

Fetal Education Series:

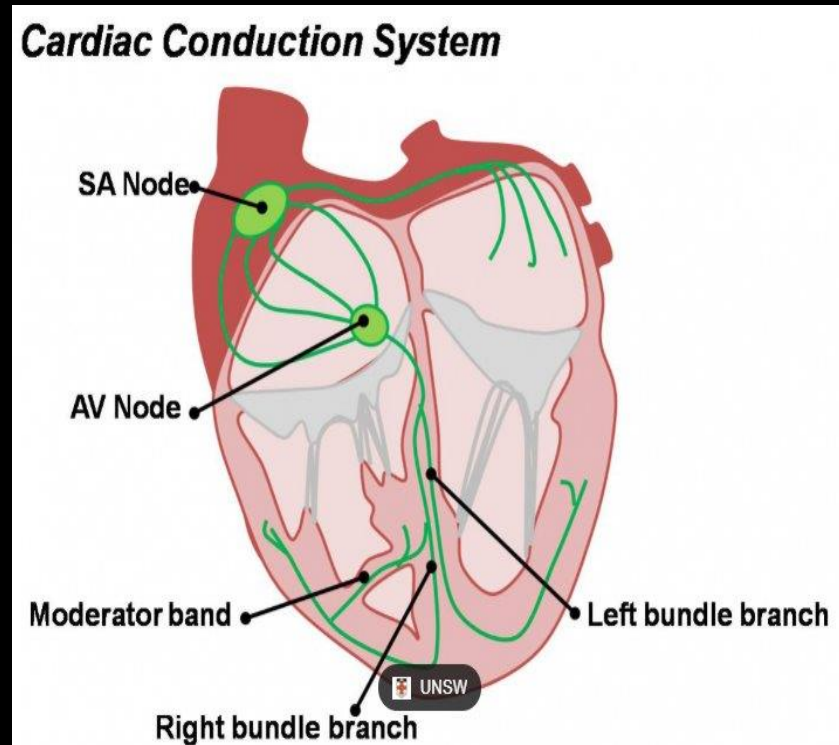
Premature Atrial Contractions (PAC's)

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Overview of the talk

- Normal cardiac conduction
- Manifestation of conduction abnormalities
- What are PAC's?
- Why do they occur?
- What is the significance?
- What are the monitoring guidelines?

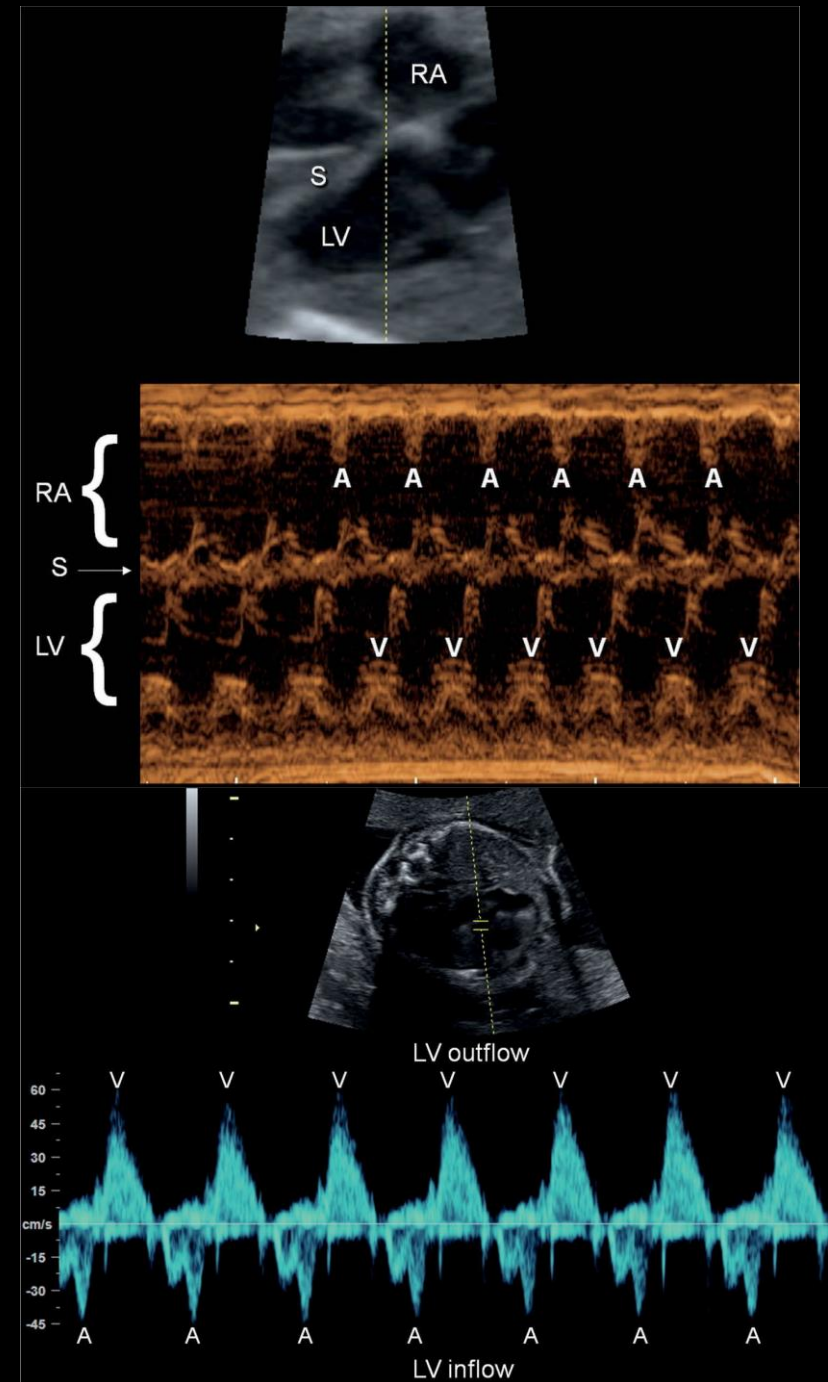
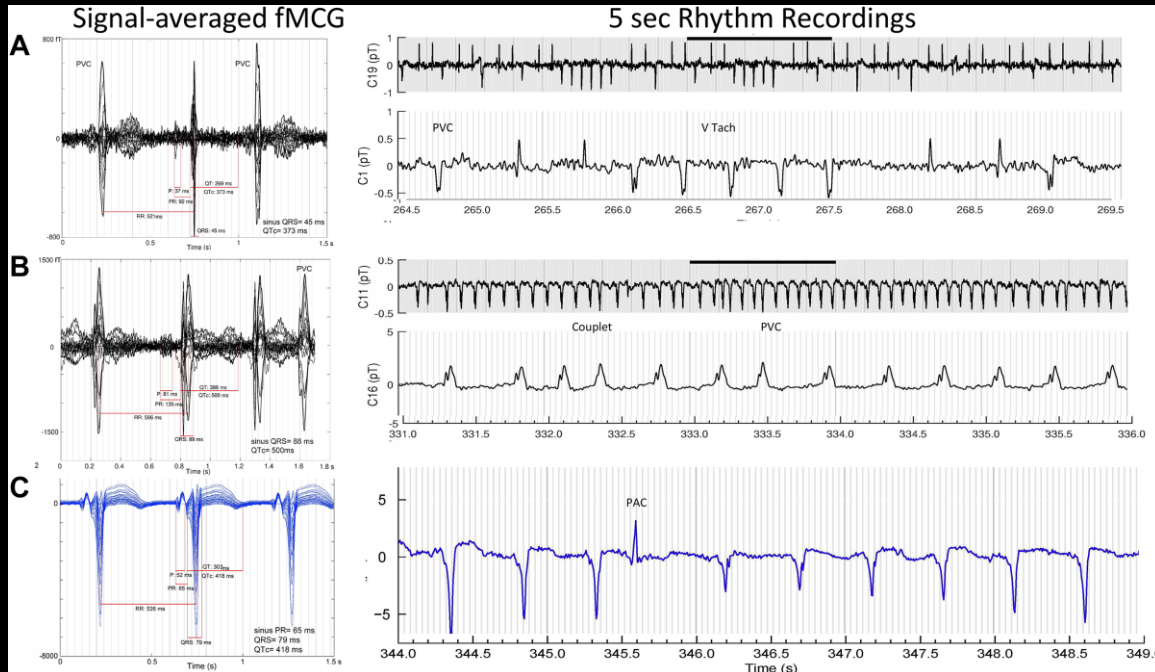
Normal Cardiac Conduction



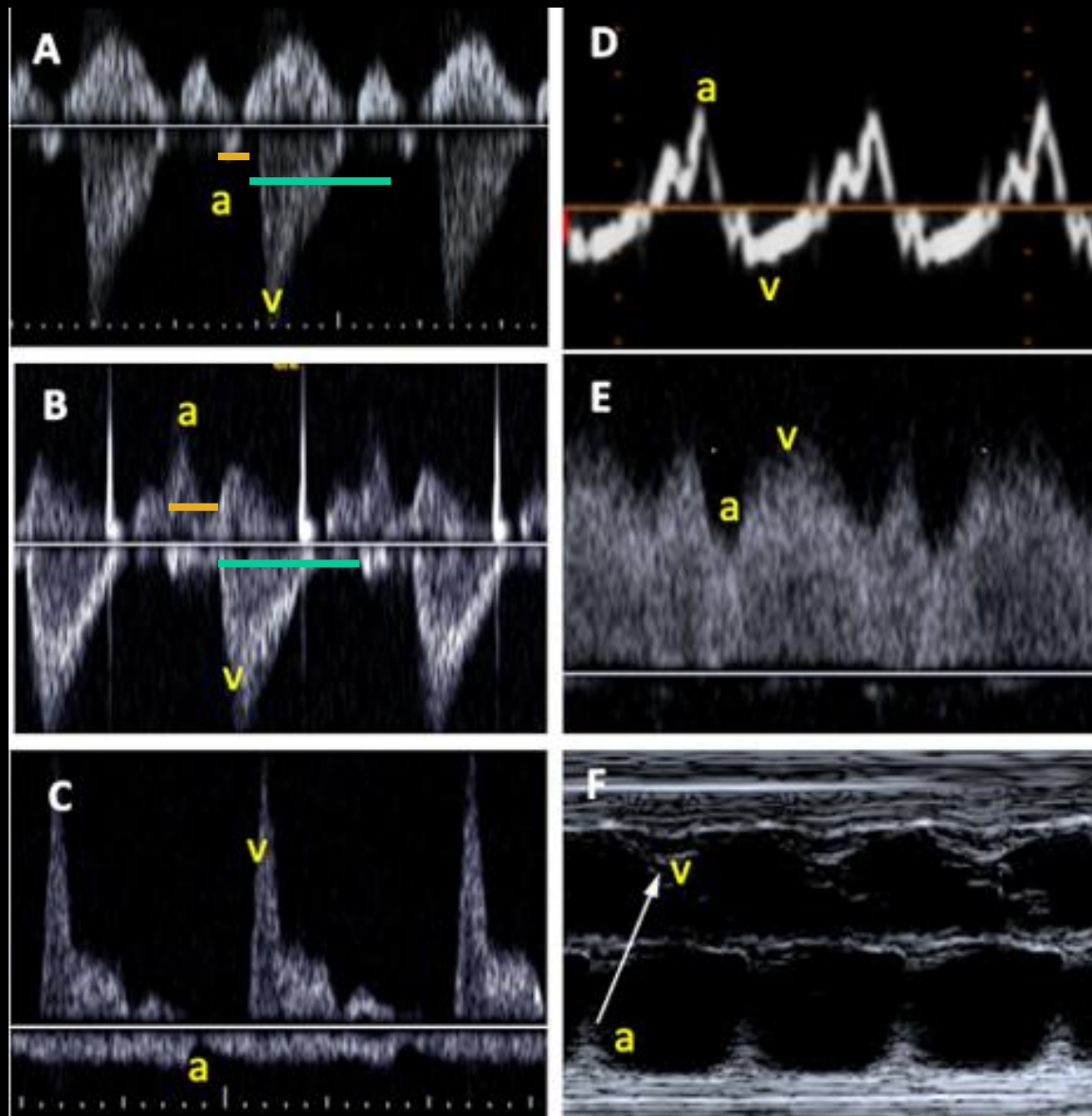
<https://www.youtube.com/shorts/lMkuhVSMY-w?feature=share>

Assessment of fetal heart rate and rhythm

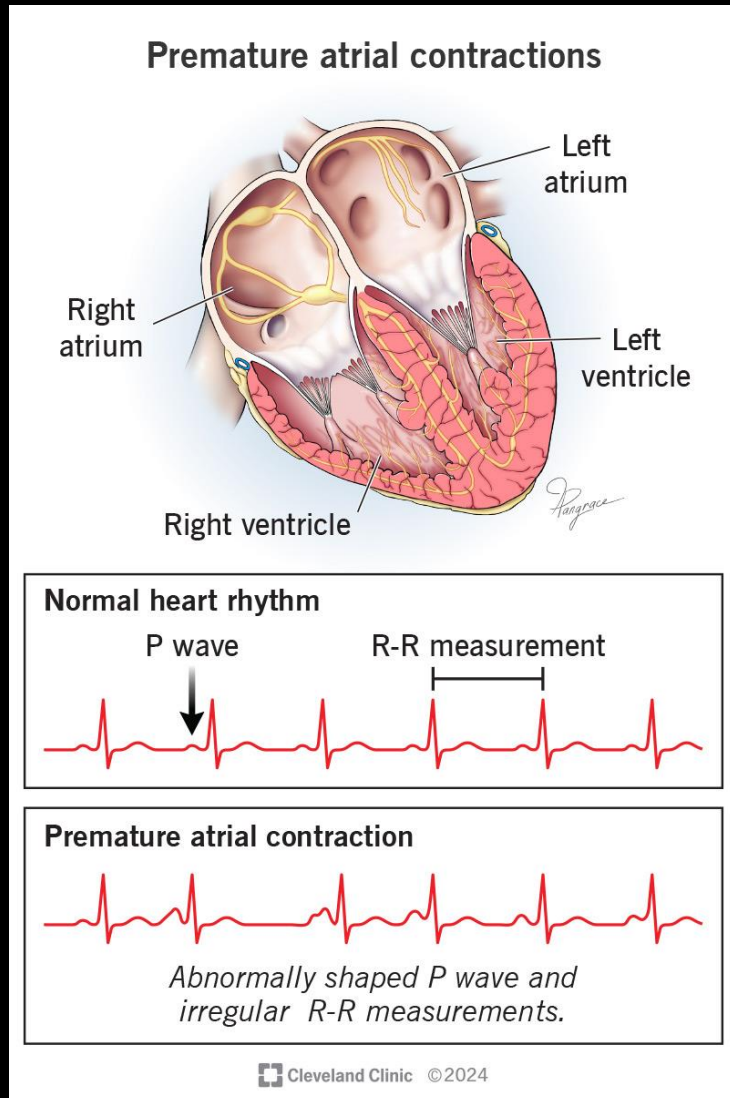
- Mainstay of diagnosis of the rhythm is a fetal echocardiogram
- Conceptual basis is to visualize the mechanical or flow related sequelae of electrical activity
- Newer technology: Fetal magnetocardiography



Rhythm and rate from different Dopplers



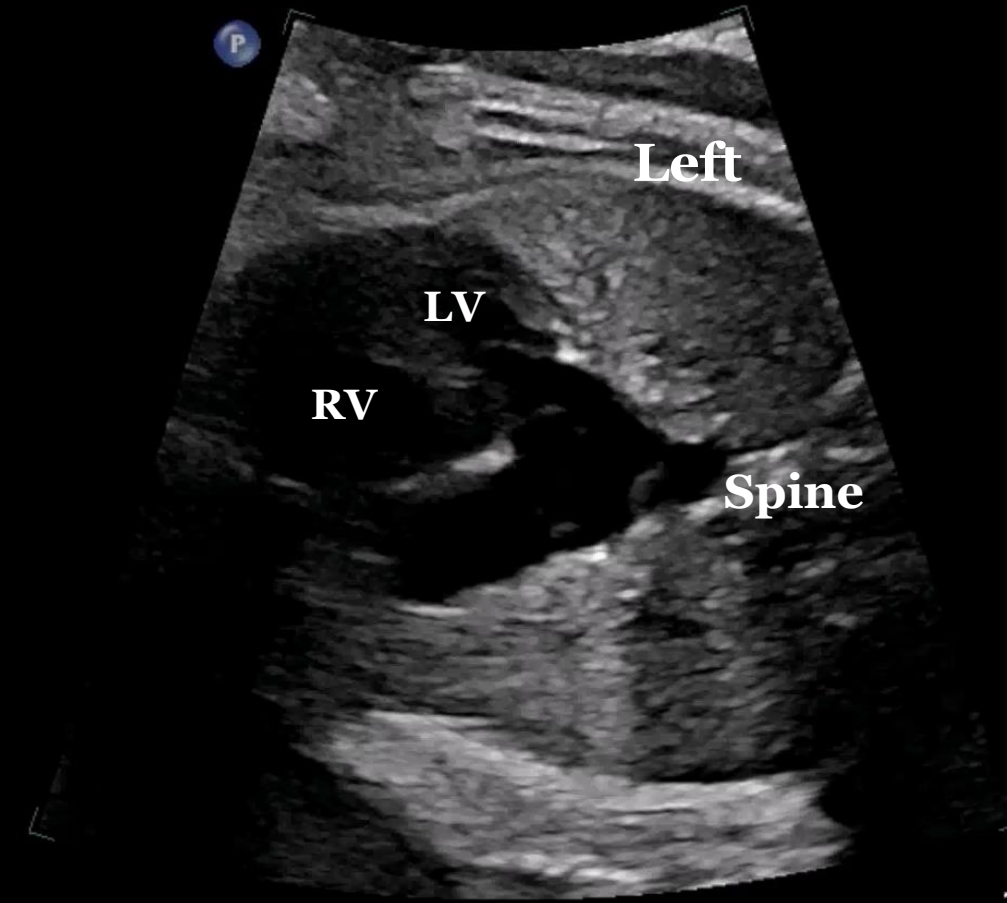
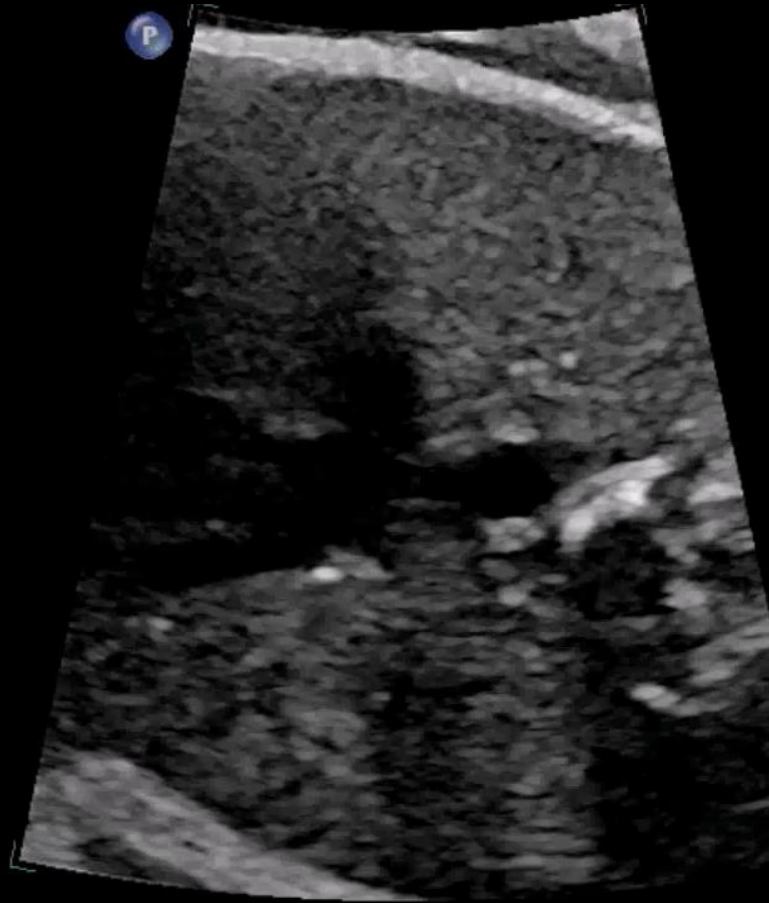
What are PAC's ?



- Premature atrial contractions
- Much more common 1.7% in third trimester
- Benign, and in isolation are not associated with underlying heart disease
- 1-10% can be associated with CHD
- Frequent PAC's may herald the development of sustained tachyarrhythmia
- Commonly present in the 2nd- 3rd trimester

Why do they occur?

- Fetal factors
- Maternal factors



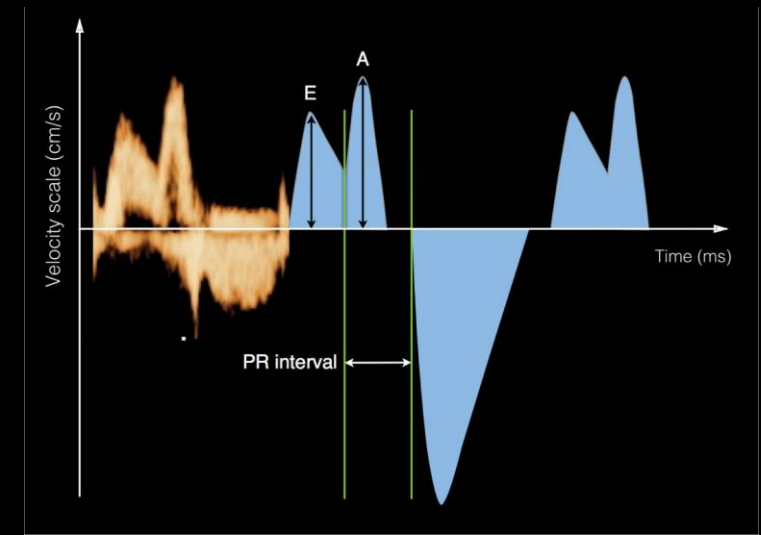
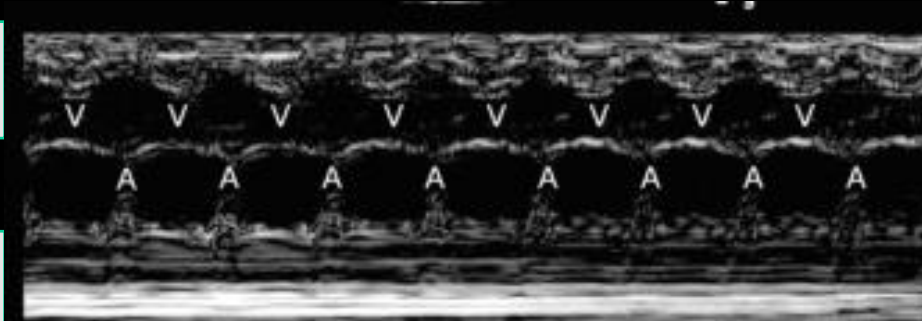
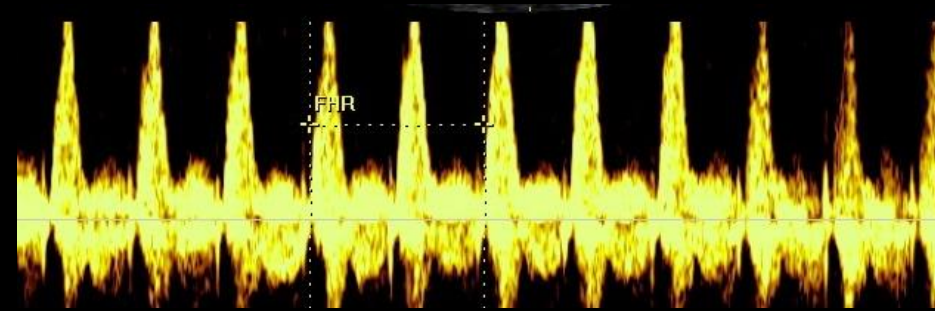
Goals of Fetal Imaging

Evaluate for structural heart disease

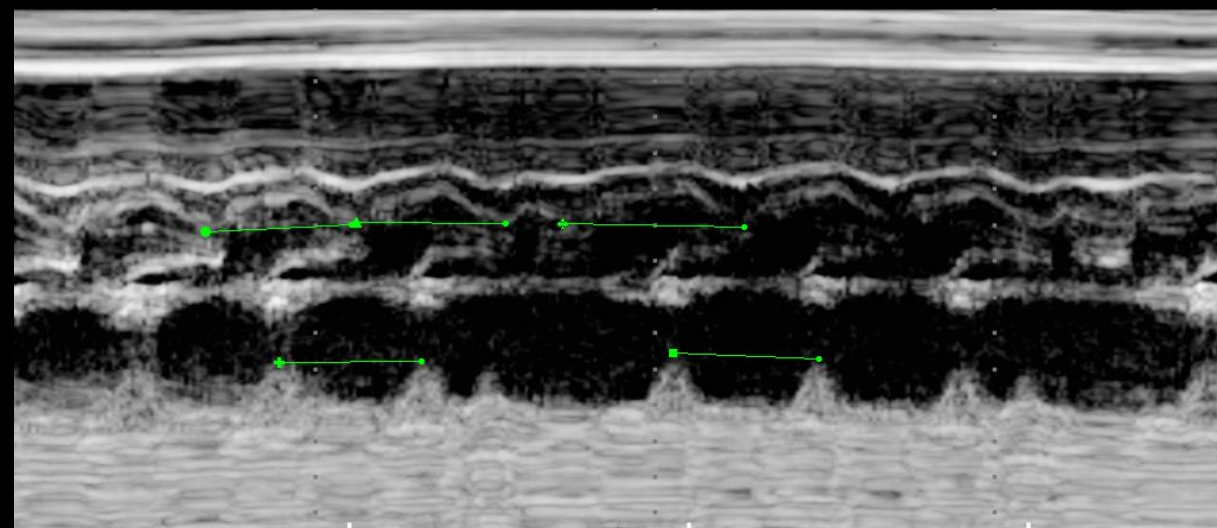
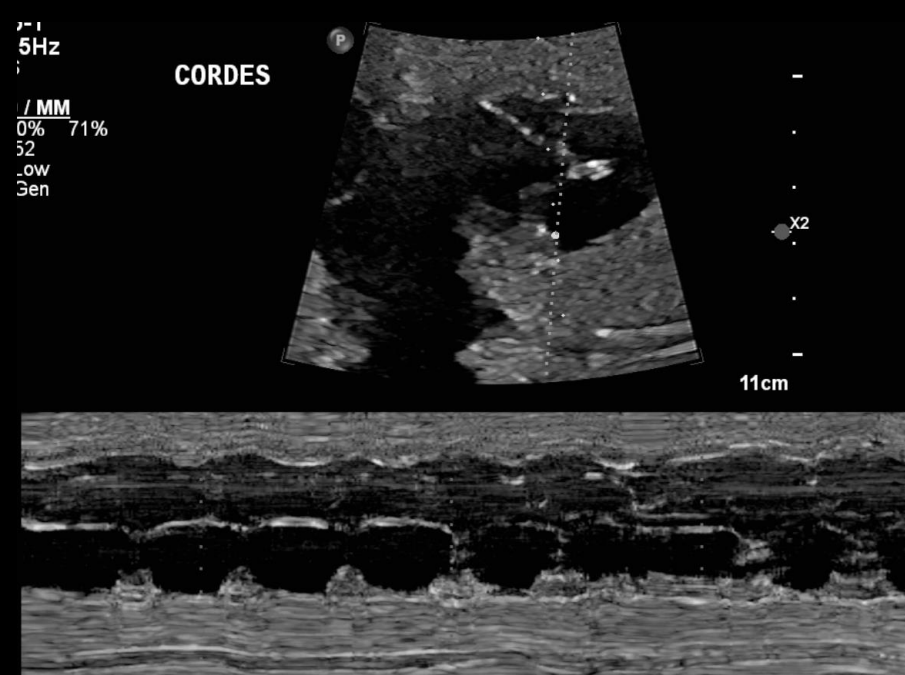
Diagnose Heart rhythm by assessing

- Rate
- A-V relationship
- Mechanical PR interval

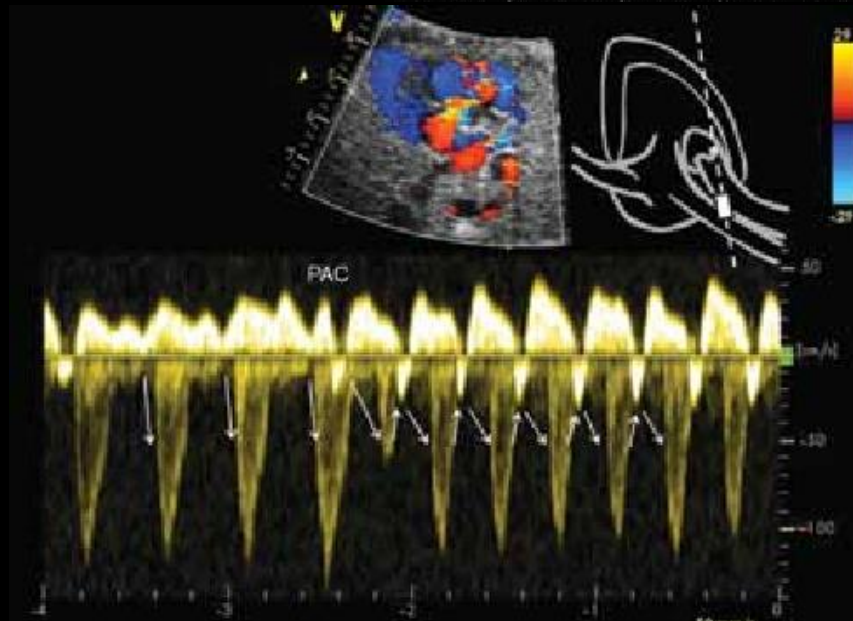
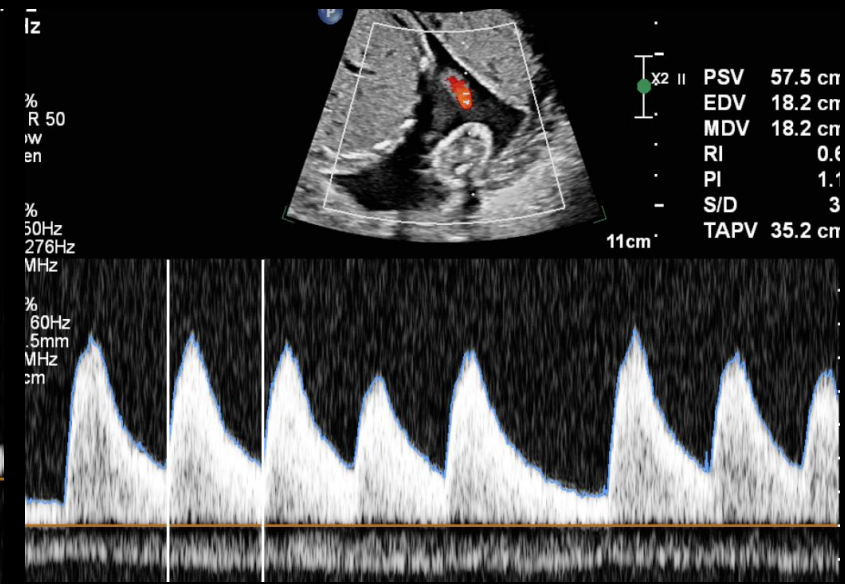
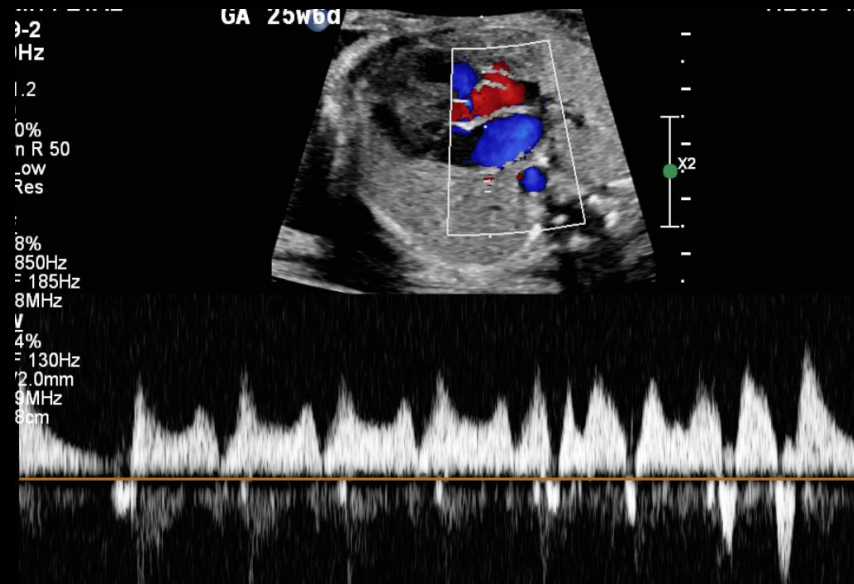
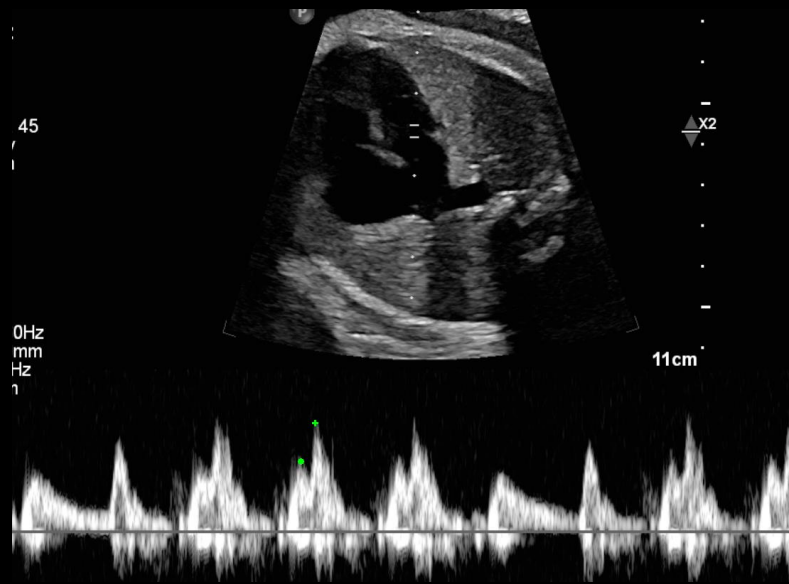
Fetal well being parameters



Fetal Imaging



Interesting Doppler facts in arrhythmia



Different morphologies of a PAC

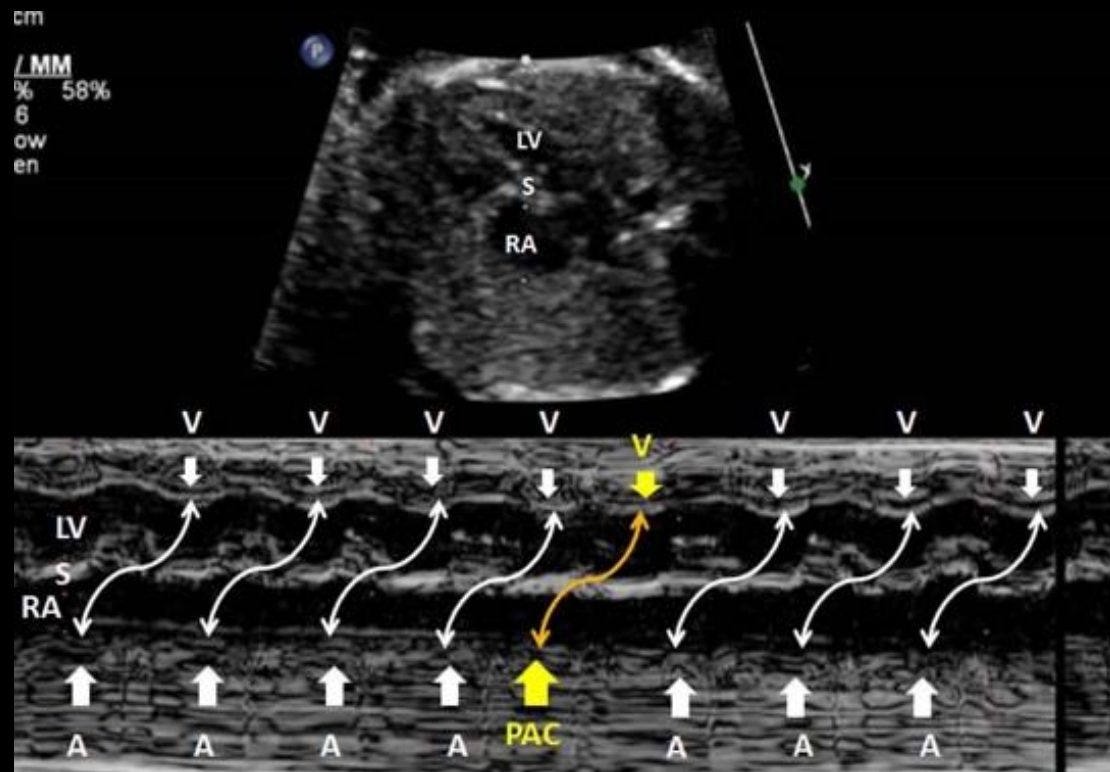
Isolated PAC's

- Conducted
- Non-conducted/blocked

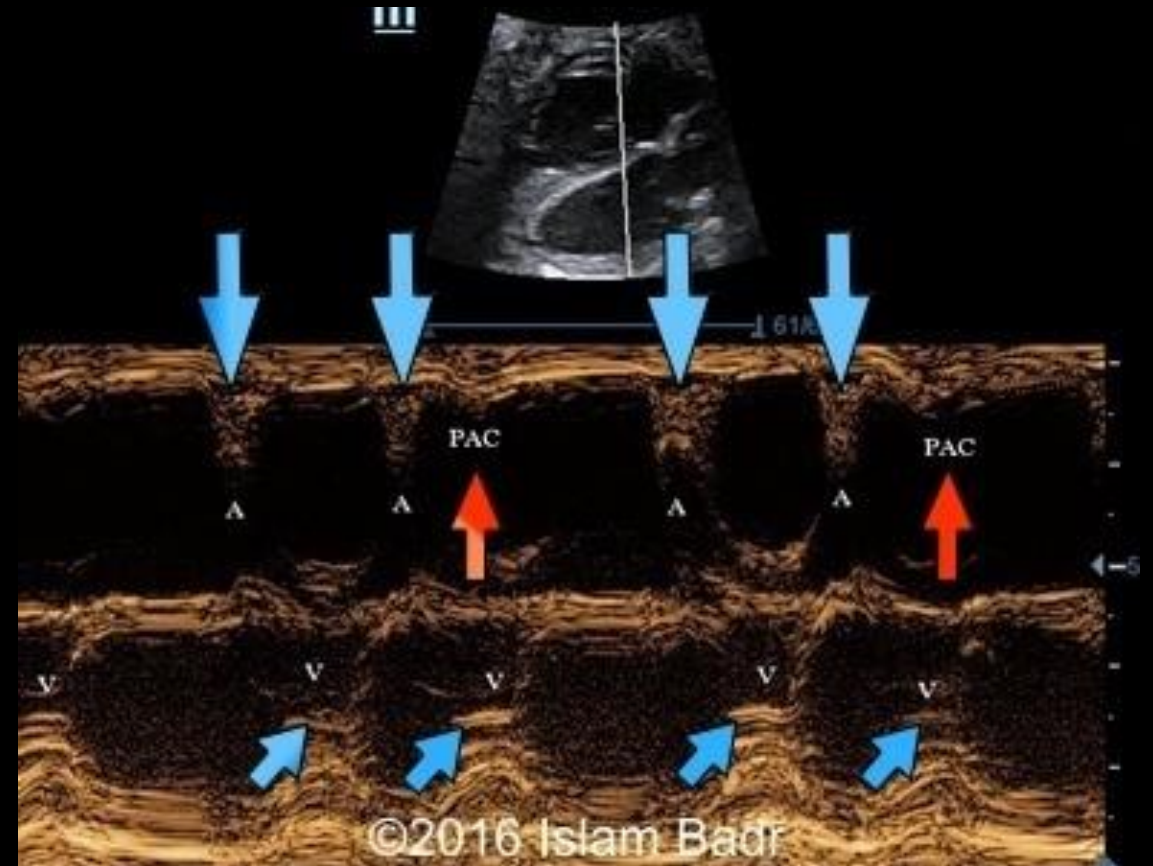
Atrial bigeminy

Atrial trigeminy

Isolated PAC's- conducted



Blocked PAC's



Atrial Bigeminy



0mm
35.1mm
d
3kHz



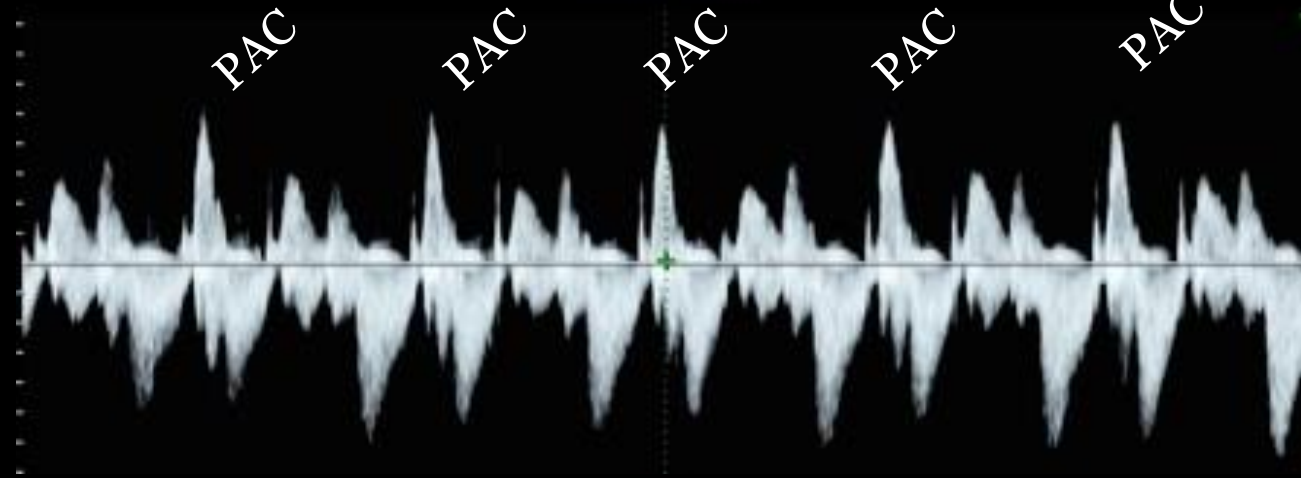
PAC

PAC

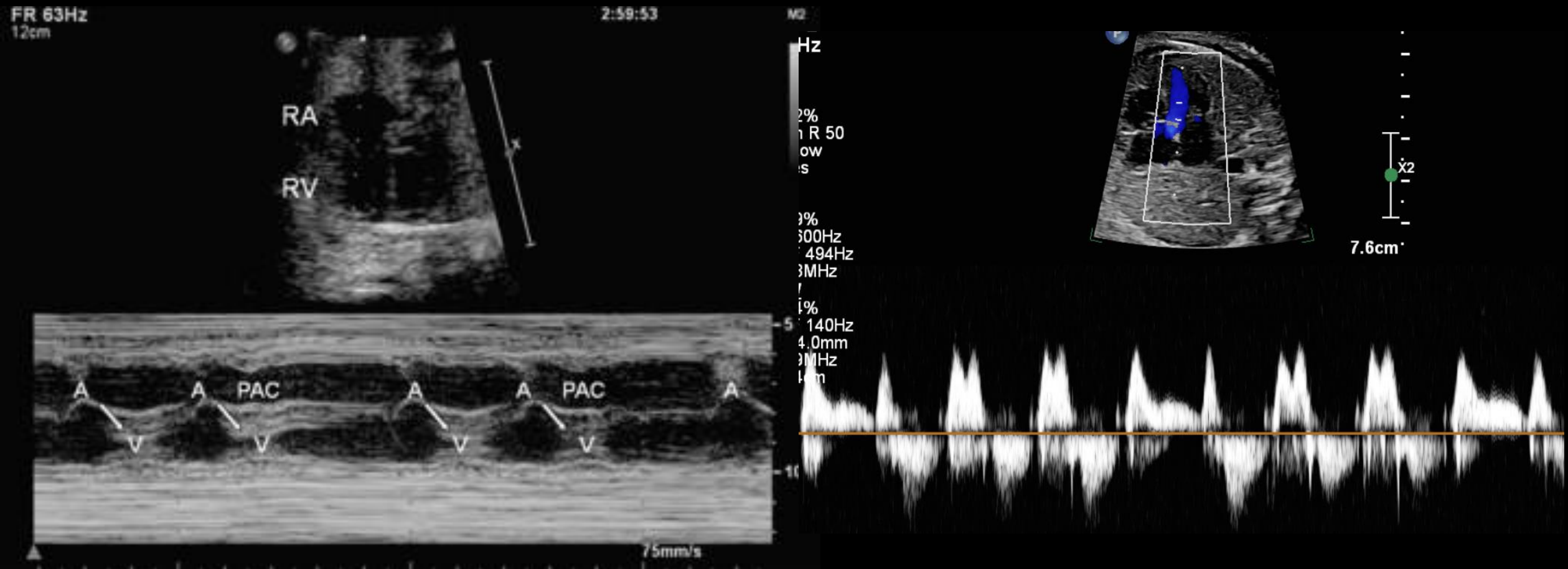
PAC

PAC

PAC



Atrial Trigeminy



When do we get concerned



1H FETAL
1-2
6Hz

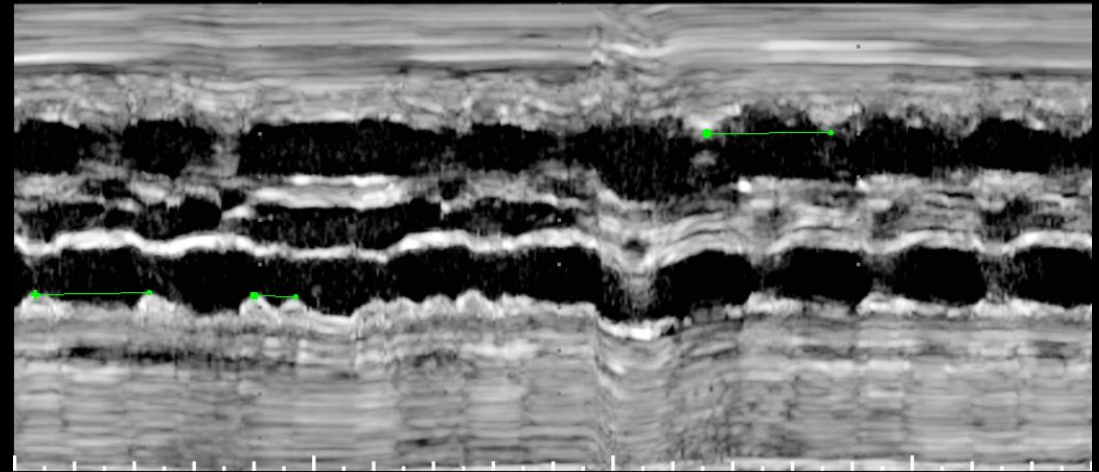
/ MM
2% 77%
i0
ow
3en

GA 25w6d



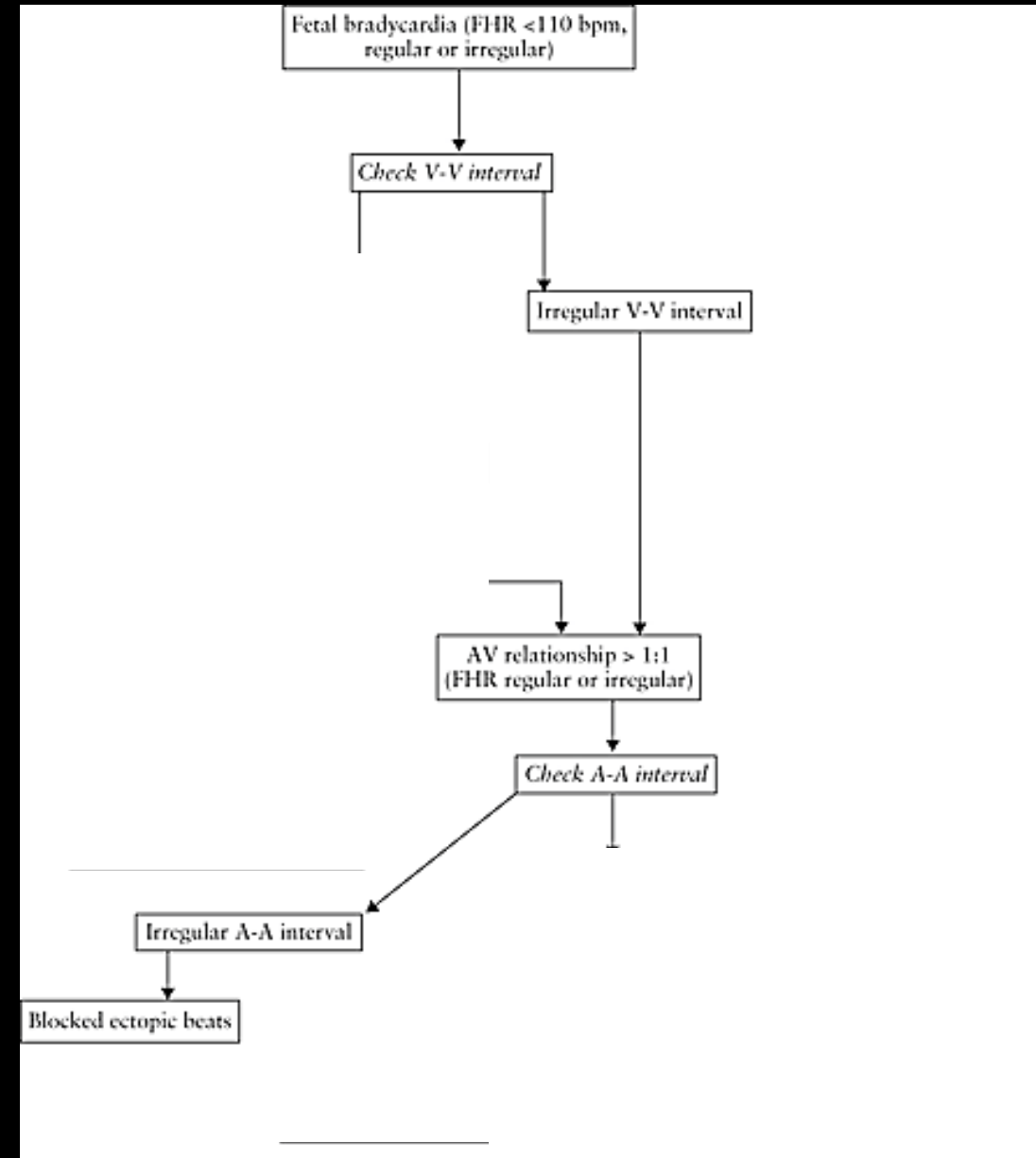
8.1cm

Interval -
Interval -



How do we systematically assess

Diagnosis	←FETAL ARRHYTHMIAS→	Treatment
	<i>Irregular rhythm →</i>	Mostly benign Observation
<p>2D echo Heart anatomy Cardiac function</p> <p>M-mode Echo Spectral Doppler Echo ↓ Chronology of atrial and ventricular contractions</p> <p>Duration of cardiac cycle intervals</p>		



Management of Atrial ectopy

- Conservative management if isolated but frequent PAC's
- Fetal echo frequency based on the amount/burden of PAC's
- Fetal echo every 4-6 wks if ectopy is persistent
- Postnatal ECG

Thank you

