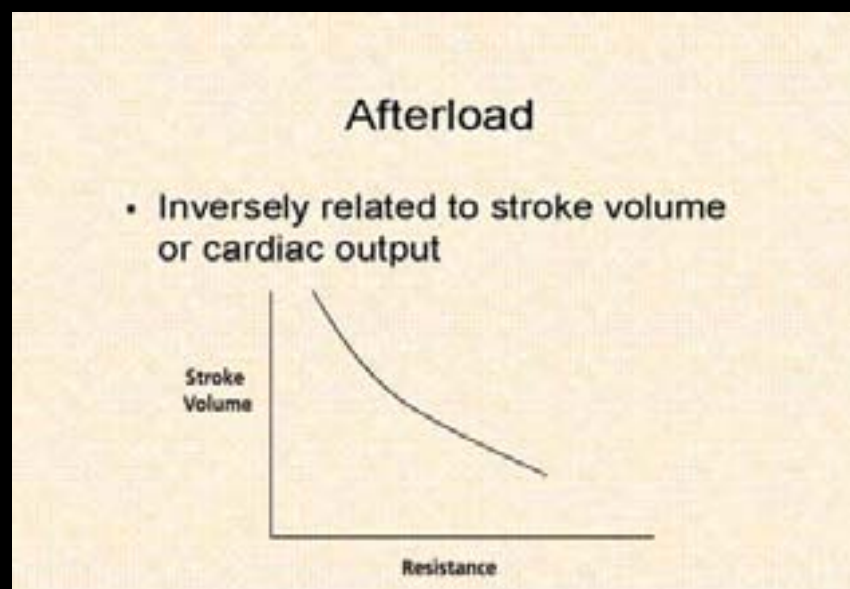
- Increased circulating volume
- Mitral insufficiency
- Aortic insufficiency
- Heart Failure

- Decreased circulating volume (bleeding, 3rd spacing)
- Mitral stenosis
- Vasodilator use (NTG)
- Diuretics
- Asynchrony of atria and ventricles

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BASIC CARDIAC HEMODYNAMICS

- Afterload
 - resistance the ventricle must overcome to eject blood during systole



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AFTERLOAD

- **Increased Afterload**

- Hypertension
- Pressors
- Aortic stenosis

- **Decreased Afterload**

- Vasodilators
- ACE Inhibitors
- ARBs
- Decreased volume
- Sepsis

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BASIC CARDIAC HEMODYNAMICS

- Contractility
 - Intrinsic ability of the heart to contract independent of preload and afterload



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CONTRACTILITY

– Increased

- Positive inotropic drugs
 - Dobutamine,
Digoxin, Epinephrine,
Milrinone
- Sympathetic stimulation
 - Fear, anxiety
- Calcium

• Decreased

- Negative inotropic drugs
 - Beta Blockers,
CCB, Epinephrine,
- Vagal stimulation
- Hypoxemia