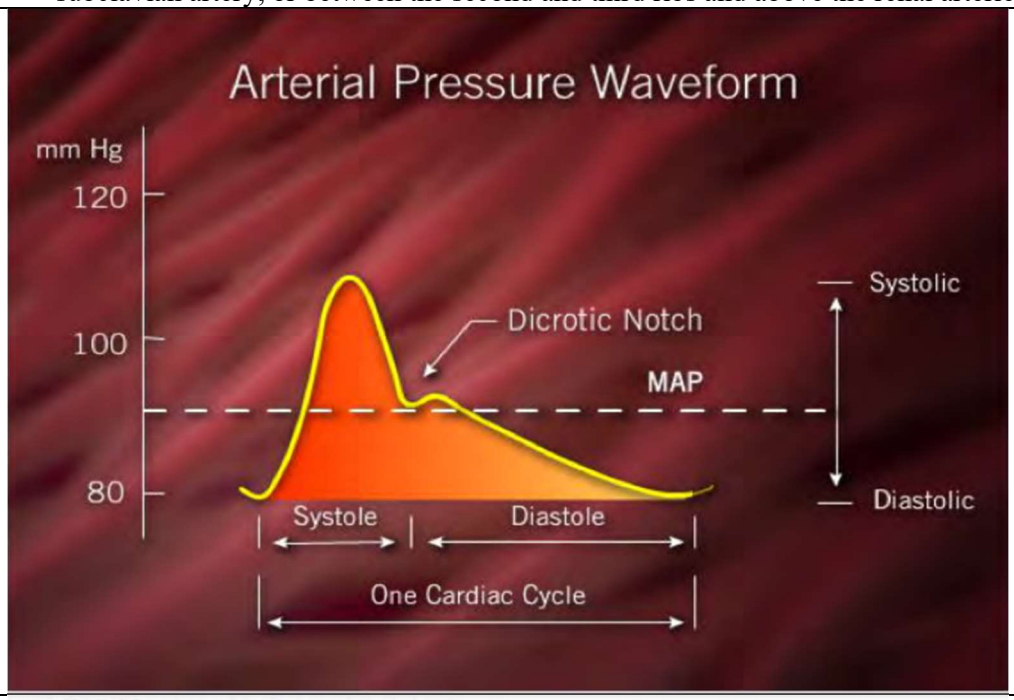
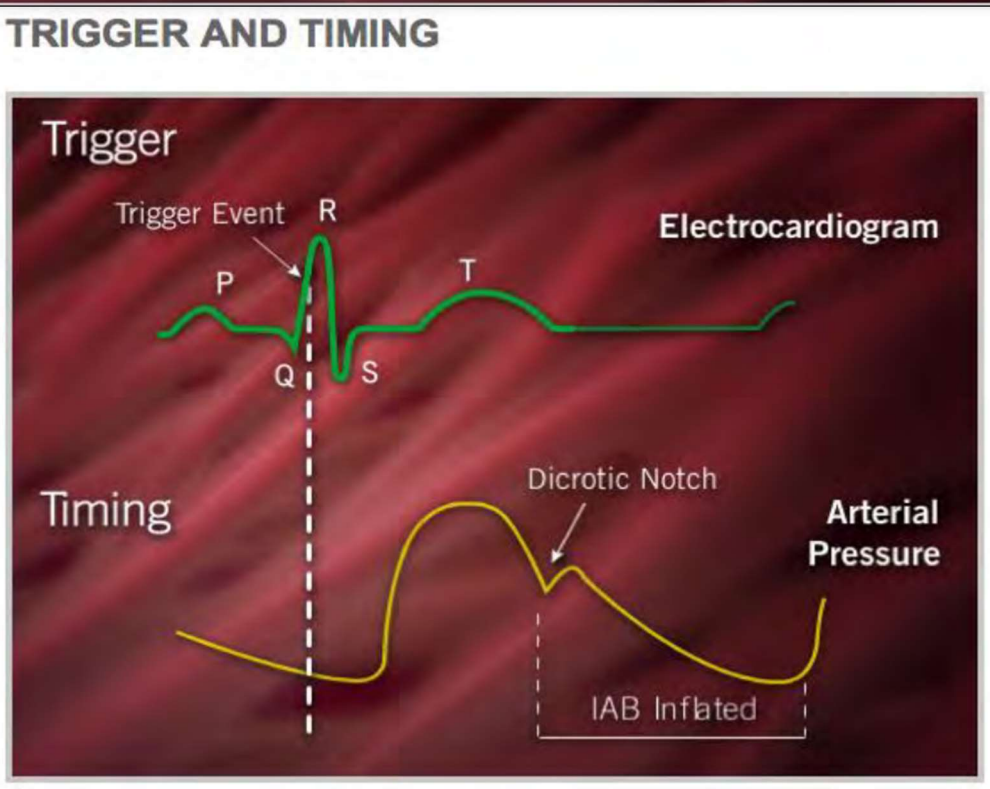
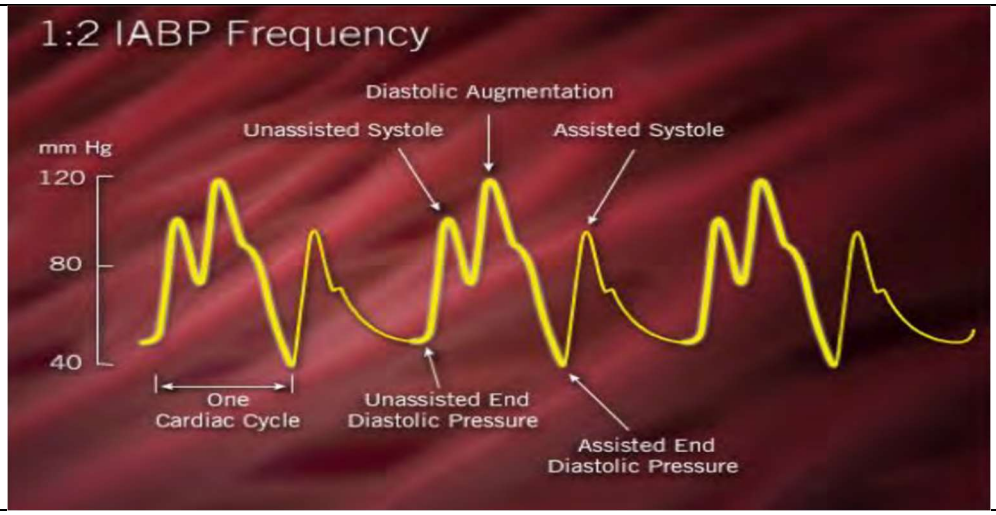
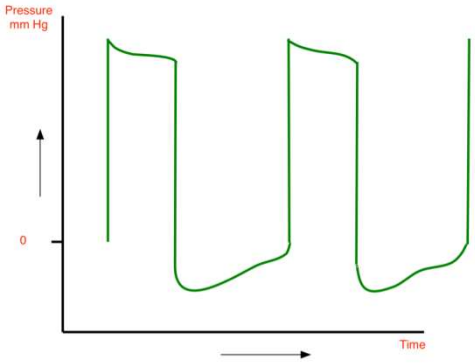
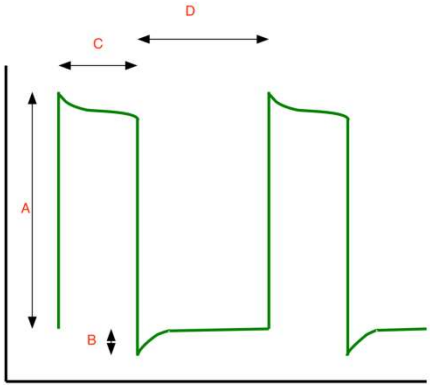
IABP chks	• Check limb circulation observations and document • Check CXR for proper positioning of catheter 2 cm below the origin of the left subclavian artery, or between the second and third ribs and above the renal arteries.
IABP tracing	
IABP trigger and timing	

Late balloon inflation	 Visible dicrotic notch with a delay to the onset of balloon inflation (Yellow ellipse) Assisted systolic pressure peak approaching the same height as the unassisted systolic pressure peak (Horizontal yellow line). Additionally, the augmented diastolic peak has dropped to the same height as the unassisted systolic pressure peak. Narrow balloon inflation waveform (Purple ellipse).

Other IABP thoughts	Timing should be checked on a 1:2 or 1:3 ratio so you can see a normal beat and press the inflation interval key The width of the waveform corresponds to the duration of balloon inflation during the cardiac cycle The plateau of the waveform reflects pressure within the aorta when the balloon is inflated. The balloon pump has to overcome the pressure within the aorta to fill the balloon with gas. Since the balloon material is very compliant, the pressure on either side will be approximately the same. Therefore the plateau pressure on the BPW should be within ± 20 mmHg of the diastolic on the arterial pressure waveform Early inflation means balloon inflates b/4 LV contraction is finished. That forces AV closed, and ↑ afterload as LV contracts against closed AV. Can also get AR. Late inflation causes loss of diastolic augmentation, appears as loss of sharp V and a clearly visible dichrotic notch prior to augmentation. Late deflation Assisted EDP > unassisted EDP Prolonged, slurred upstroke Increased afterload results in ↑ work, impaired O_2 supply-demand balance Early deflation Sharp drop in augmented pressure wave Loss of beneficial effects of afterload reduction • Assisted EDP *not* less than unassisted EDP • Assisted systole *not* less than unassisted EDP • Increased myocardial work, impaired O_2 balance Coronary steal phenomenon
1:2 freq	

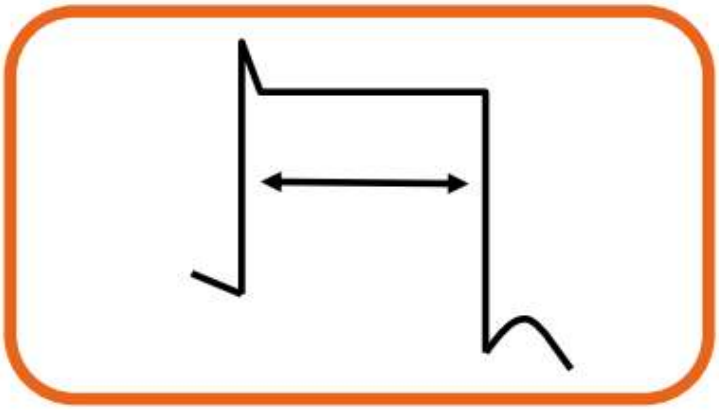
IABP troubleshooting	Inadequate augmentation
	• Pump factors
	• Pt factors
	  ○ Tachyarrhythmia
	  ○ Hypovol
	  ○ Hotn
	  ○ Vasodil
	• Catheter
	  ○ Position
	  ○ Size
	  ○ Volume

	IABP Pressure-Time tracing. What does it show?  Below is a normal tracing:  Leak in the balloon (e.g. from rupture or loose cxn) causes the balloon pressure to become negative when it is deflated.

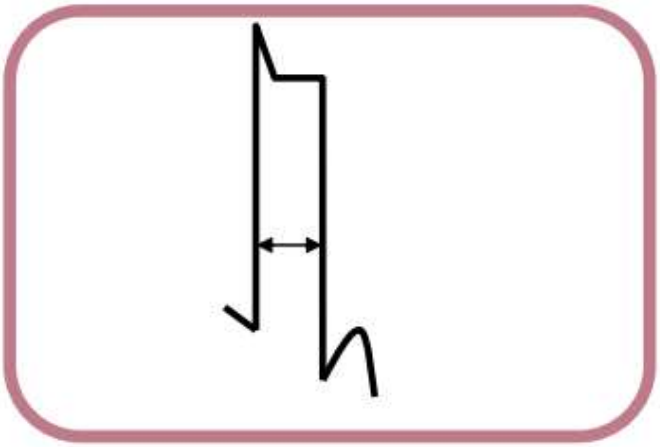
Variations in balloon pressure waveforms

Changes in balloon pressure waveforms maybe due to the following:

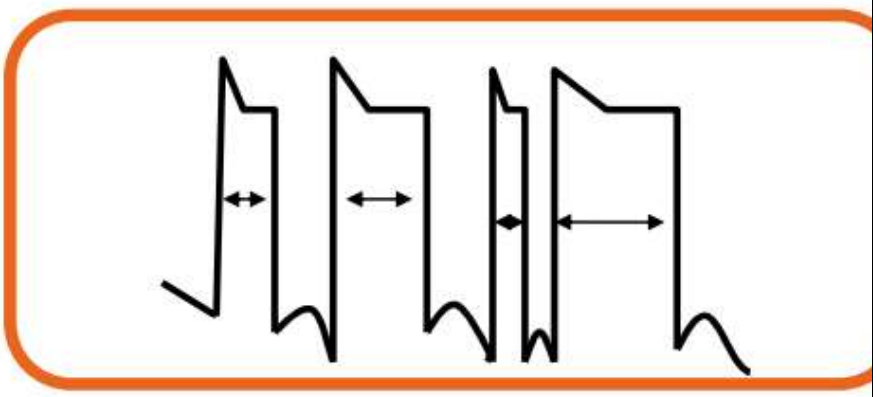
- Bradycardia: increased duration of plateau due to a longer diastolic phase



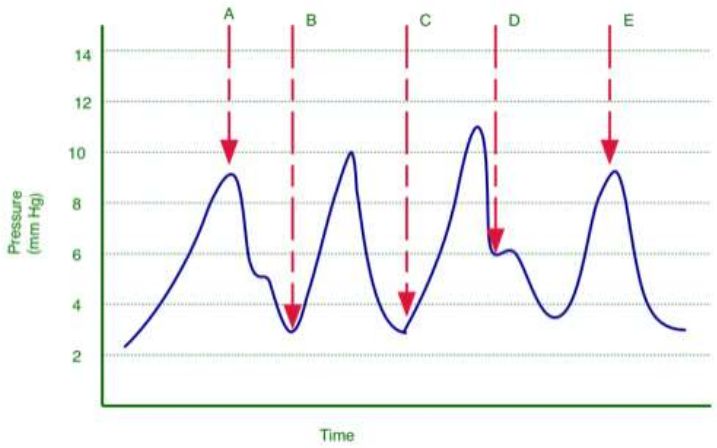
- Tachycardia: decreased duration of plateau due to shorter diastolic phase

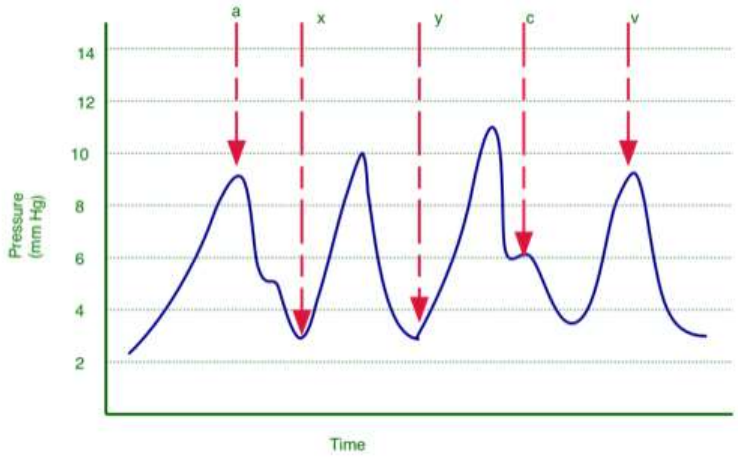


- Rhythm: changes in width due to erratic diastolic phase.
  If the heart rate is erratic, as in atrial fibrillation or there are frequent prema
  complexes, the waveform will have varying widths



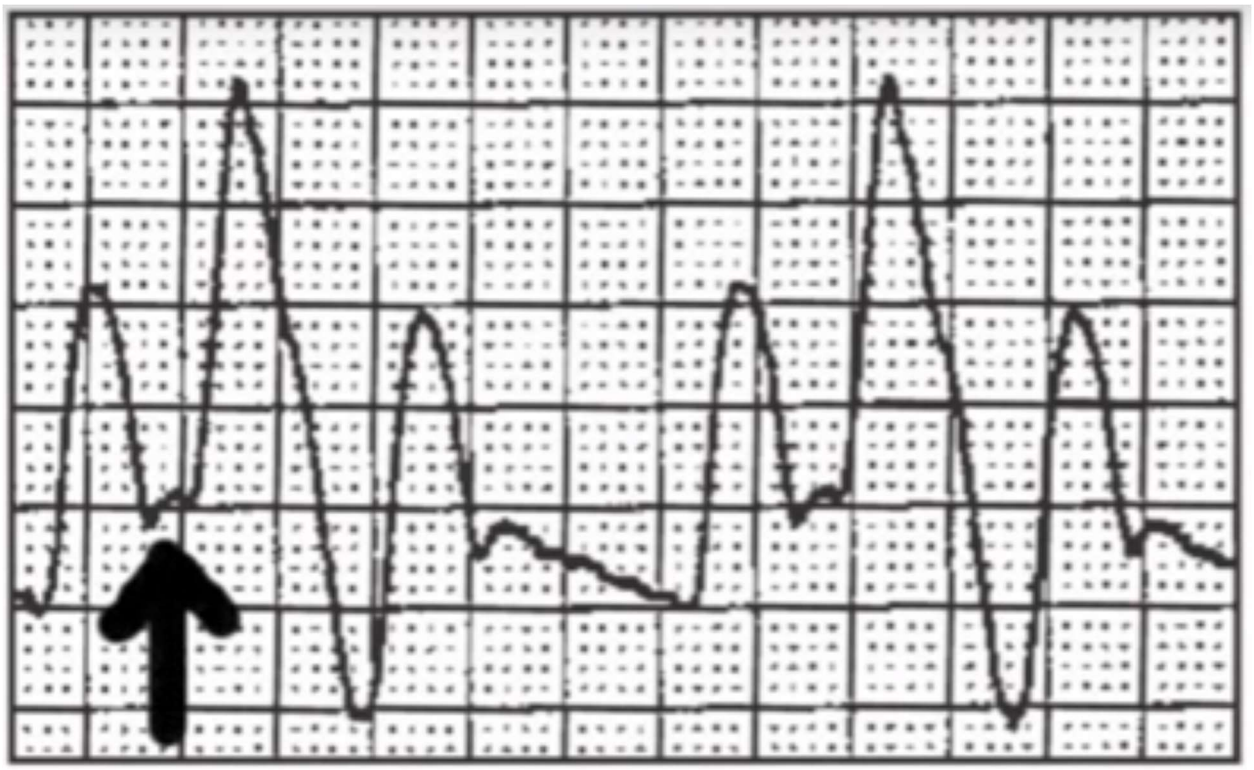
CVP tracing



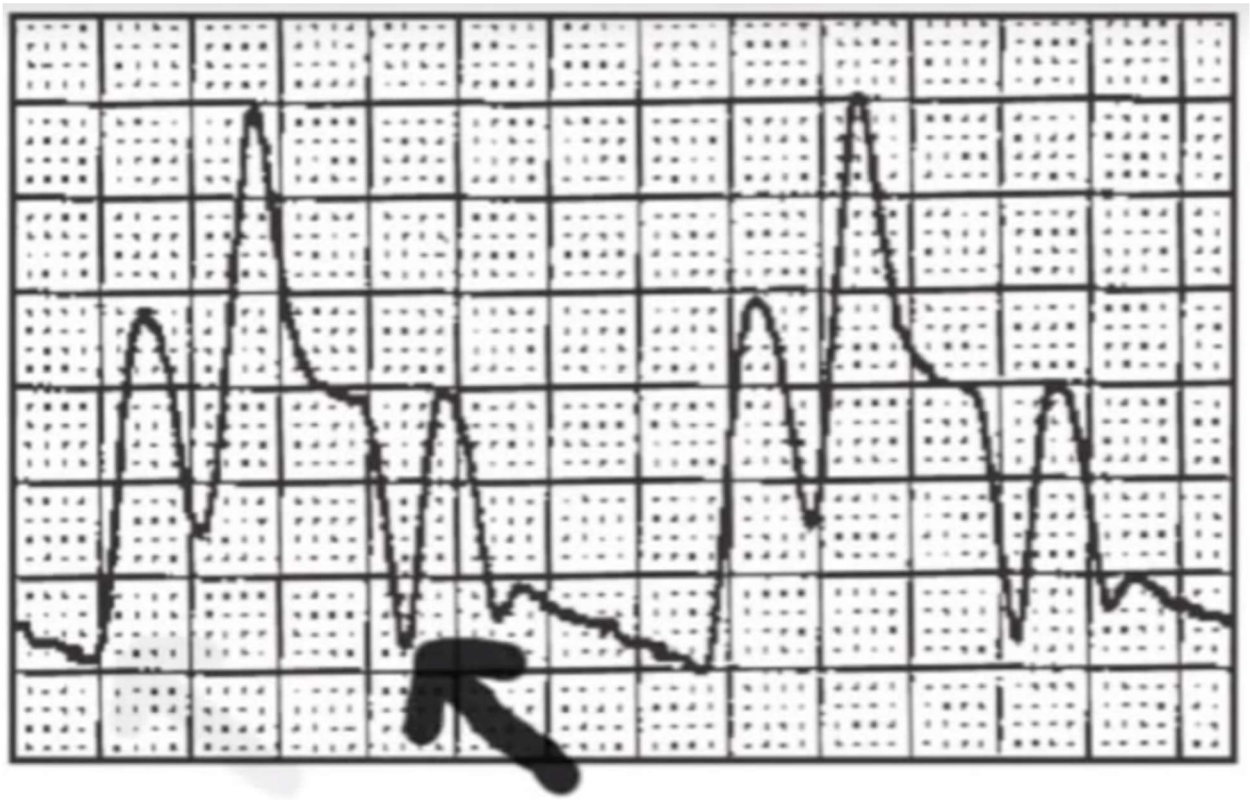


Waveform Component	Phase of Cardiac Cycle	Mechanical Event
a wave	End diastole	Atrial contraction
c wave	Early systole	Tricuspid bulging (IVC)
v wave	Late systole	Systolic filling of the atrium
x descent	Mid systole	Atrial relaxation
y descent	Early diastole	Early ventricular filling

IABP Late inflation



Late deflation



Early deflation