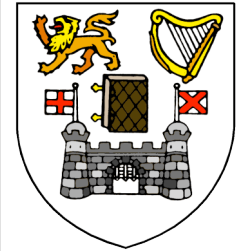


Phases of the Cardiac Cycle

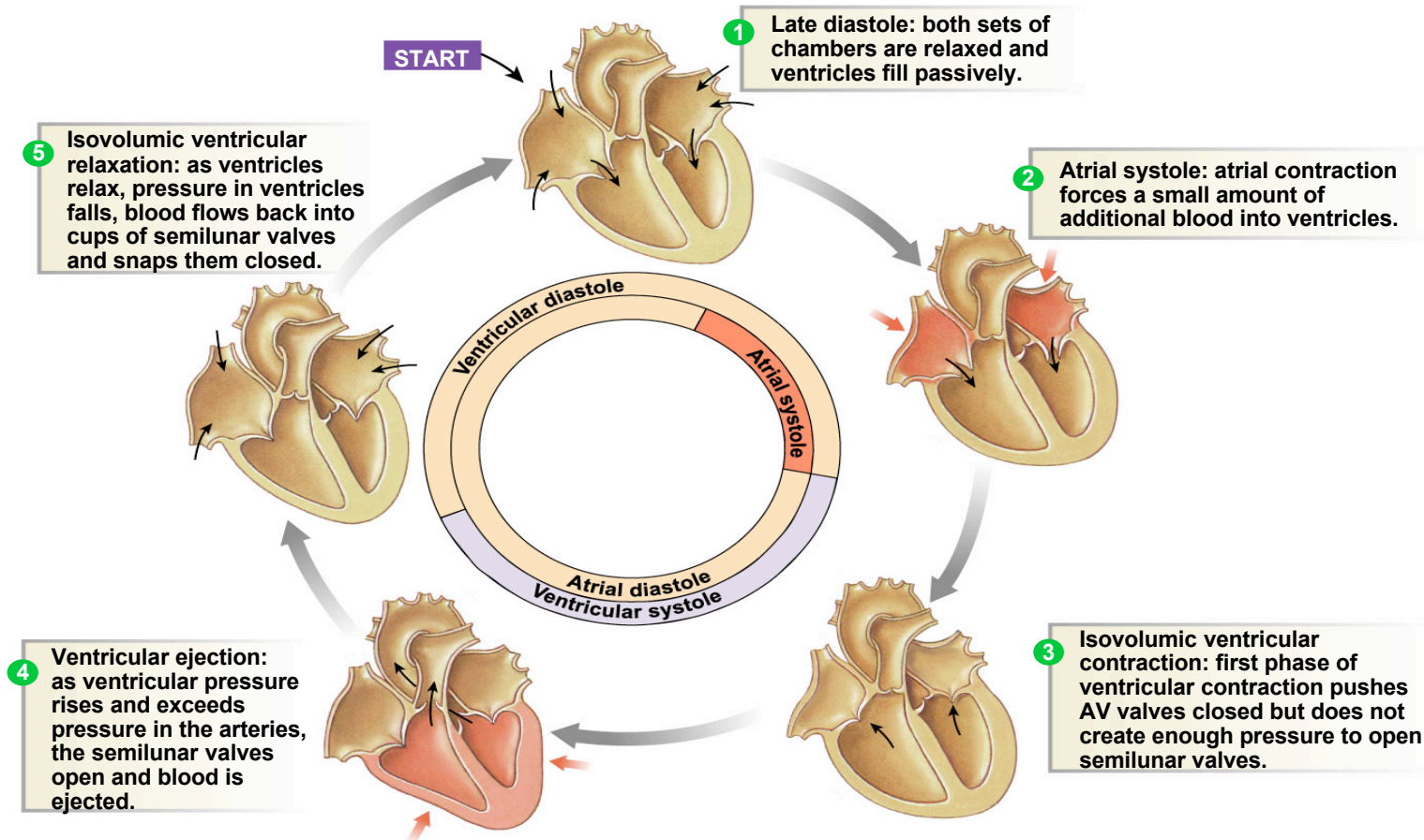
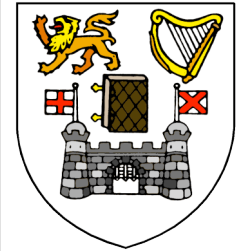
- All the events associated with the flow of blood through the heart during a single complete heartbeat (approx 0.8sec if heart rate is 75bpm)
- One “heart beat” may be divided into two sequential phases:
 - Diastole
 - Period of cardiac relaxation
 - Often an implied time of refilling, despite period of isovolumetric relaxation
 - Systole
 - Period of cardiac contraction
 - Often an implied time of ejection, despite period of isovolumetric contraction
- Each phase may be applied to both atria and ventricles, therefore the sequence of events (which may overlap) are:
 - atrial diastole → ventricular diastole → atrial systole → ventricular systole

Phases of the Cardiac Cycle

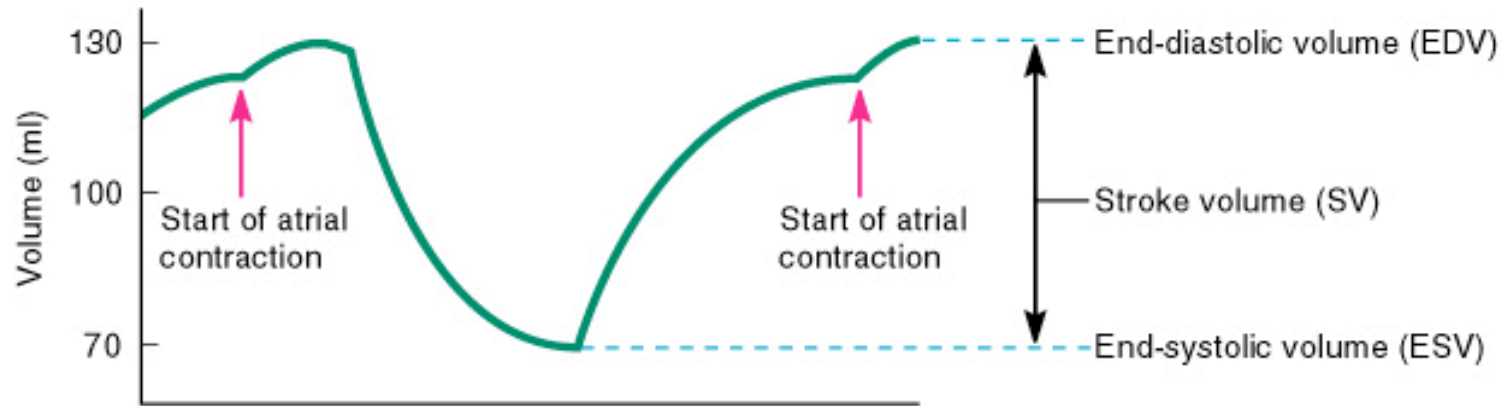
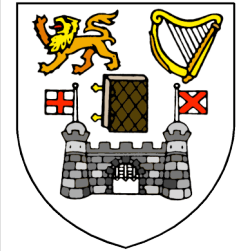
- Revise:
- Cardiac anatomy
- Action of valves
 - Valves open passively due to pressure gradients
 - AV valves open when $P_{\text{atria}} > P_{\text{ventricles}}$
 - Semilunar valves open when $P_{\text{ventricles}} > P_{\text{arteries}}$



Cardiac Cycle: Mechanical Phases



Ventricular Volume and Stroke Volume



EDV = end diastolic volume = volume of blood in ventricle at end of diastole

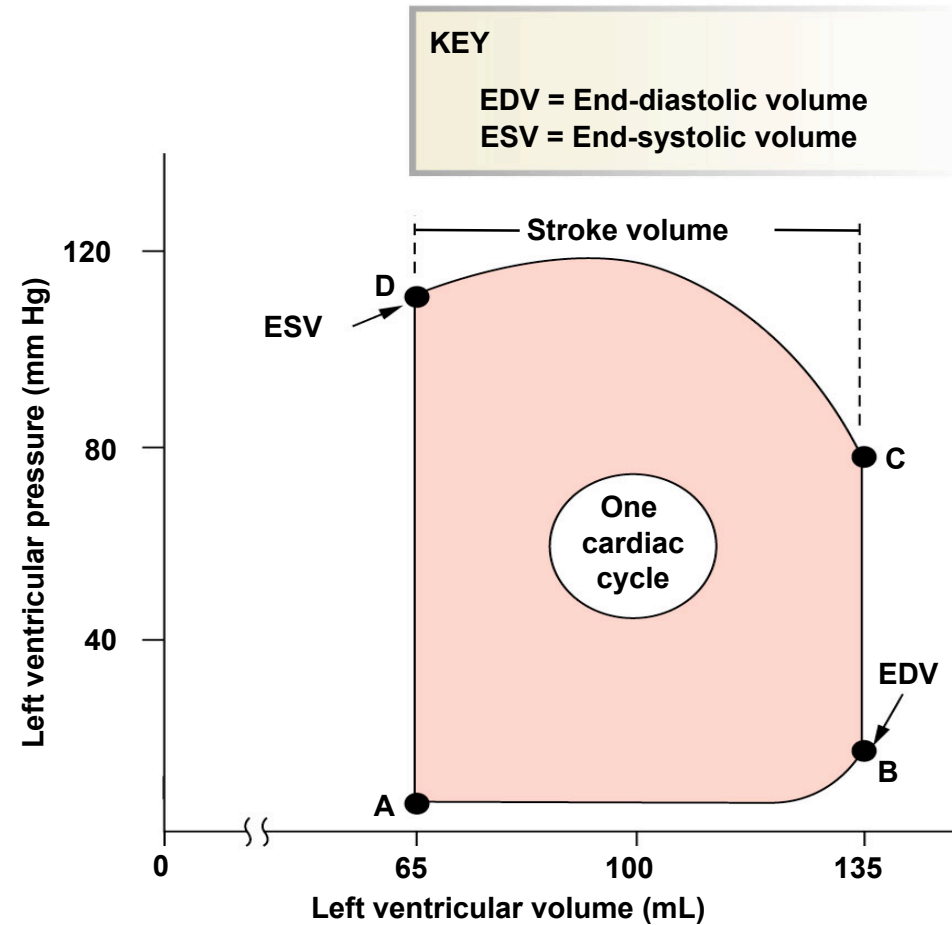
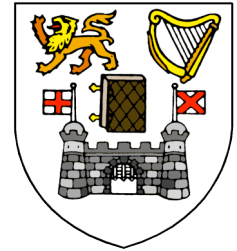
ESV = end systolic volume = volume of blood in ventricle at end of systole

SV = stroke volume = volume of blood ejected from heart each cycle

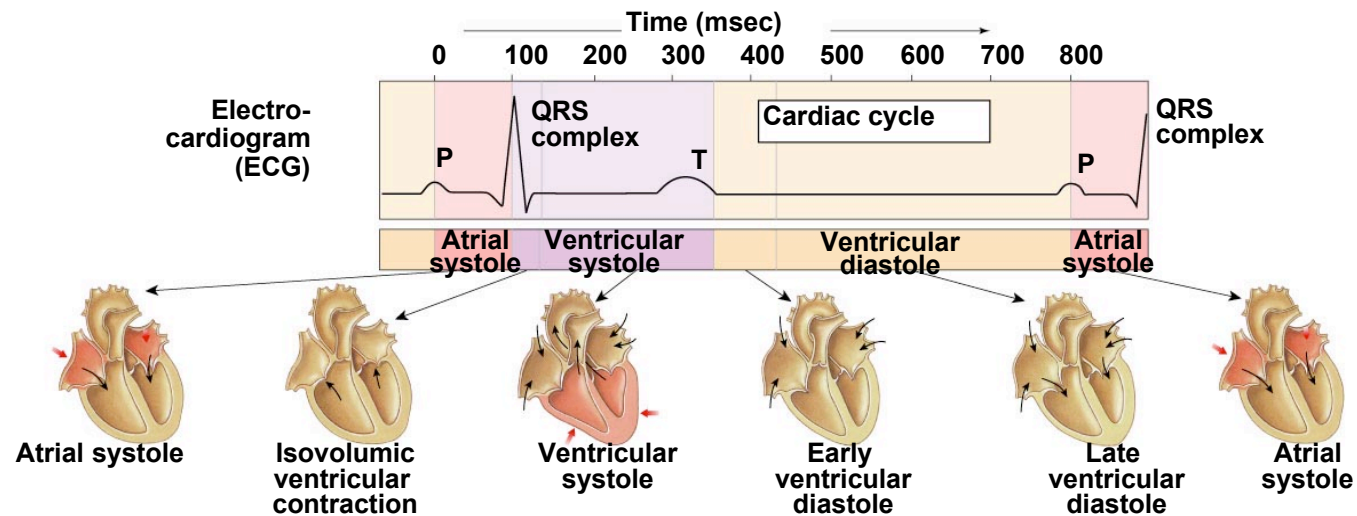
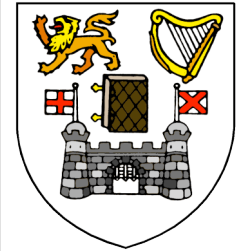
$SV = EDV - ESV$

$130 \text{ mL} - 70 \text{ mL} = 60 \text{ mL}$

Cardiac Cycle: Pressure-Volume curve/loop



Wigger Diagram



Wigger Diagram

