



THE UNIVERSITY OF BRITISH COLUMBIA

Continuing Professional Development

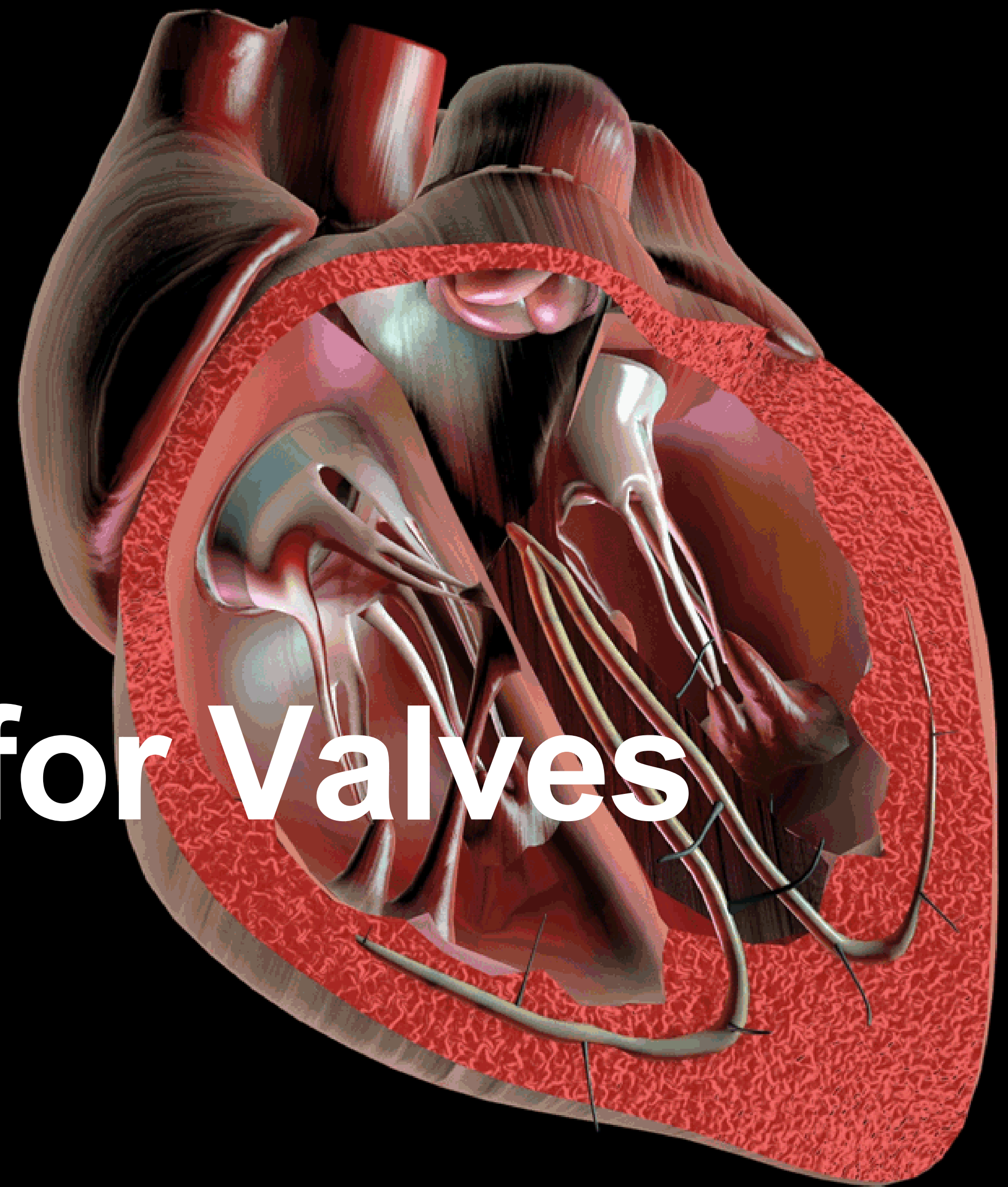
Faculty of Medicine

# Focused PoCUS for Valves

Rural PoCUS CPD Rounds

February 7, 2025

Dr. Claire L Heslop MD/PhD/FRCPC





**I wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. This meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.**





Get the best views FIRST

Stay curious + humble

Learn something from every scan

Scan everyone

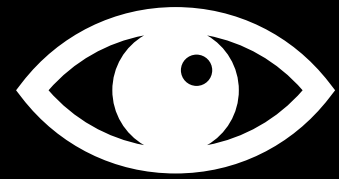
A photograph of two directional signs mounted on a single metal post against a clear blue sky with a few wispy clouds. The top sign is white with a black border and points to the right, containing the word 'NORMAL' in bold black capital letters. The bottom sign is grey with a black border and points to the left, containing the word 'STRANGE' in bold black capital letters. The post is slightly rusted at the bottom.

**NORMAL**

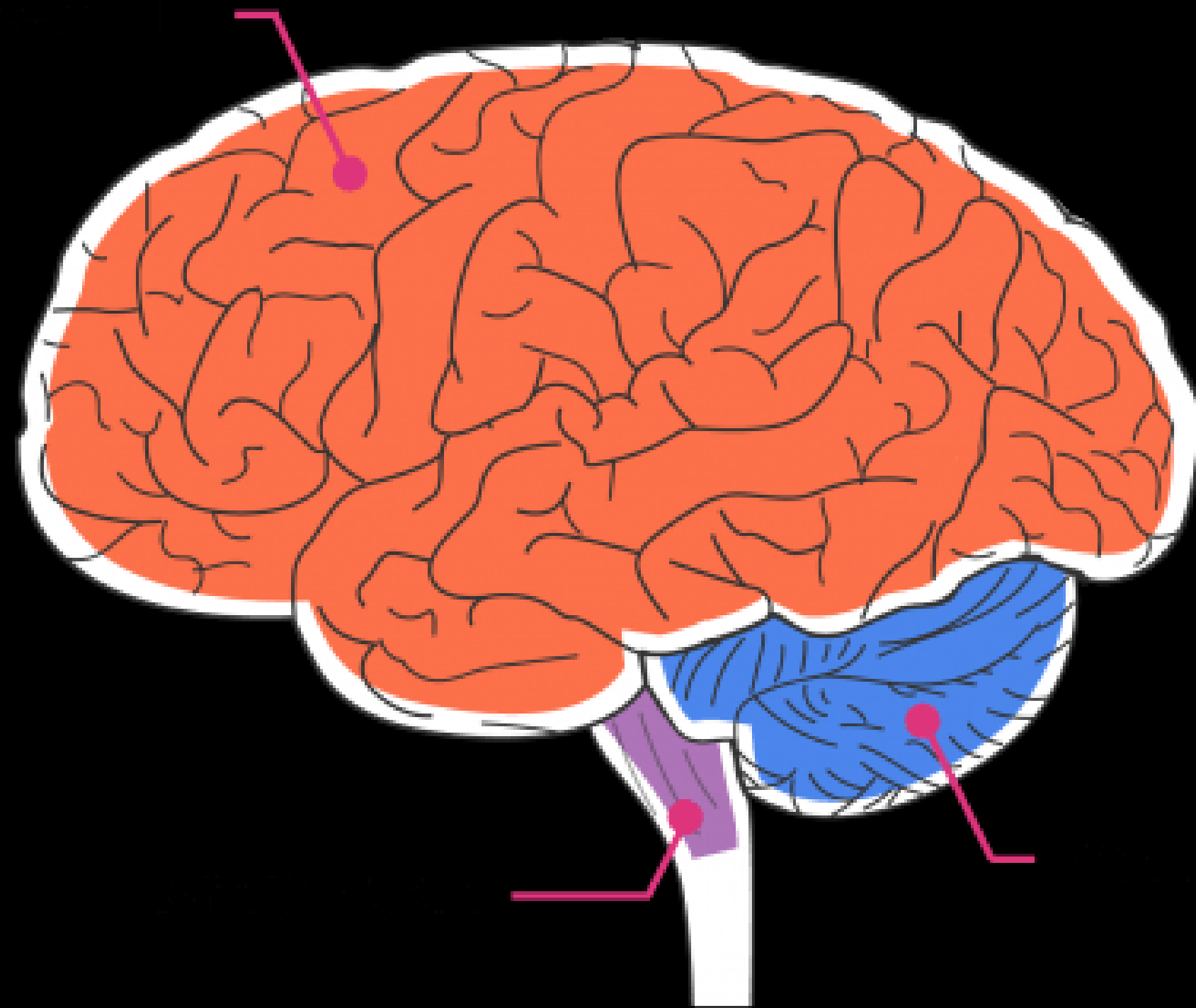
**STRANGE**



3%



30-50%



## DIFFERENT TYPES OF STETHOSCOPE



ACOUSTIC



ELECTRONIC



DIGITAL



ULTRASOUND



## 2D PoCUS

endocarditis  
severe valve stenosis

## Colour Doppler

regurgitation (Ao, MV, TV)

**! CAUTION**



**Watch  
your  
step**

Not a “rule-out” test

Clinical context wins

Always check for regurgitation

Be aware of mimics

Mechanical/prosthetic valves  
are outside scope of POCUS



Positive Possum  
believes you can  
do the thing.



# Get to know the buttons.



Frequency

TGC

Gain

Auto optimize

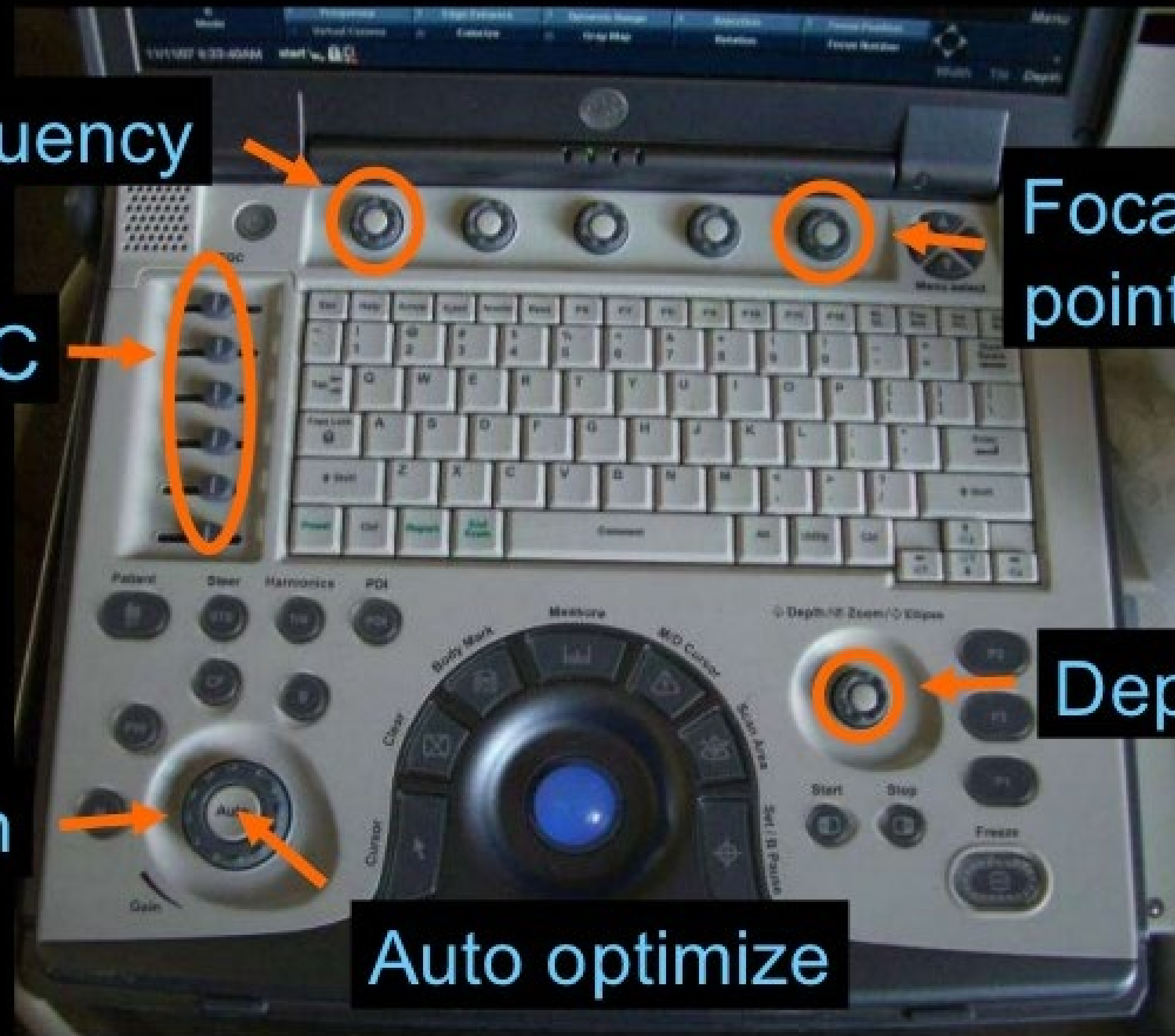
Focal points

Depth

L5

P5

LB





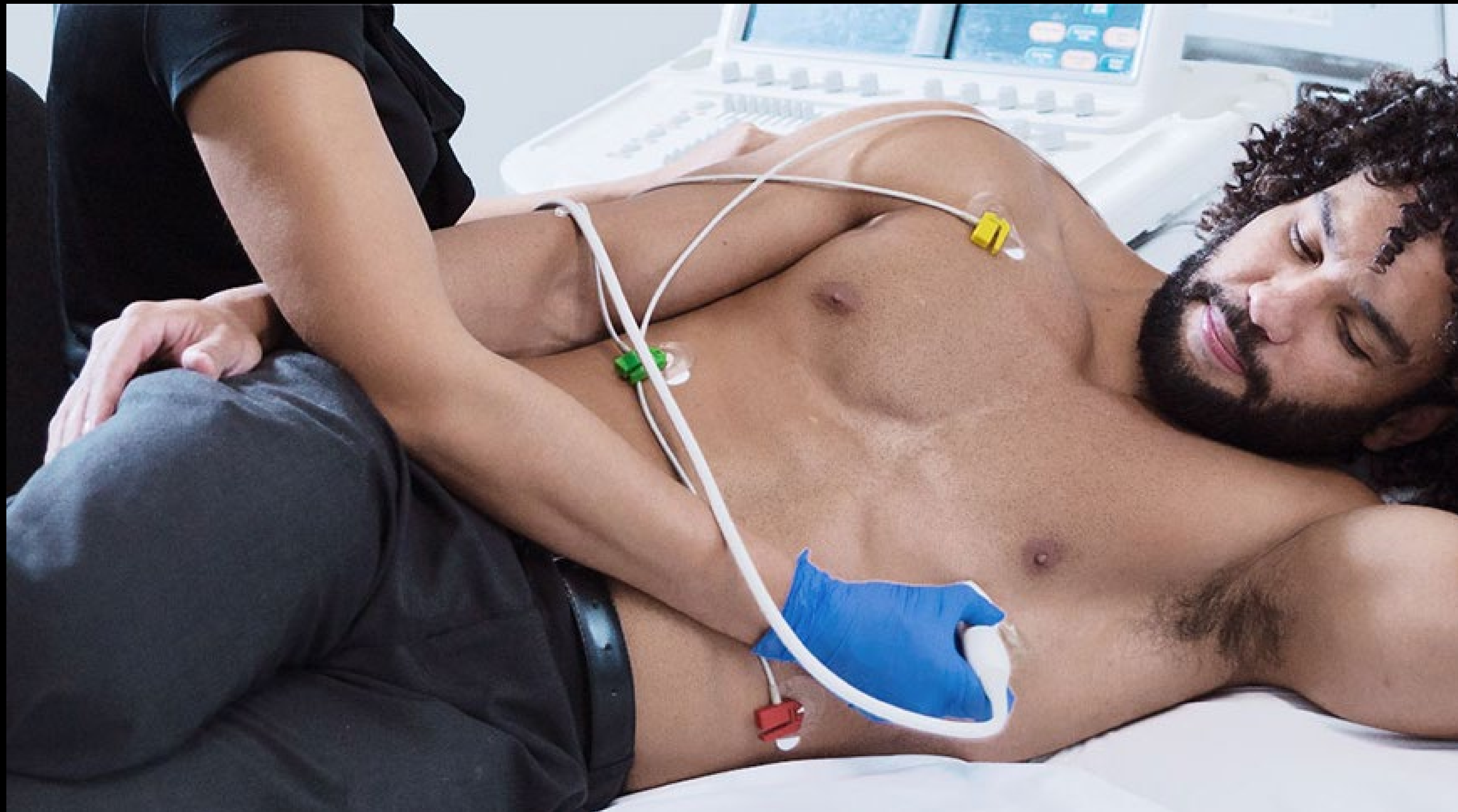




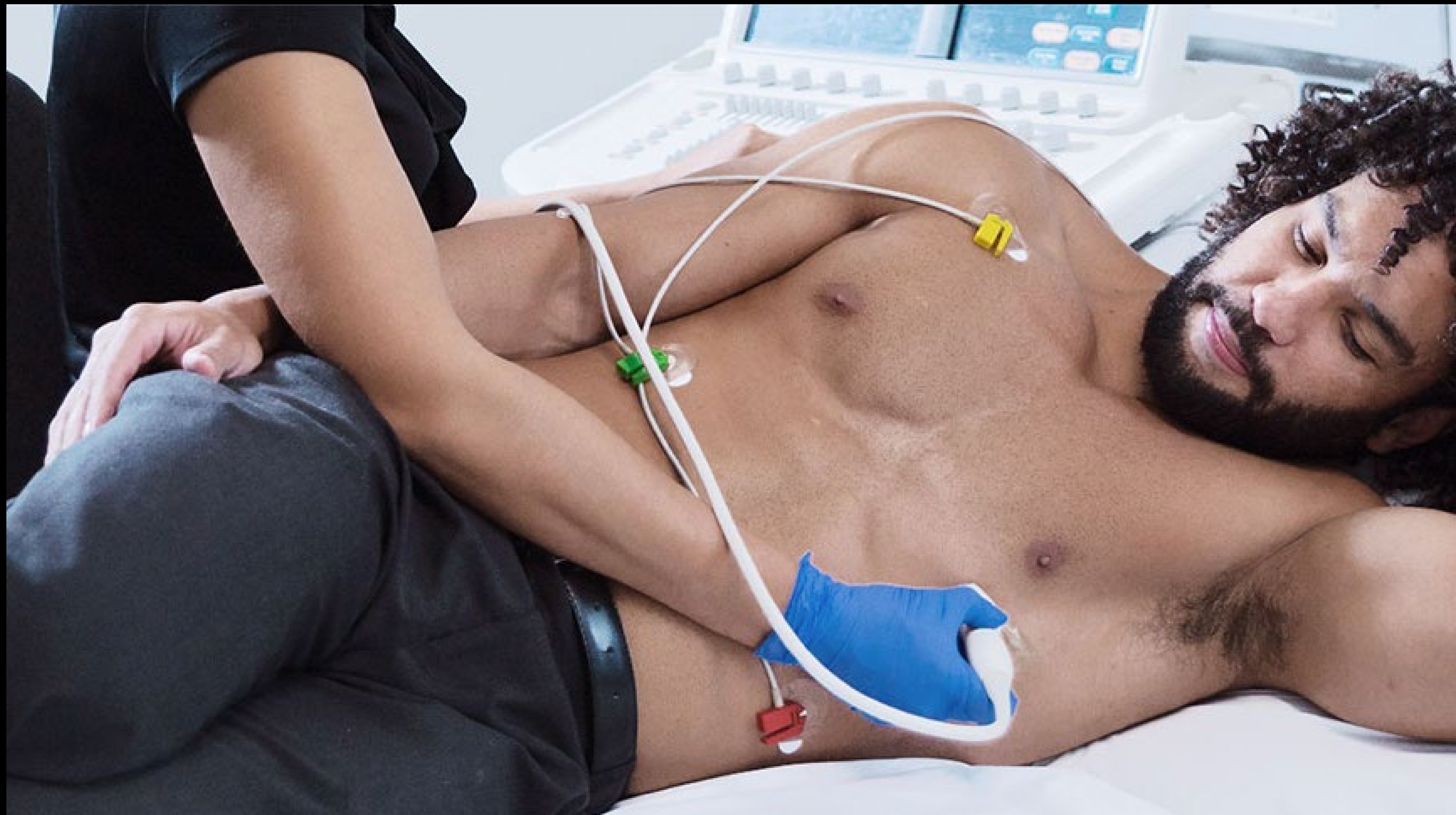


our patient prepared for  
SS.

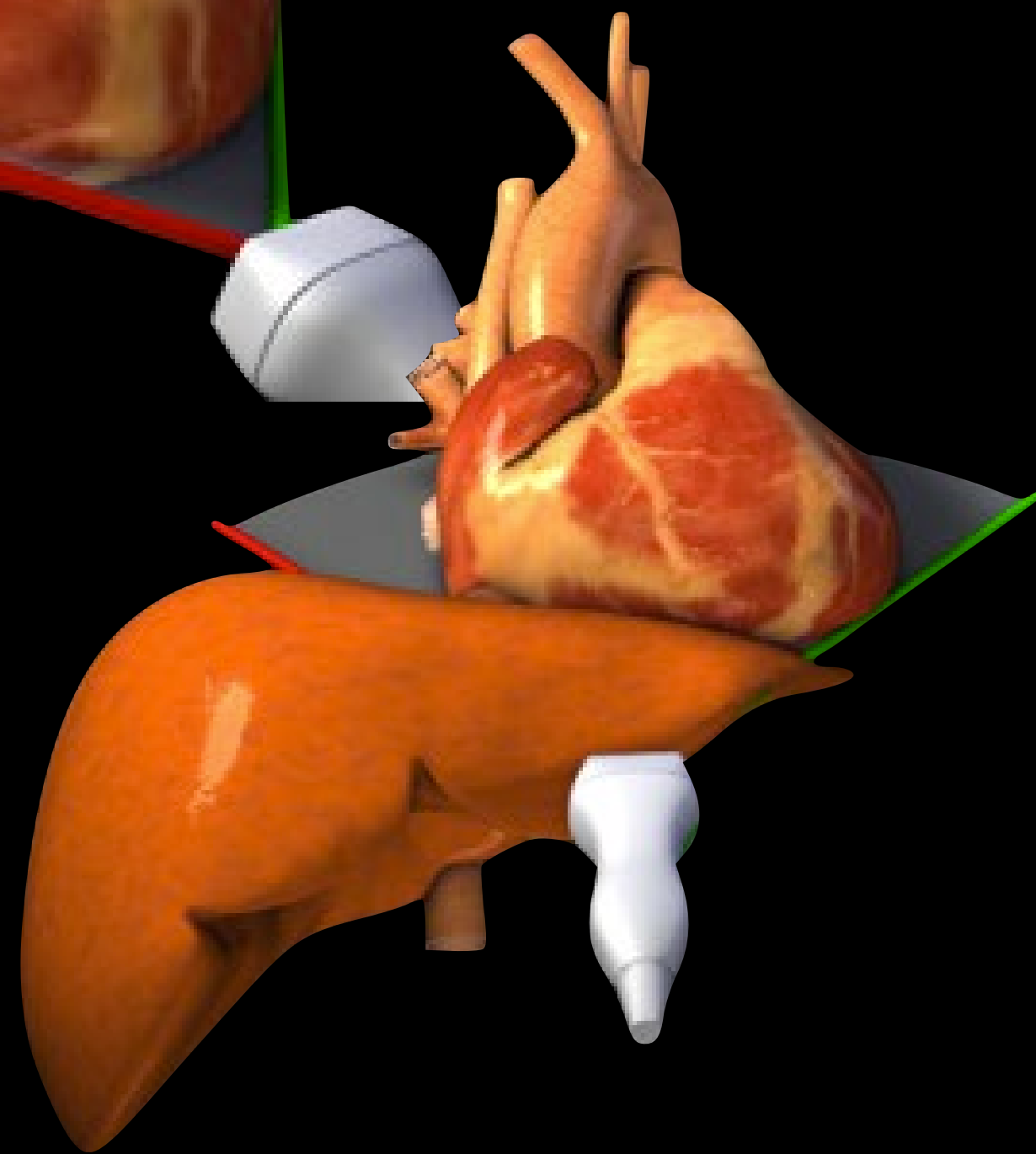
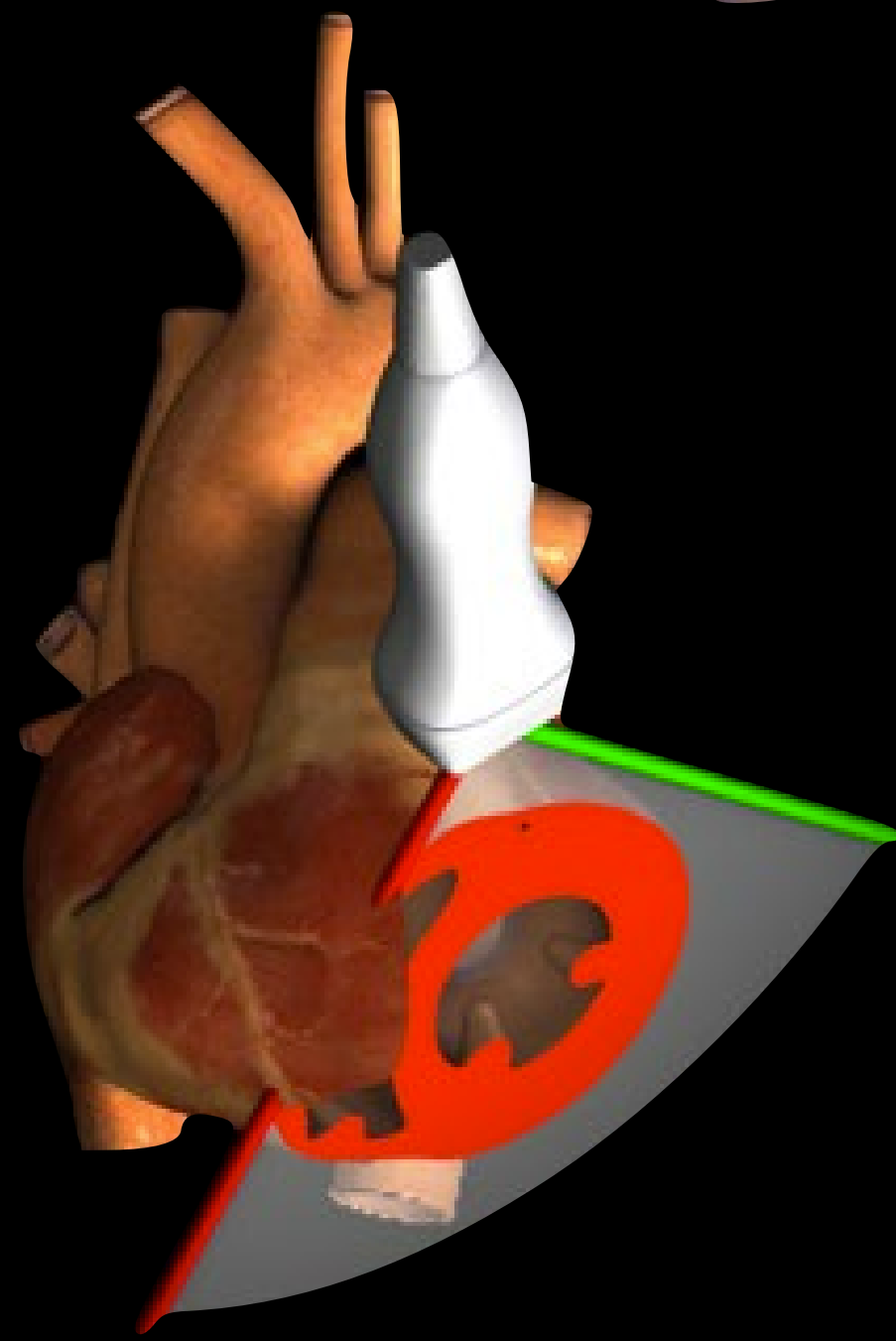
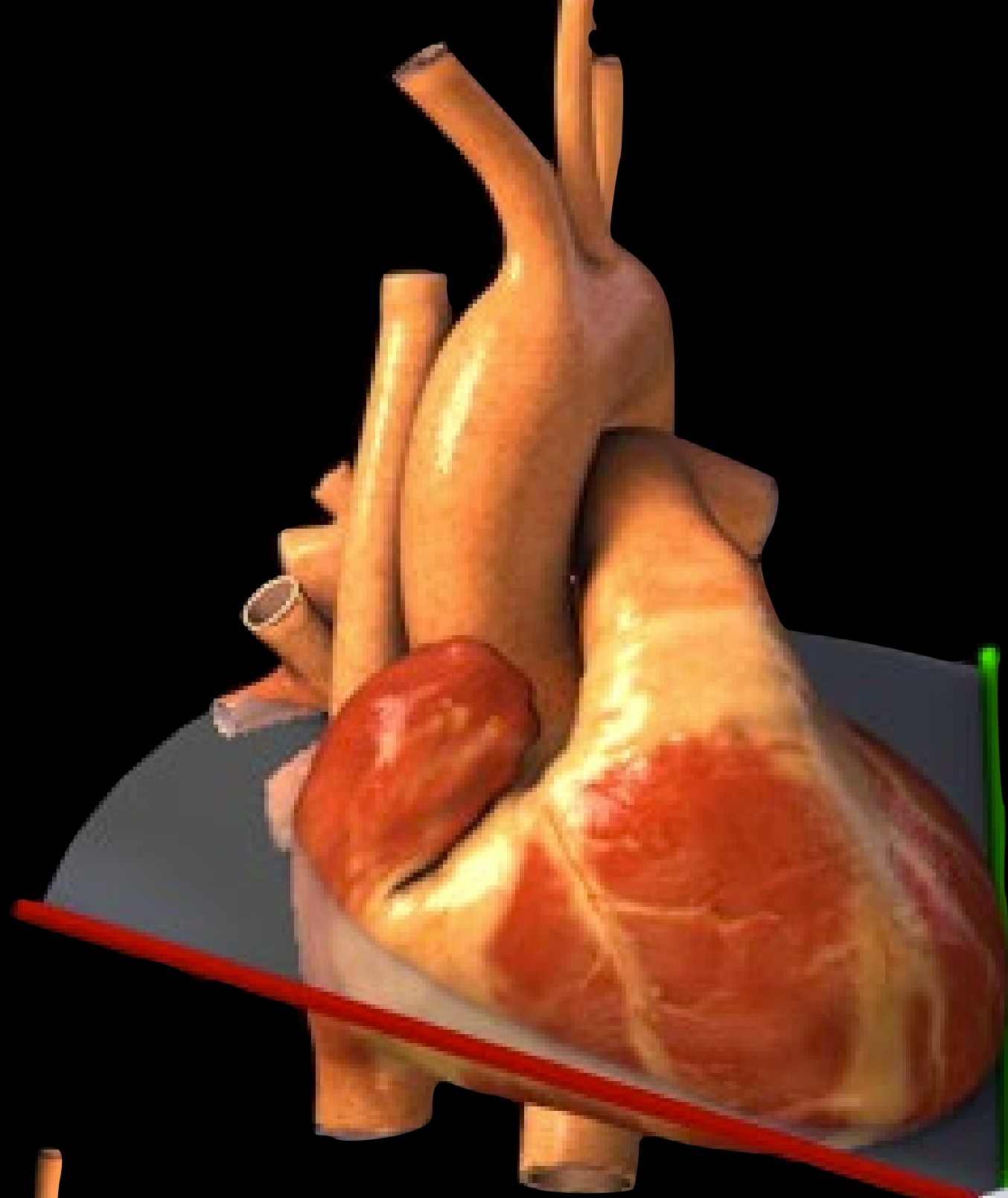
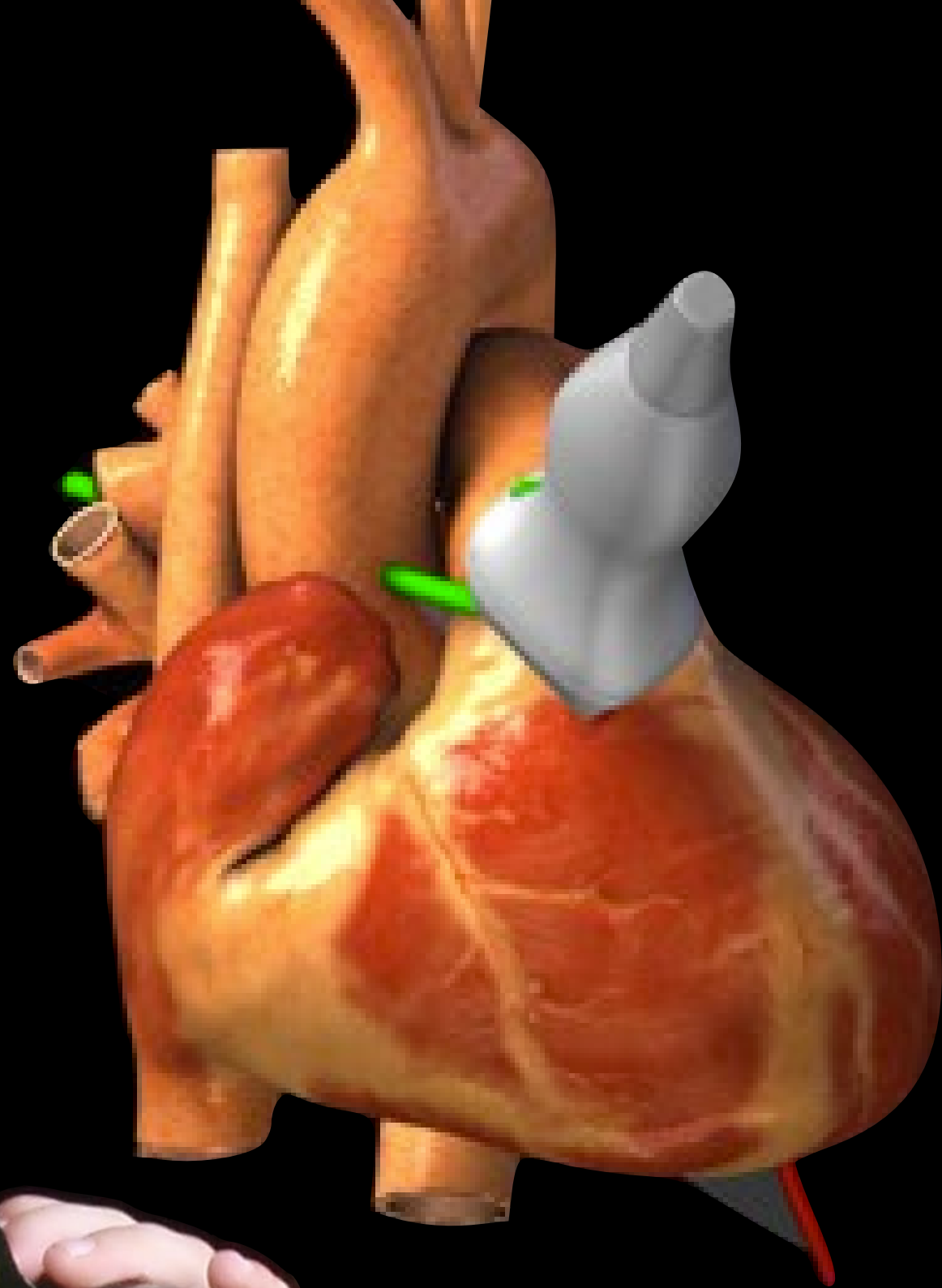
# ROLL EVERYONE



**More communication  
is better than more gel.**



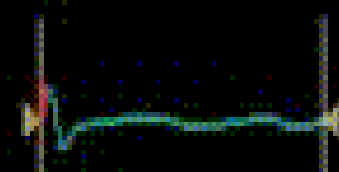
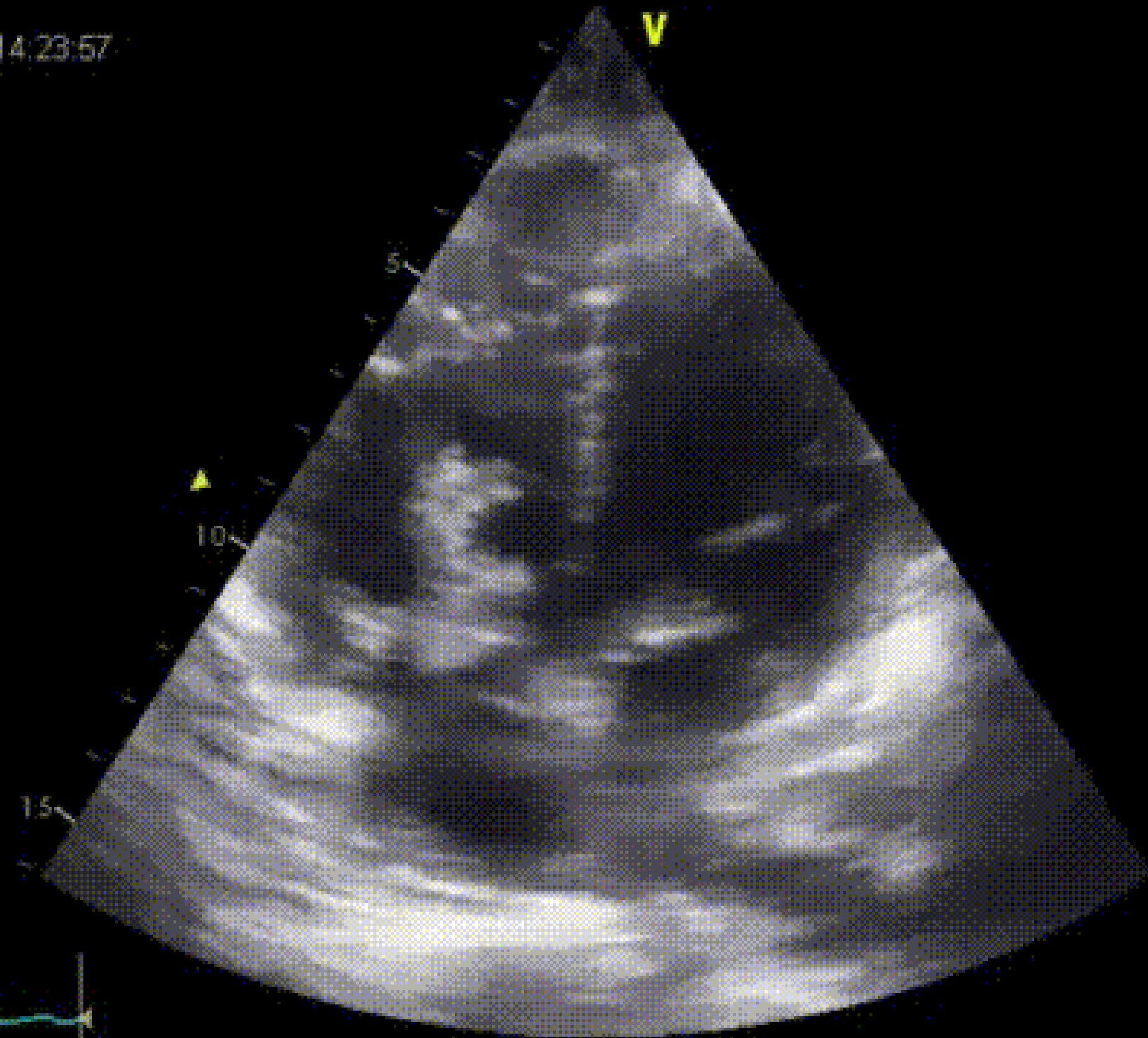




# 38F Chest Pain + Fever

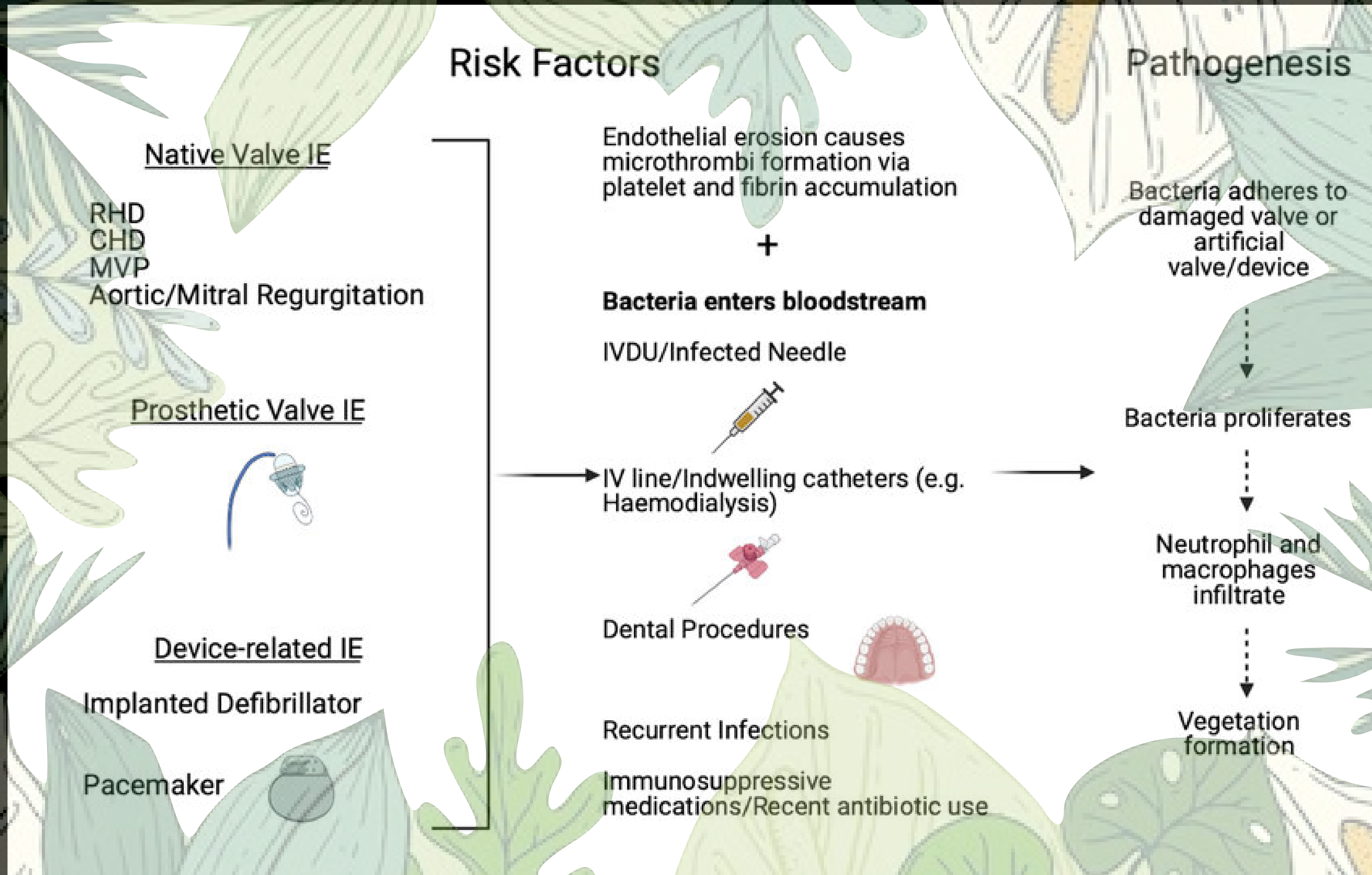


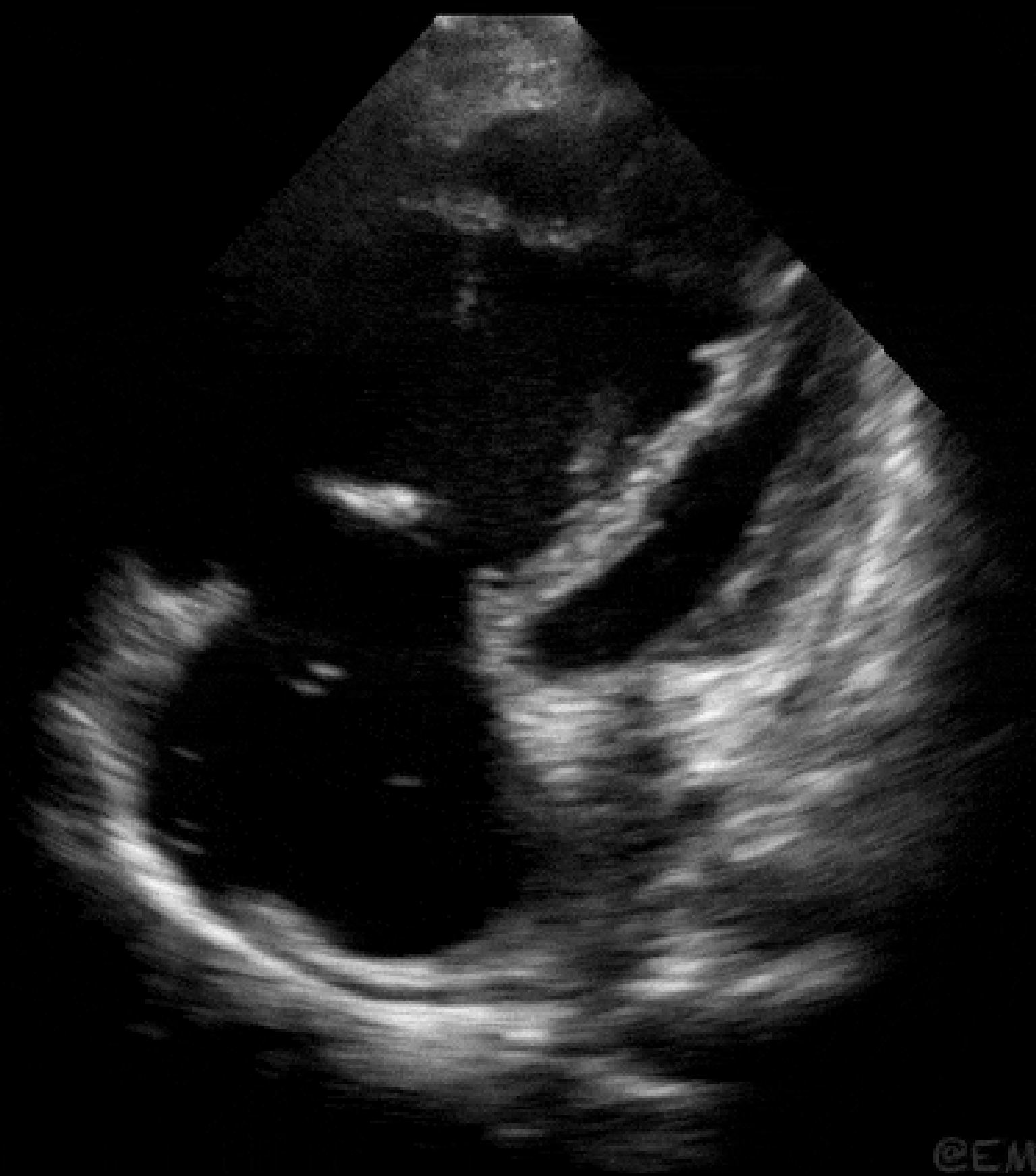
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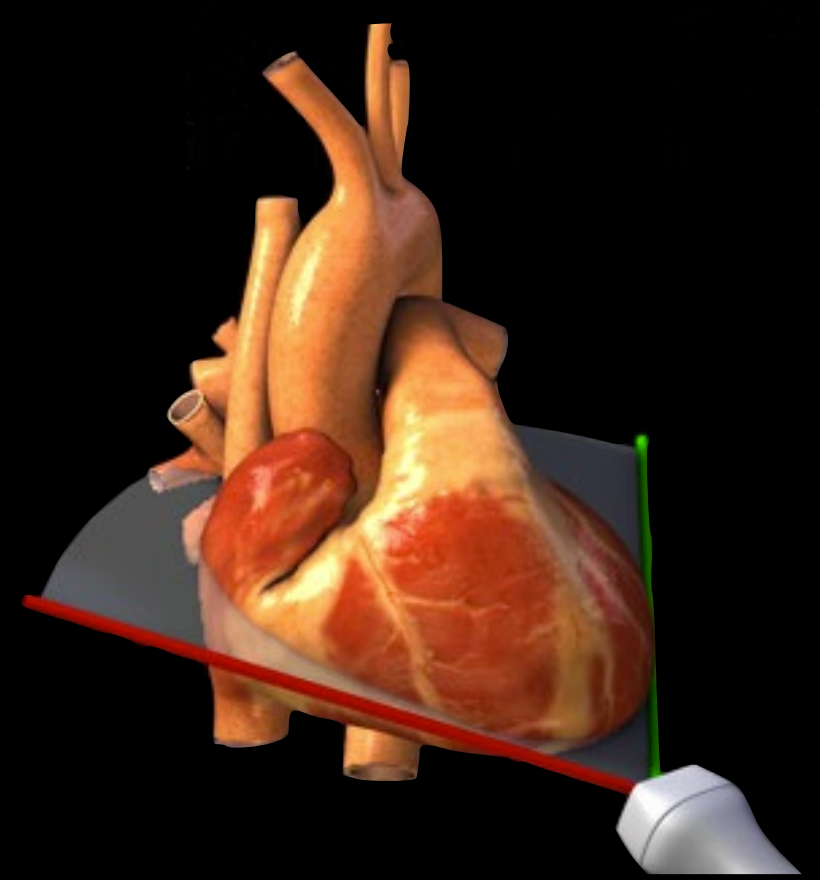
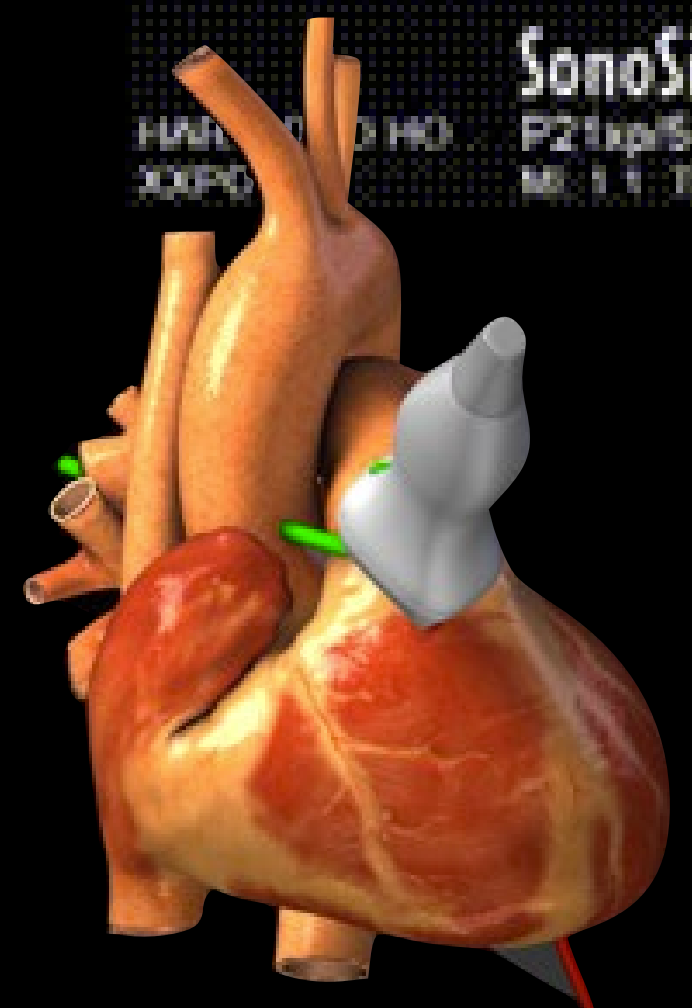
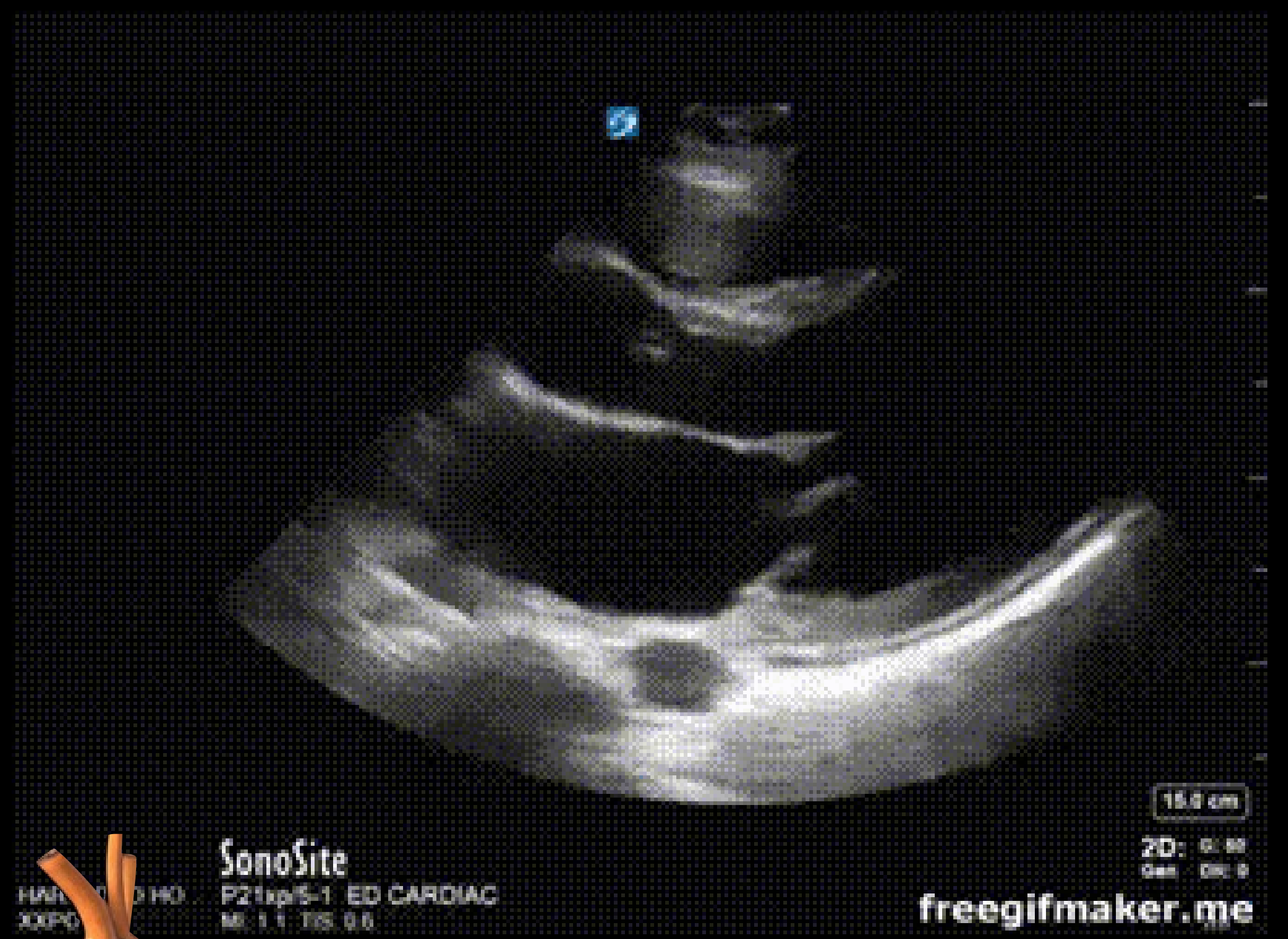
108  
2:93 HR

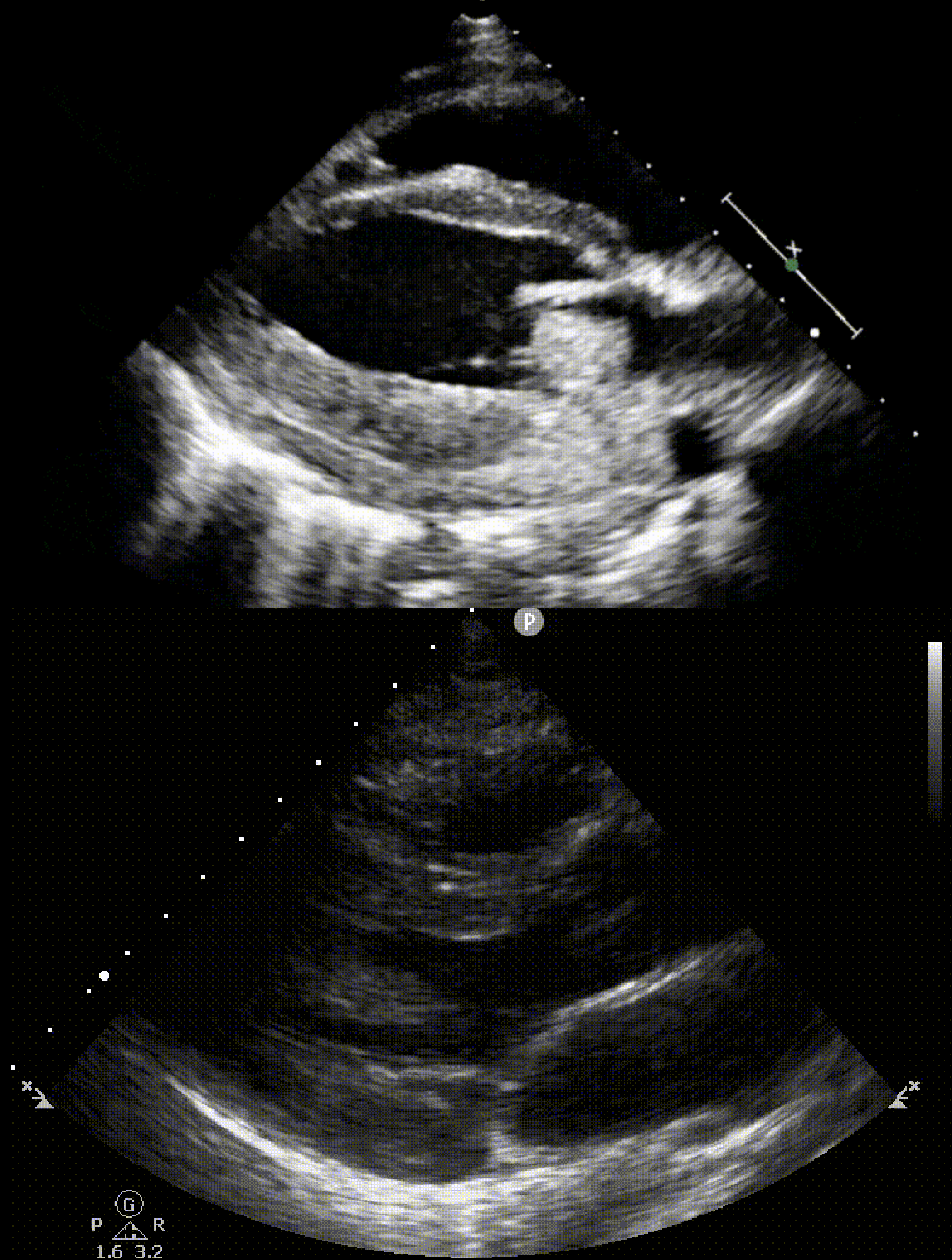






@EM\_RESUS





## Mimics

Atrial thrombus

Ruptured papillary muscle

Embryonic remnants

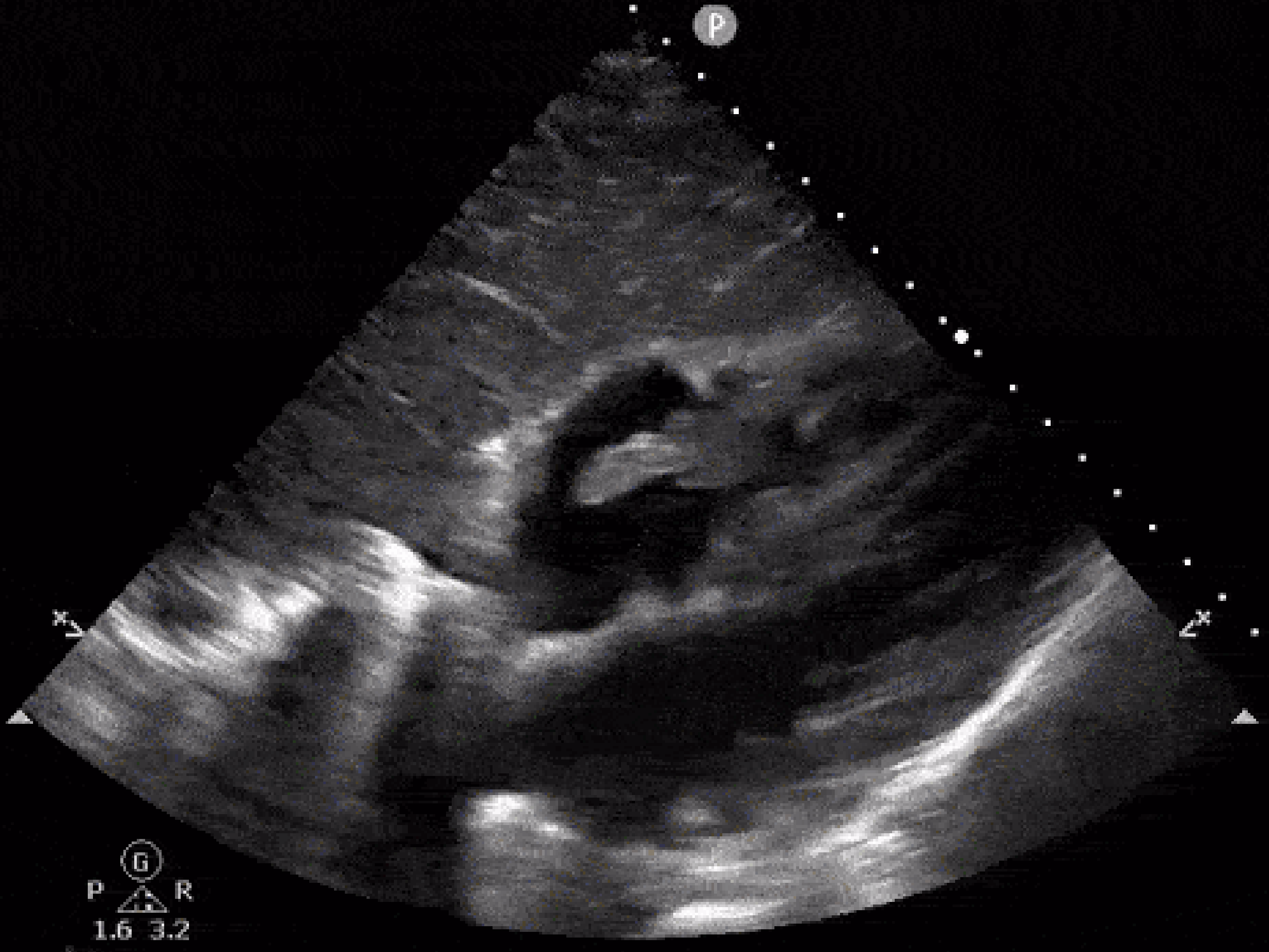
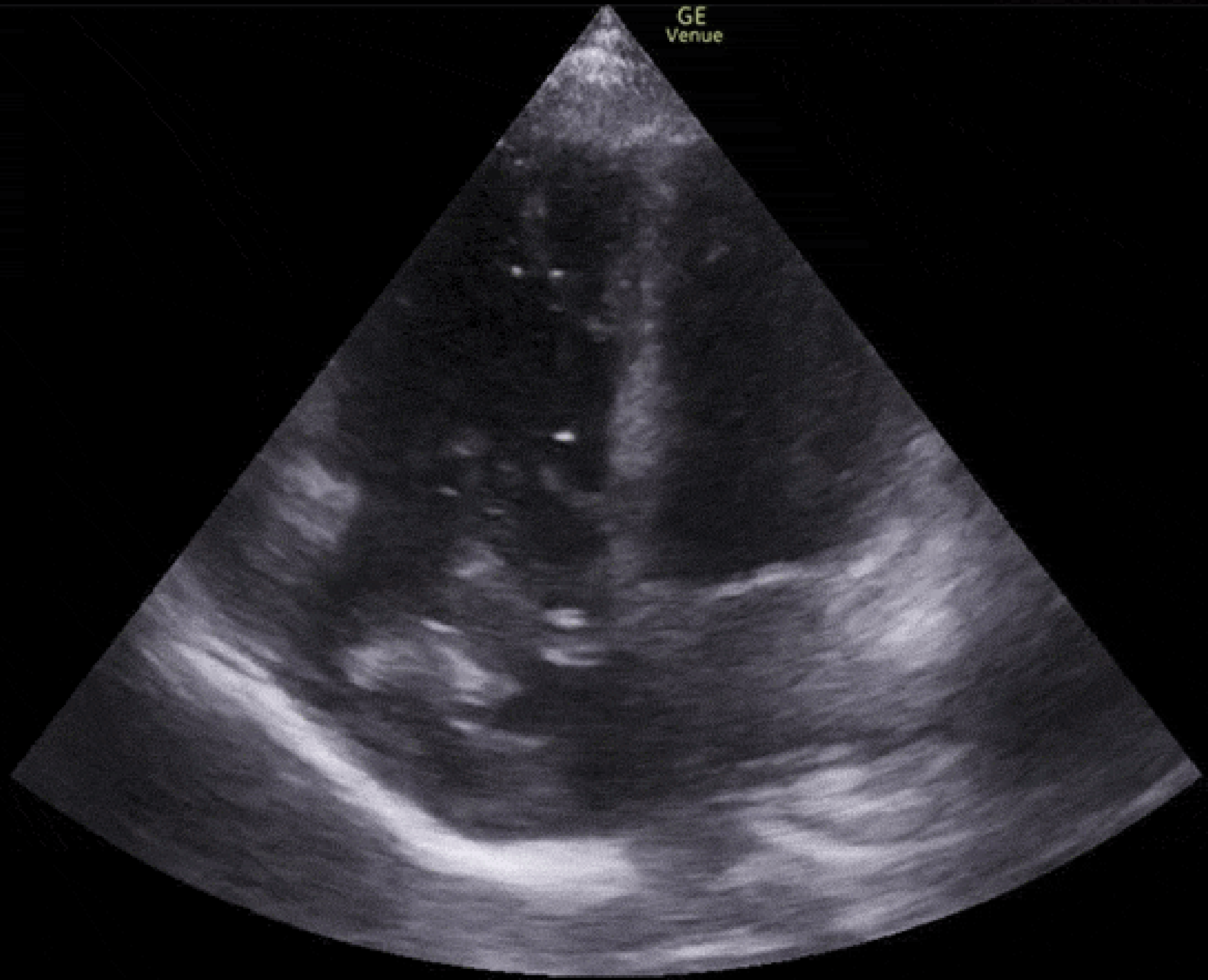
Calcification

Artifact

PHILIPS

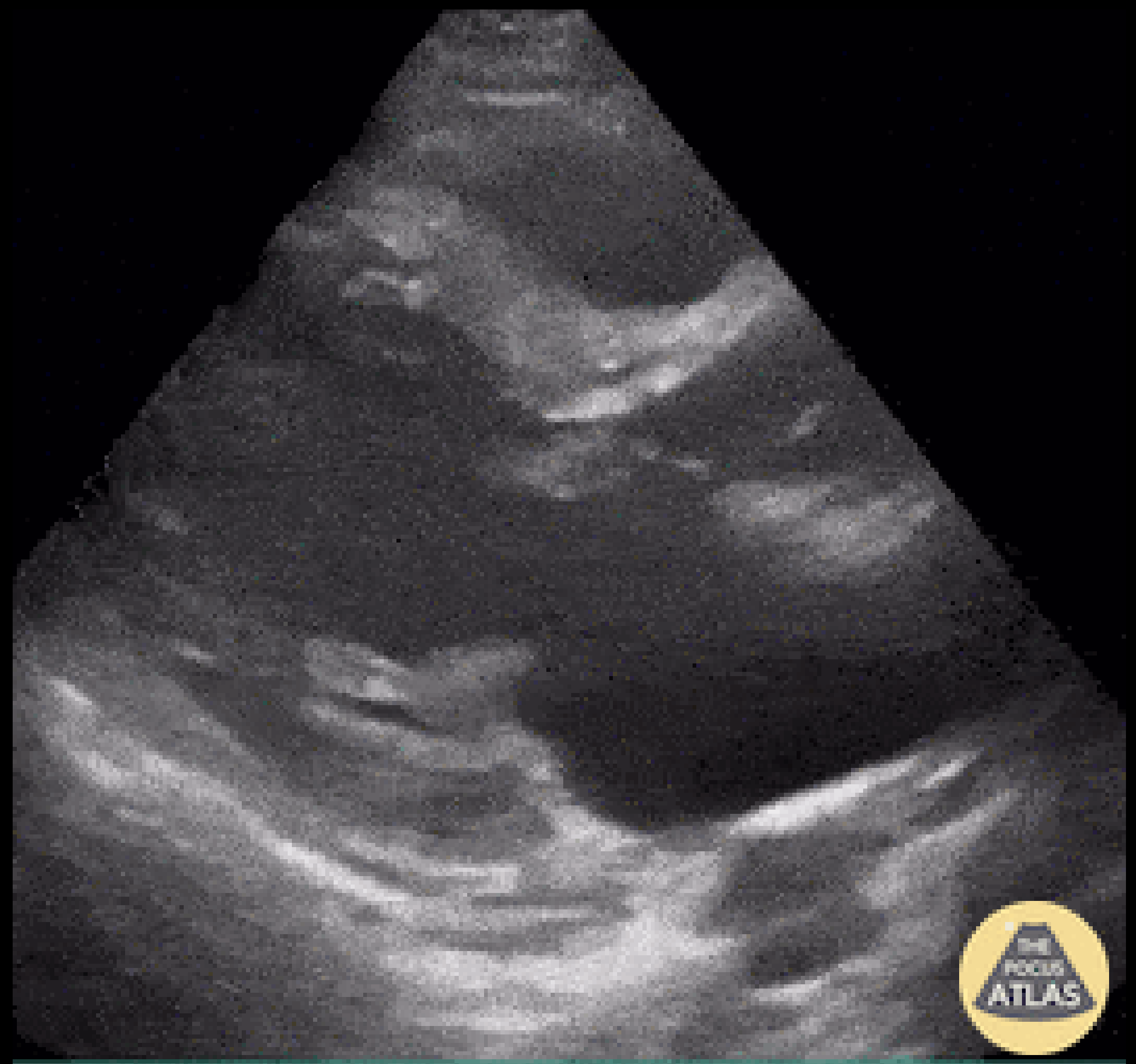
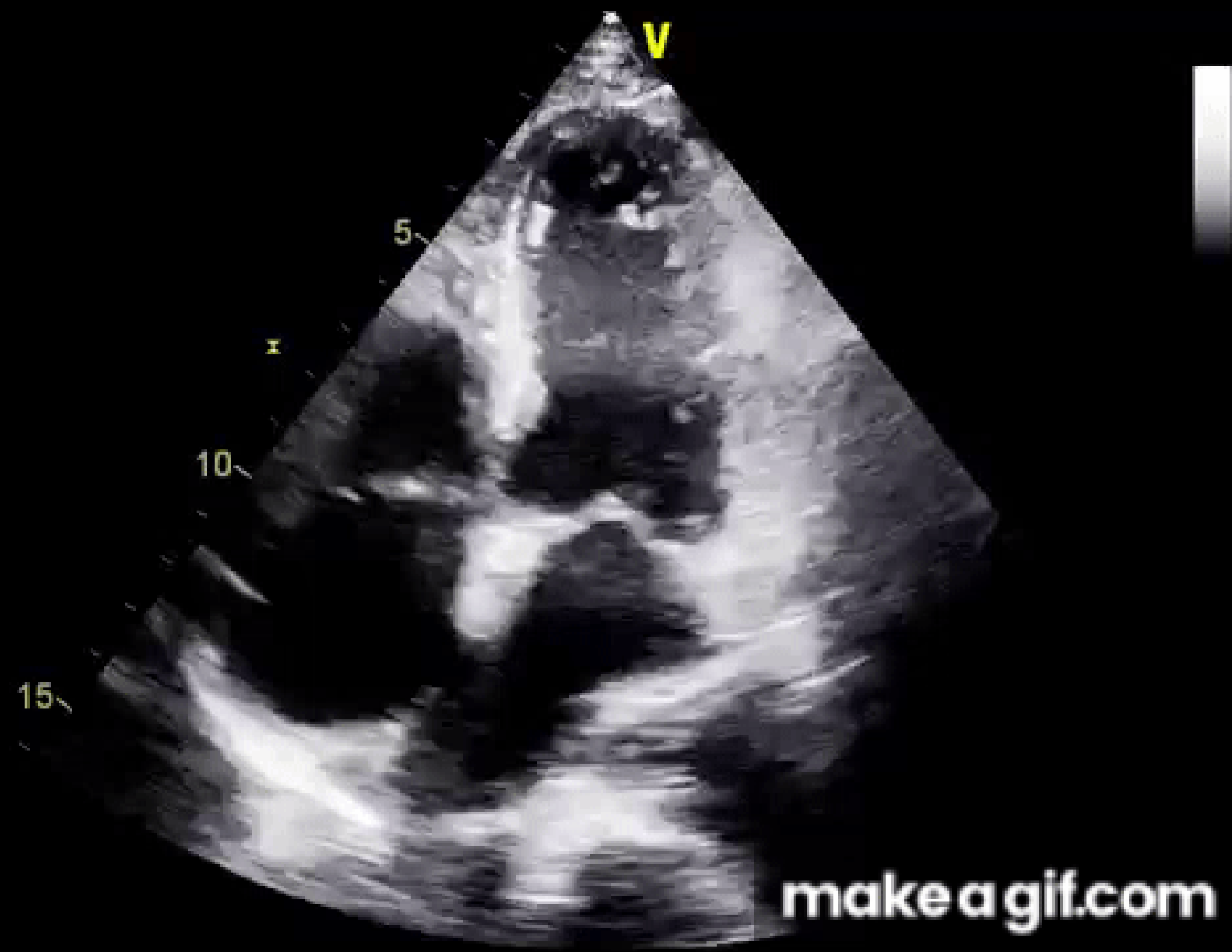
MI 0.8  
TIS 0.4

GE  
Venue

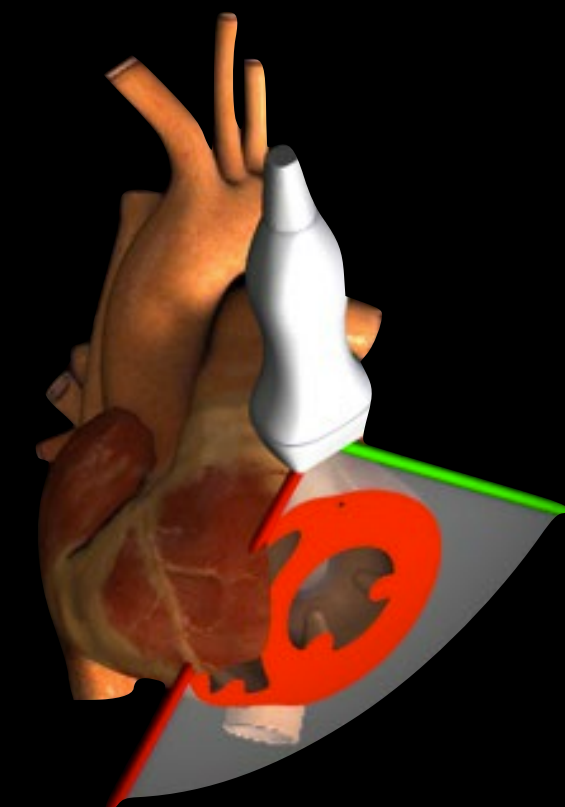
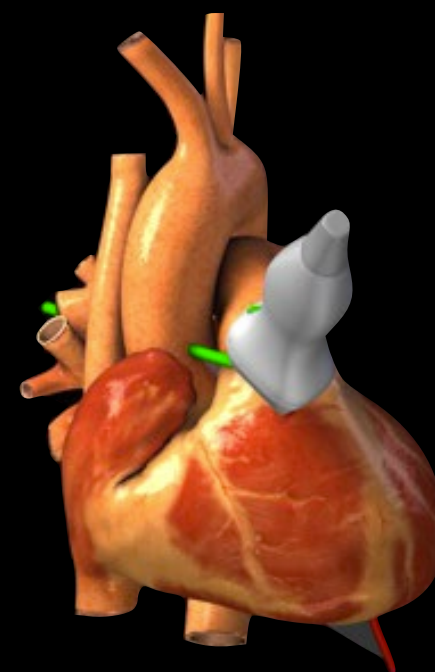
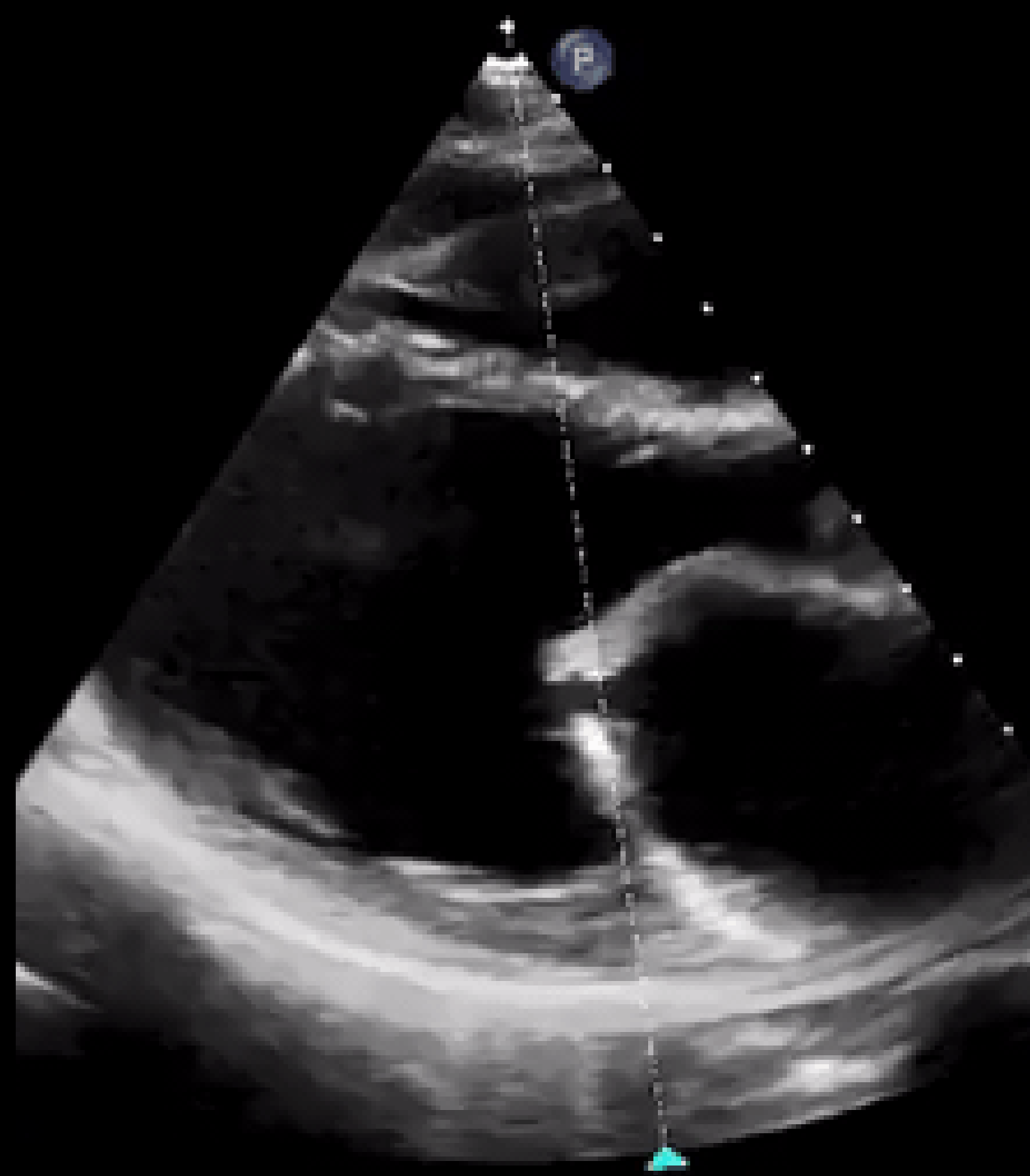


G  
P R  
1.6 3.2



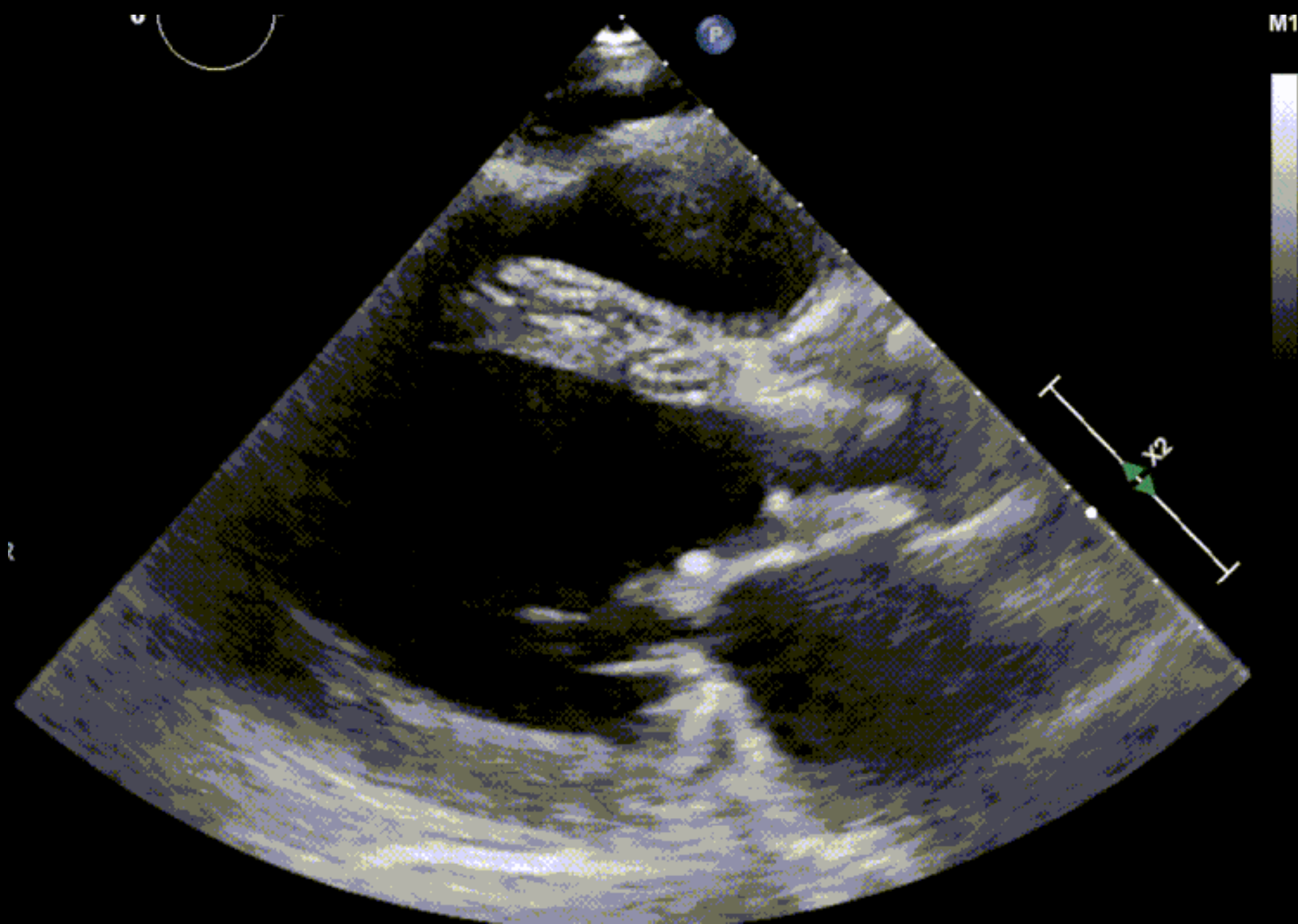
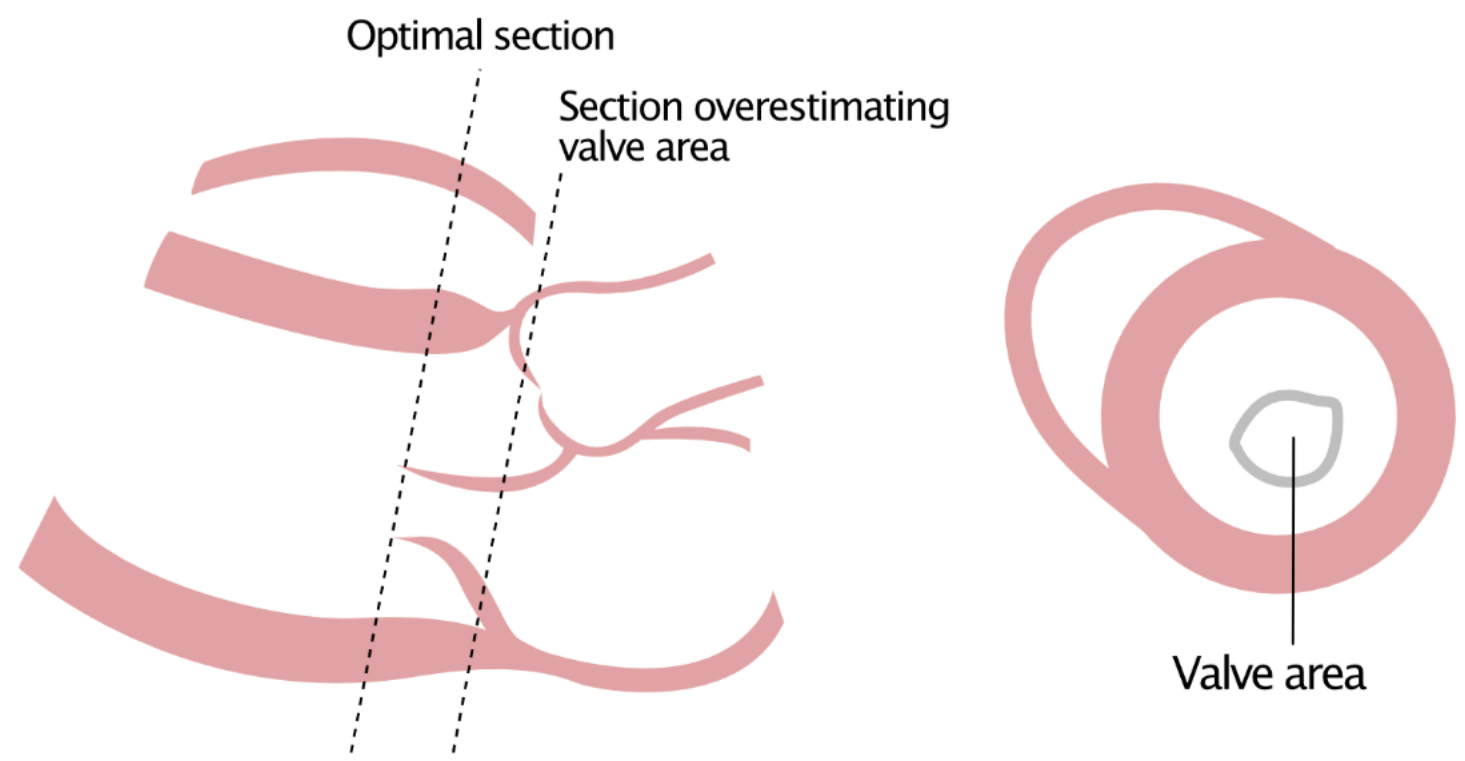


# 65F with Shortness of Breath





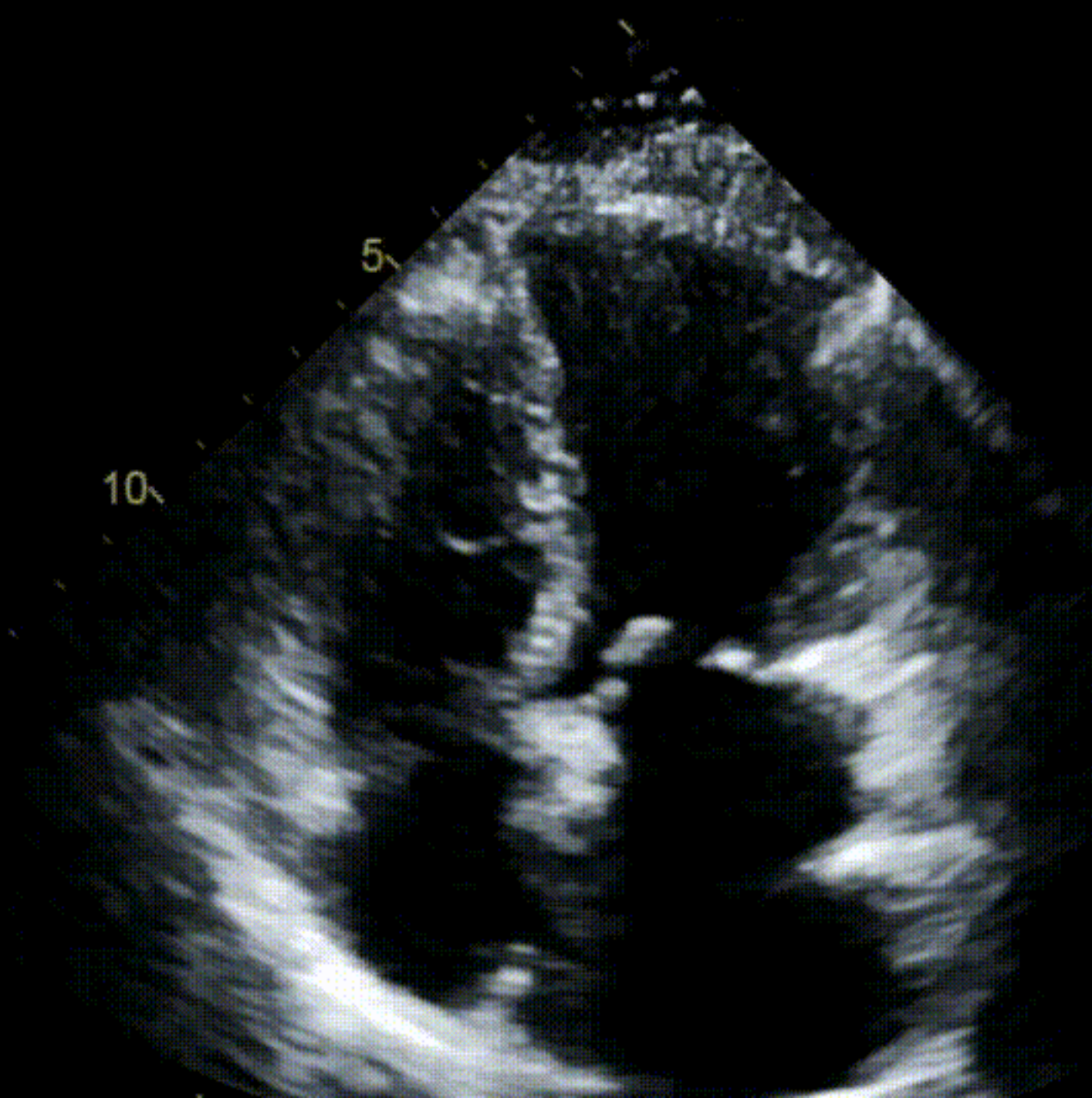
# Mitral valve area



1Hz

10

5



# 72M Shortness of Breath



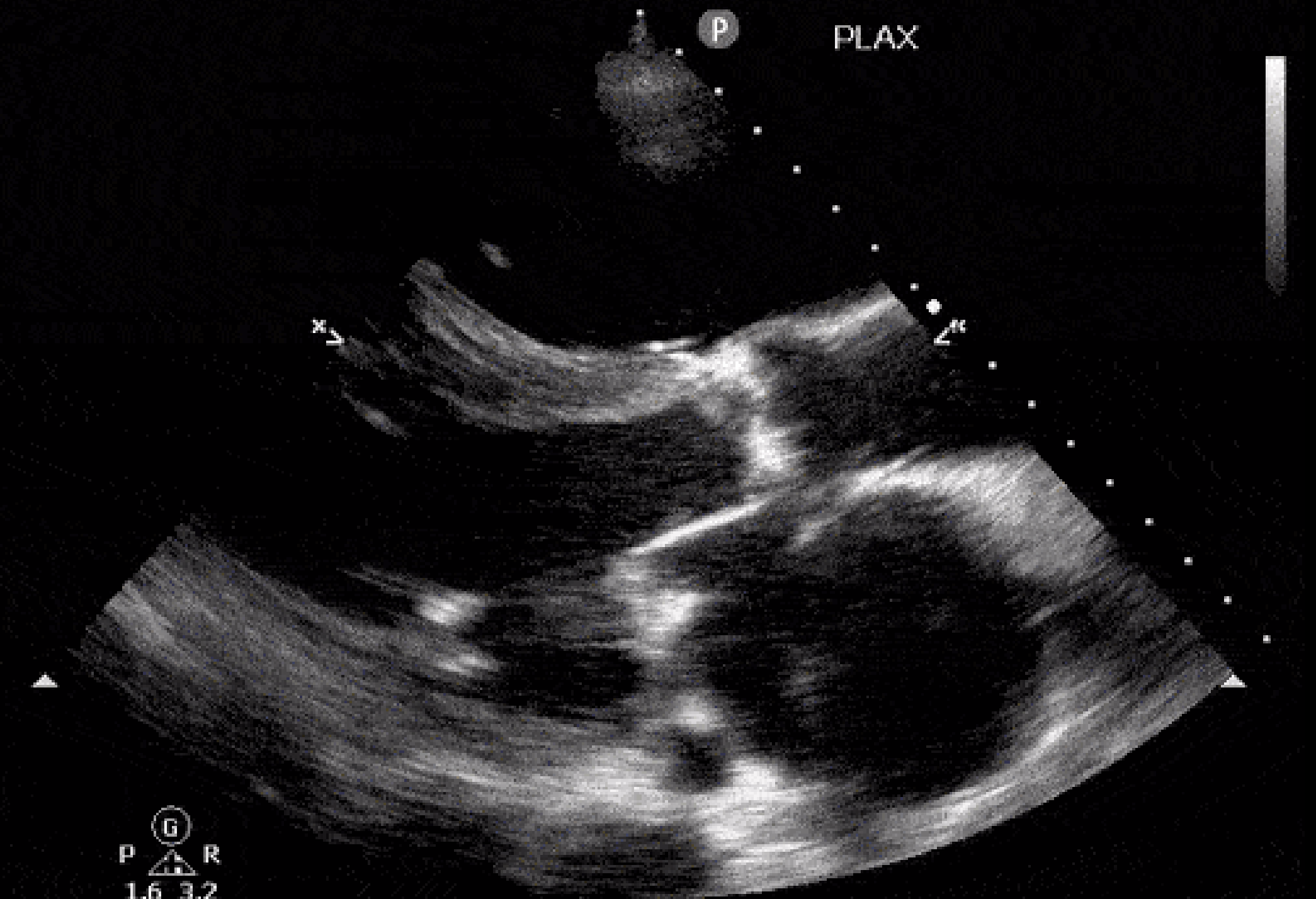
PHILIPS

Cardiac  
S4-2  
33Hz  
16.0cm

2D  
HGen  
Gn 50  
50  
4/2/0  
75 mm/s

MI 1.3  
TIS 0.6

PLAX



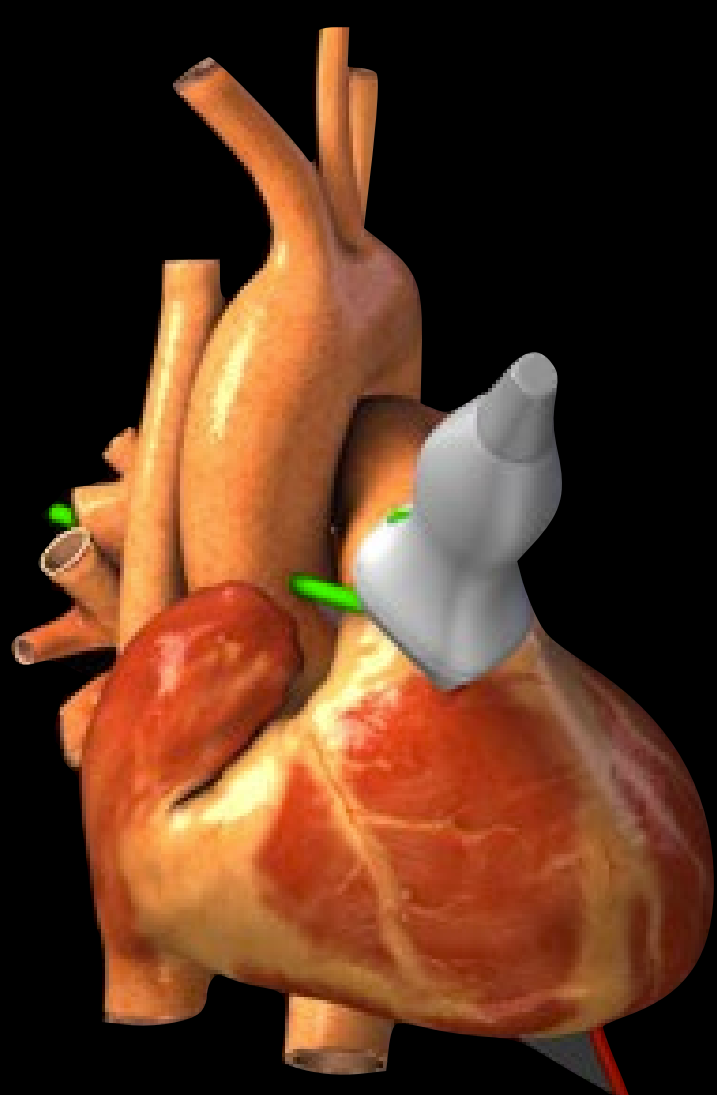
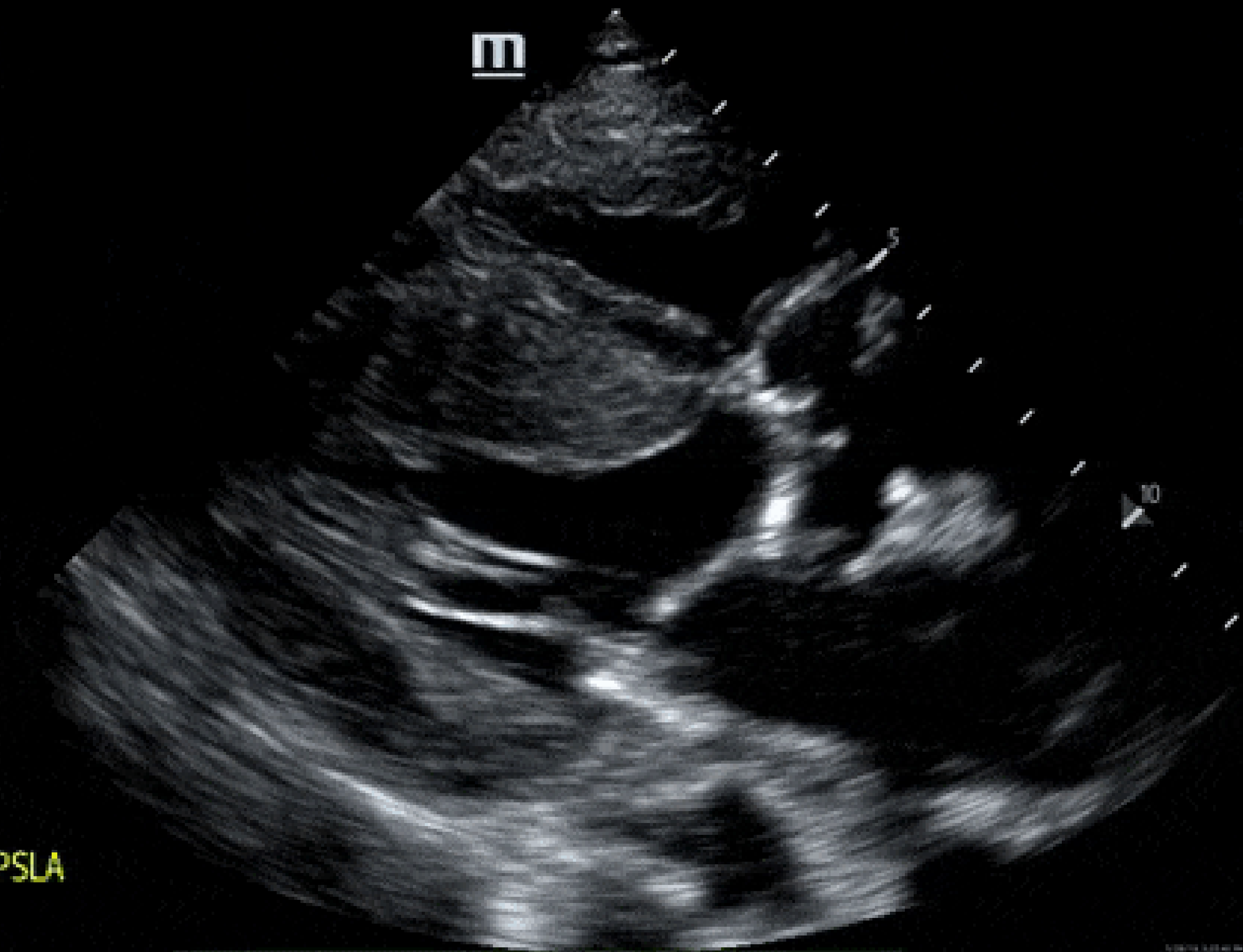
G  
P R  
1.6 3.2

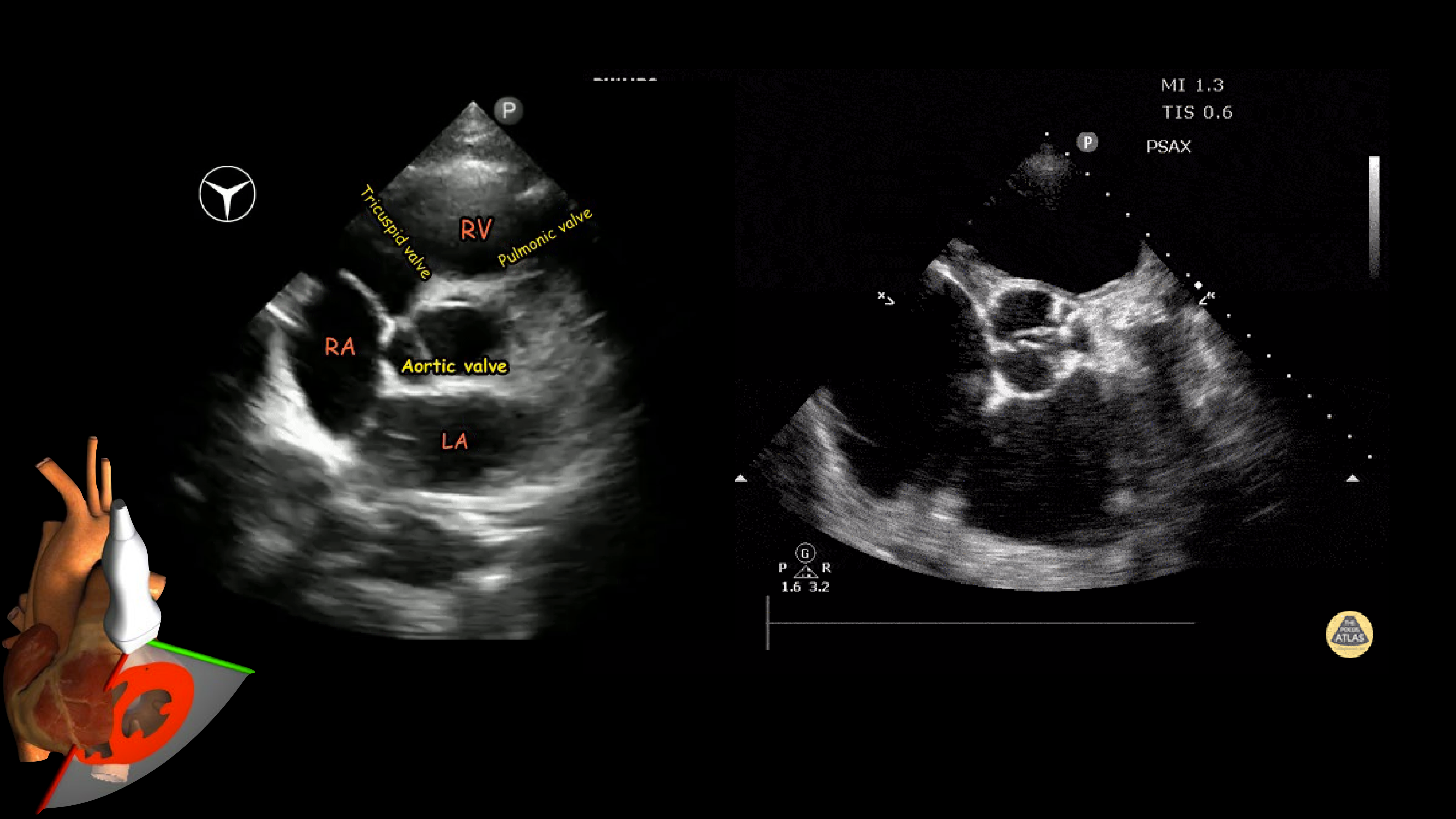




M

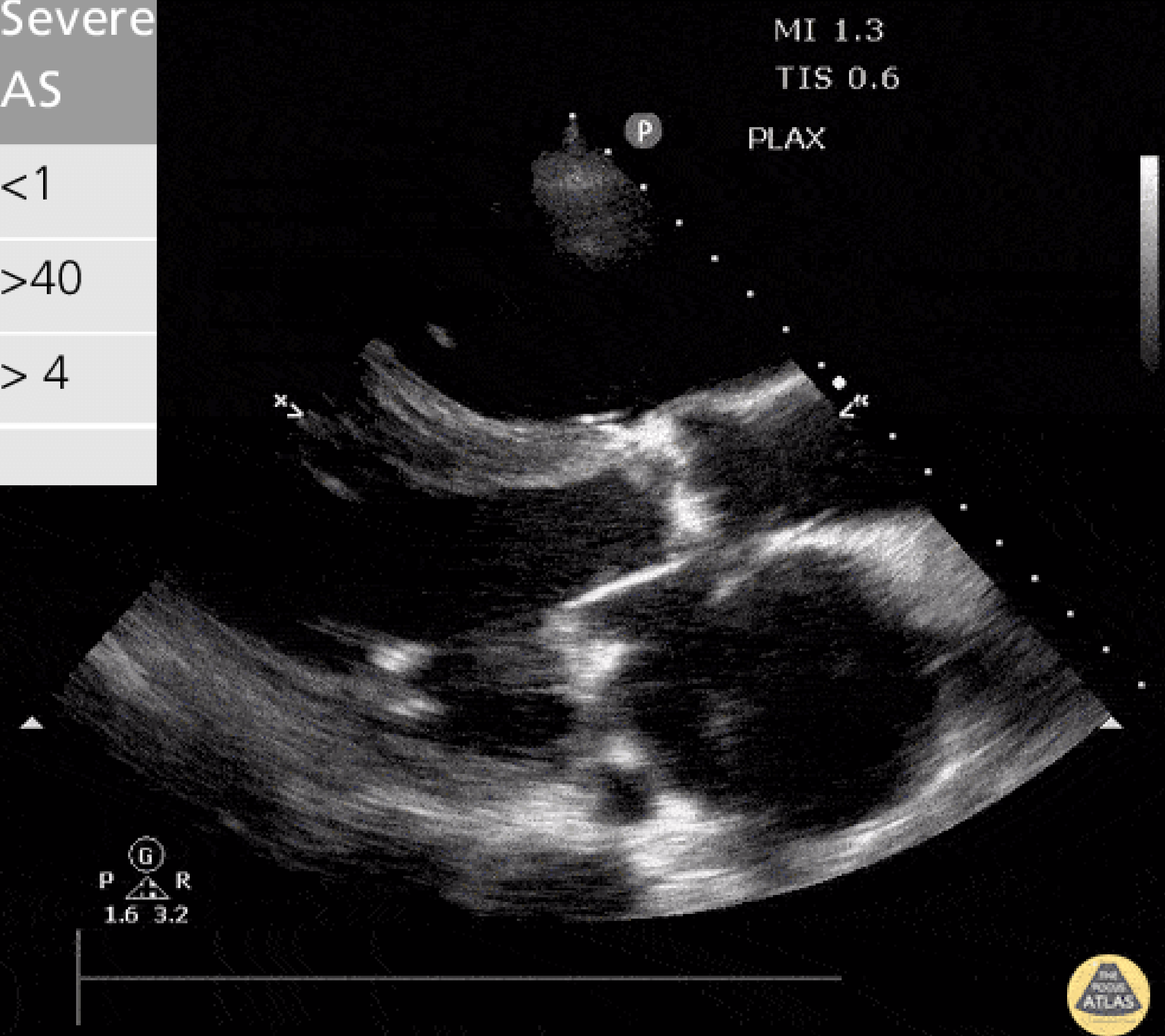
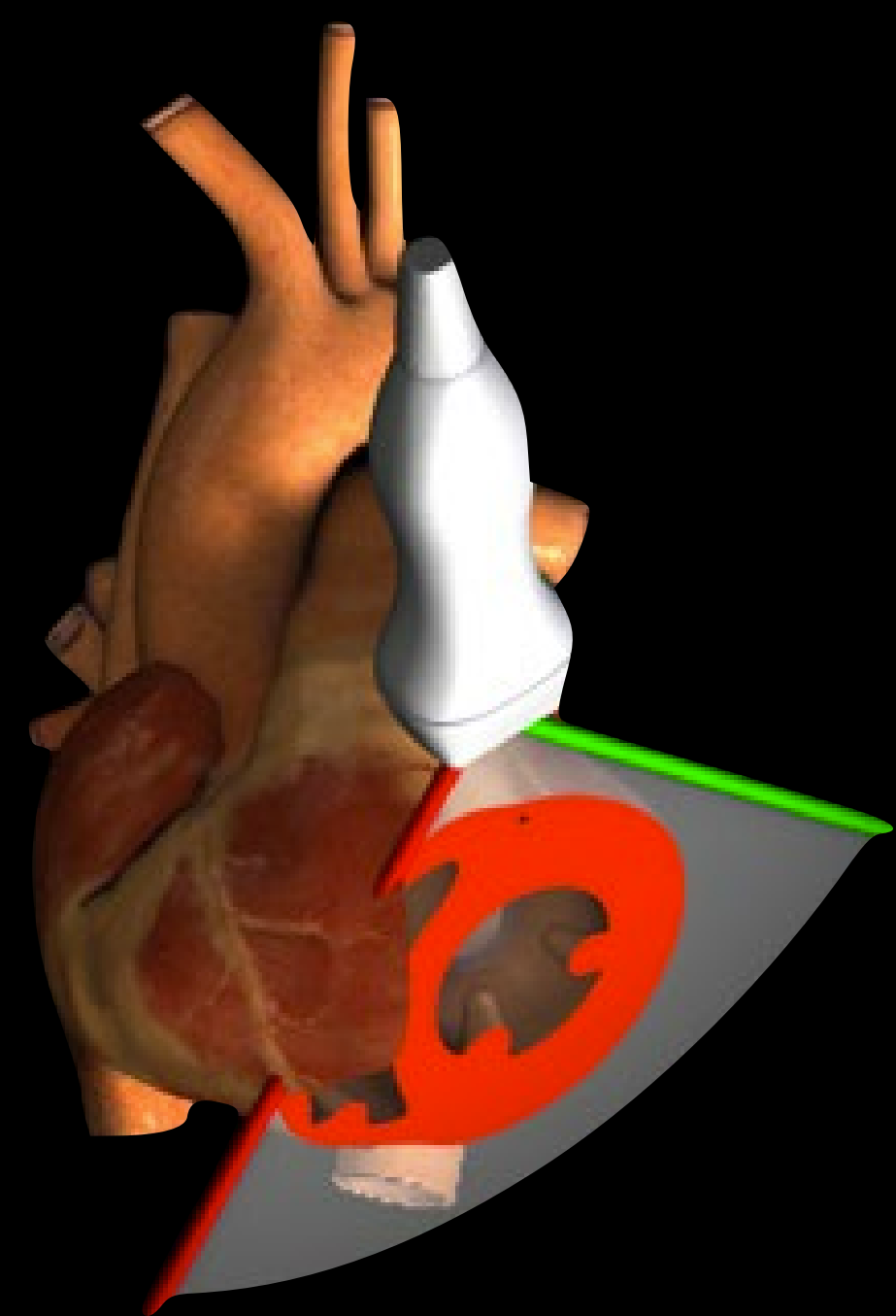
PSLA





	Mild AS	Moderate AS	Severe AS
Aortic valve area (cm <sup>2</sup> )	>1.5	1.5–1	<1
Mean gradient (mmHg)	<25	25–40	>40
Jet velocity (m/s)	<3	3–4	> 4

AS: Aortic stenosis.



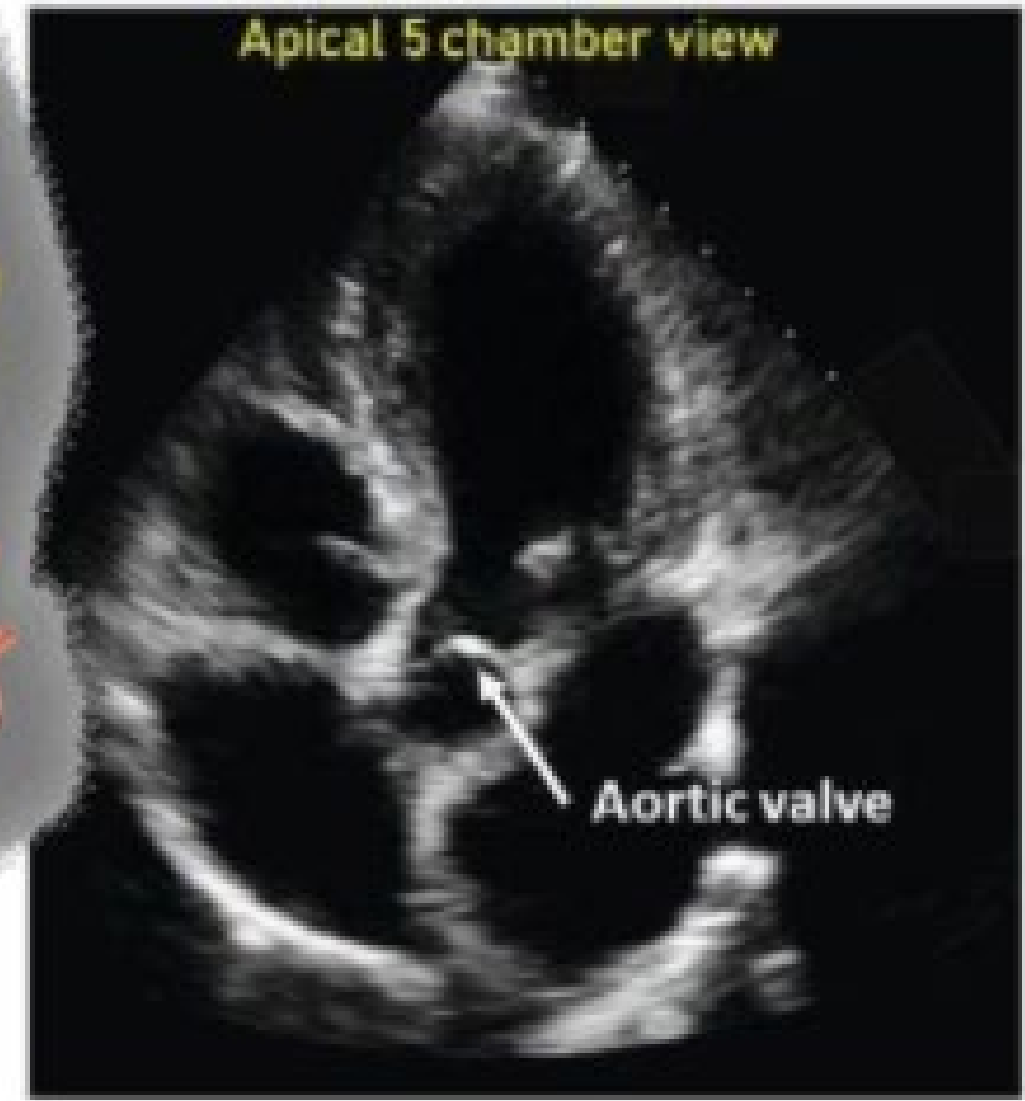
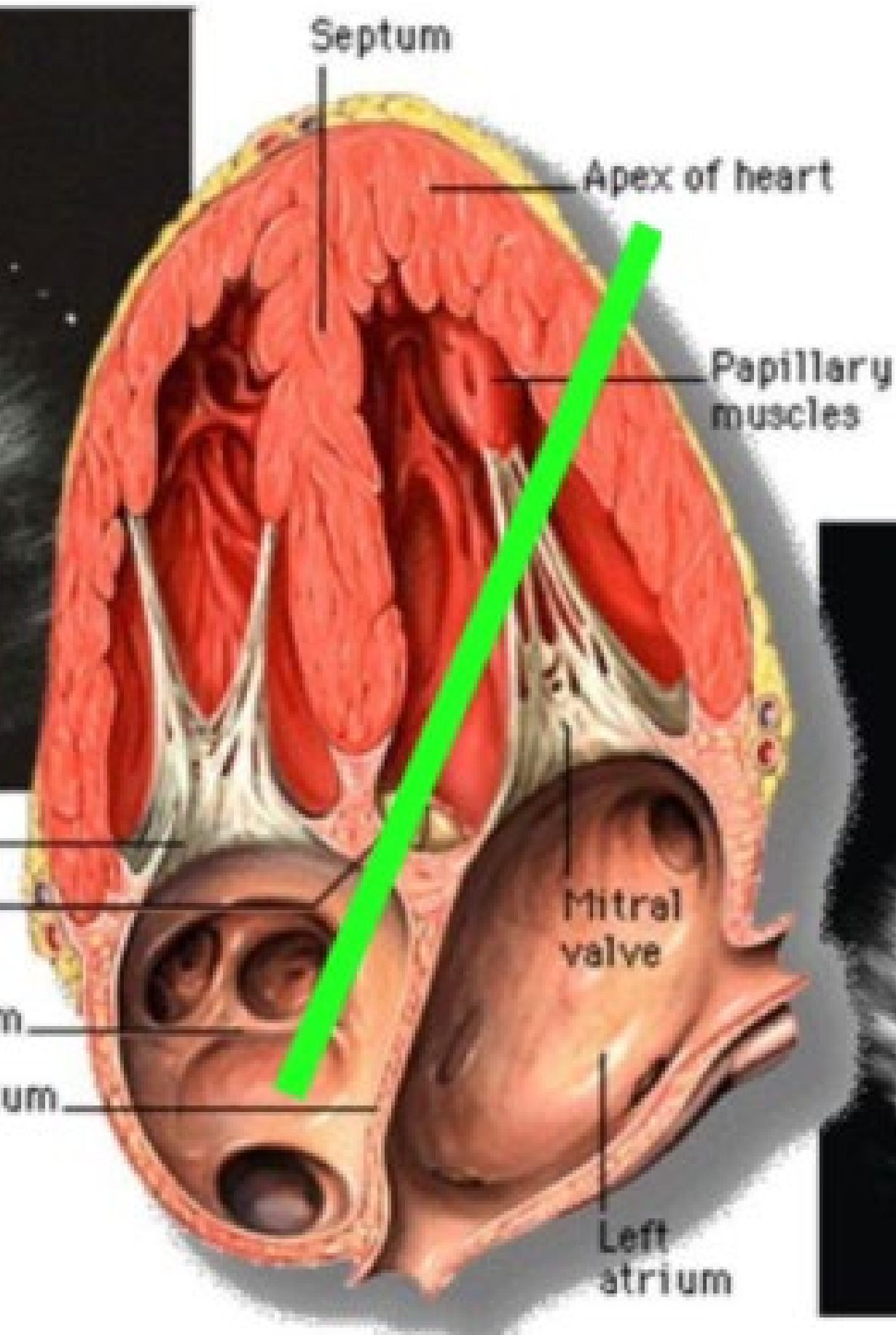
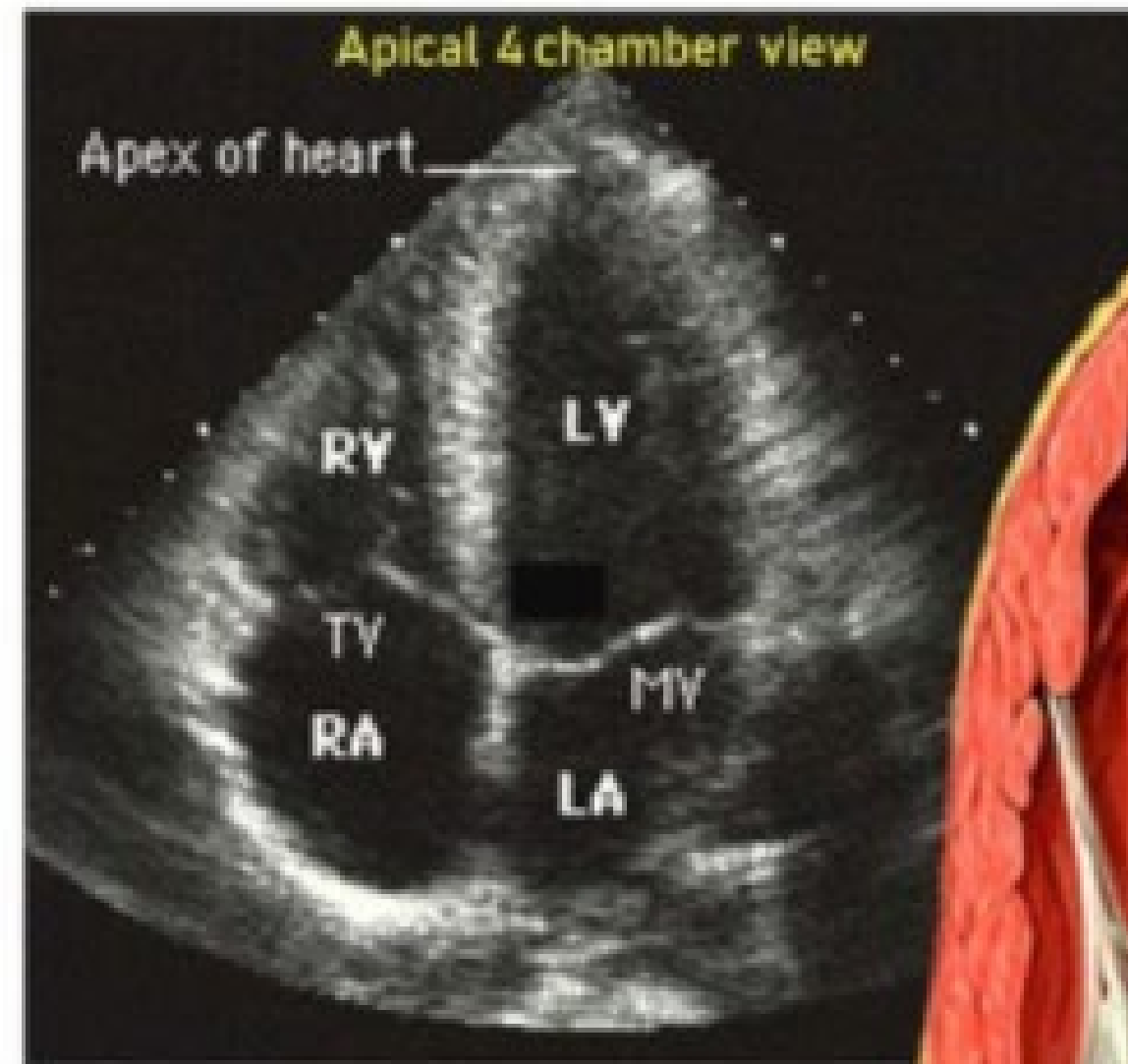
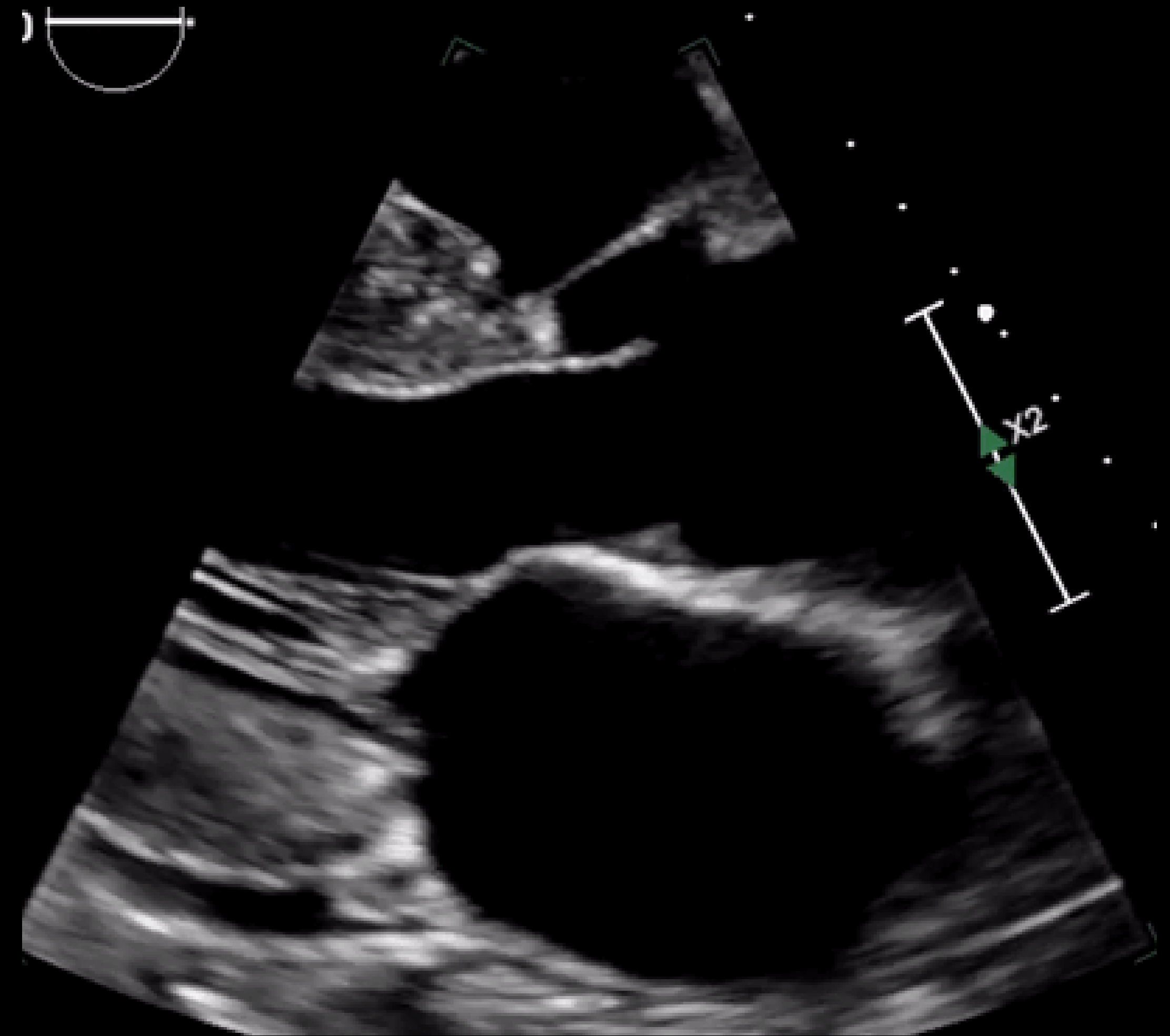
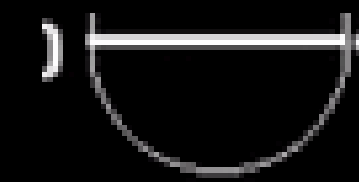


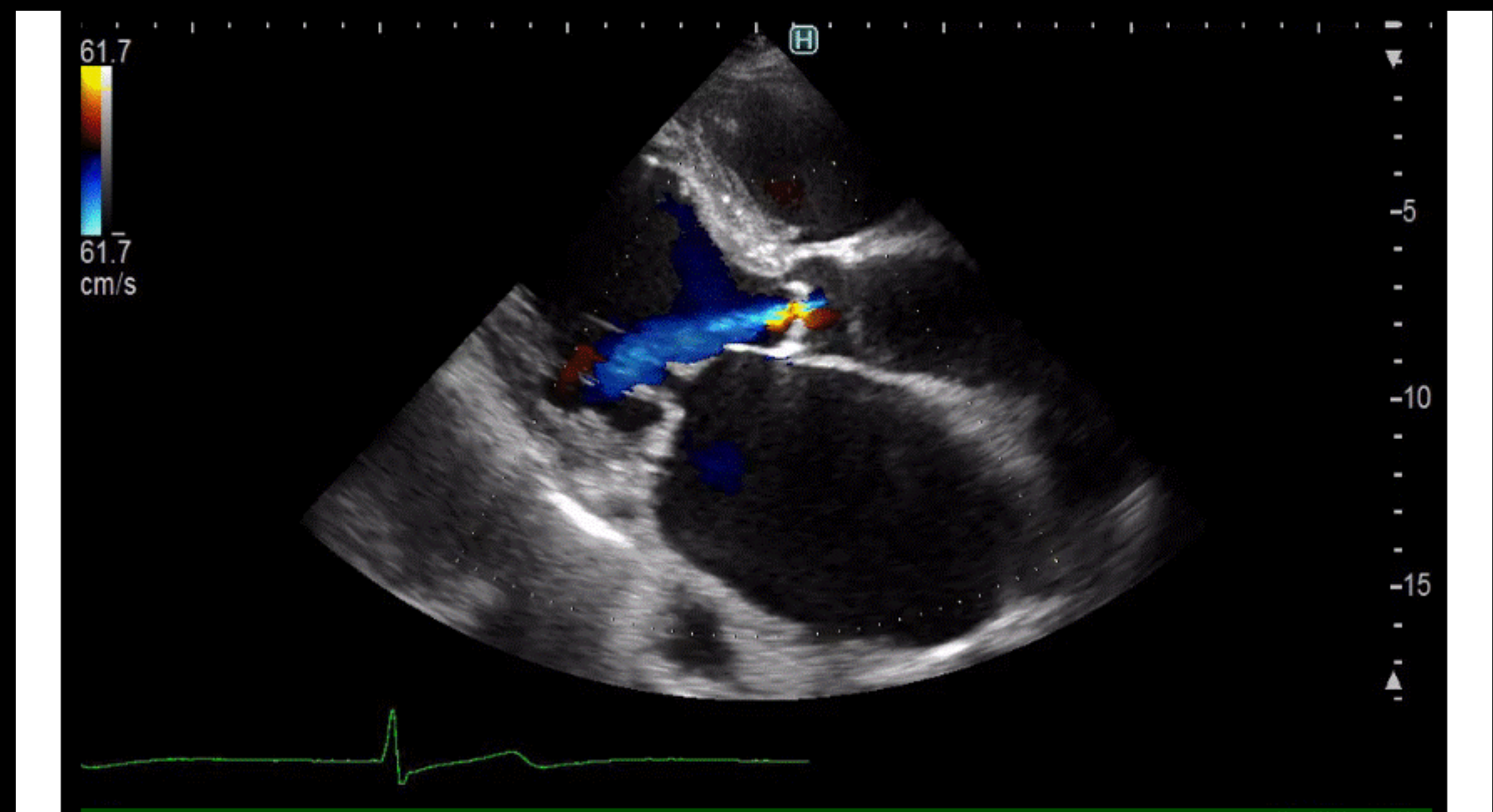
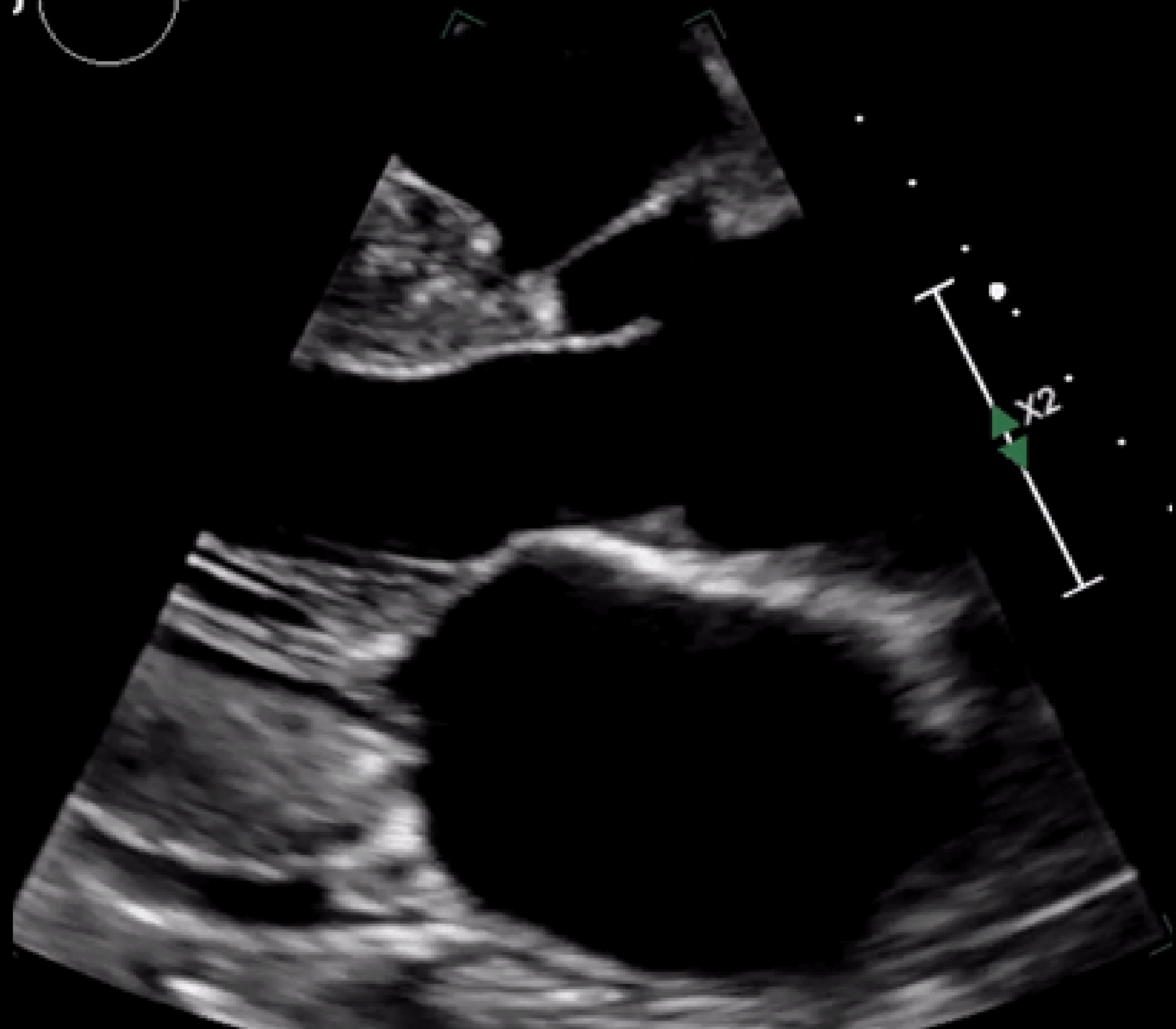
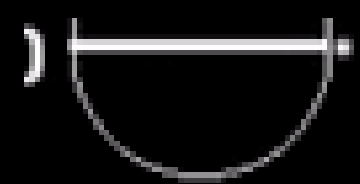
Illustration: Patrick J. Lynch, Wikimedia commons



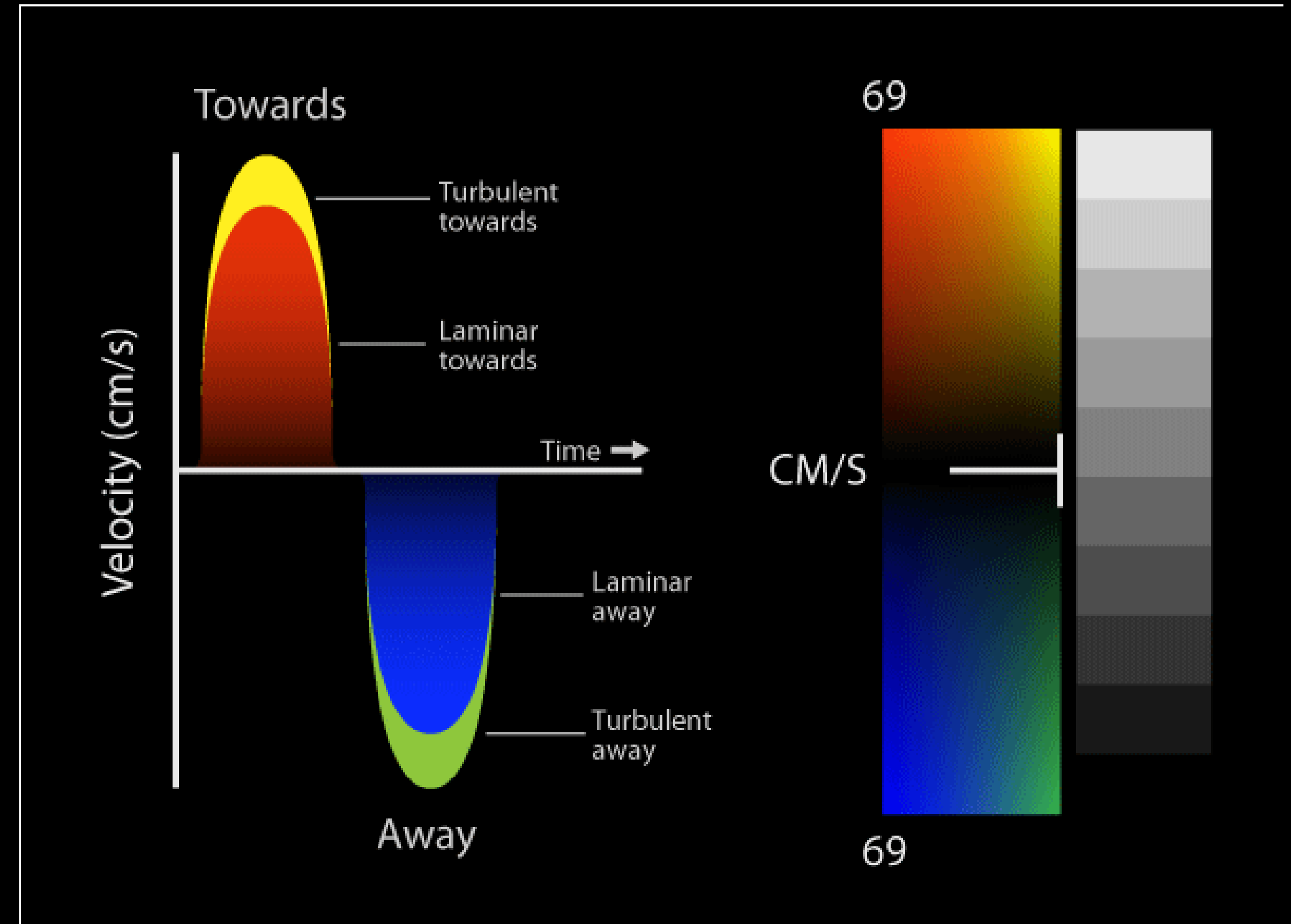
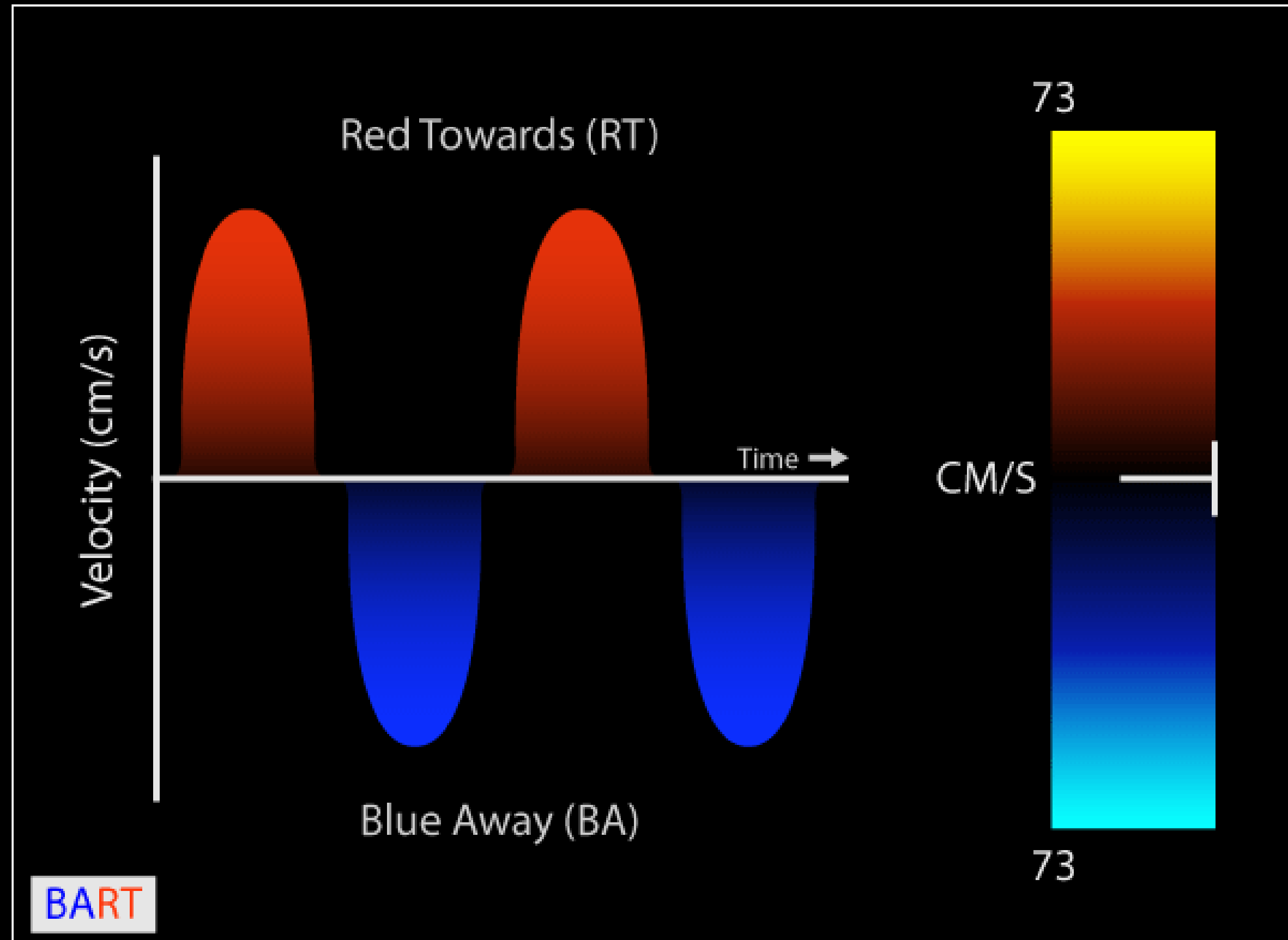
# 72M Dyspnea and syncope



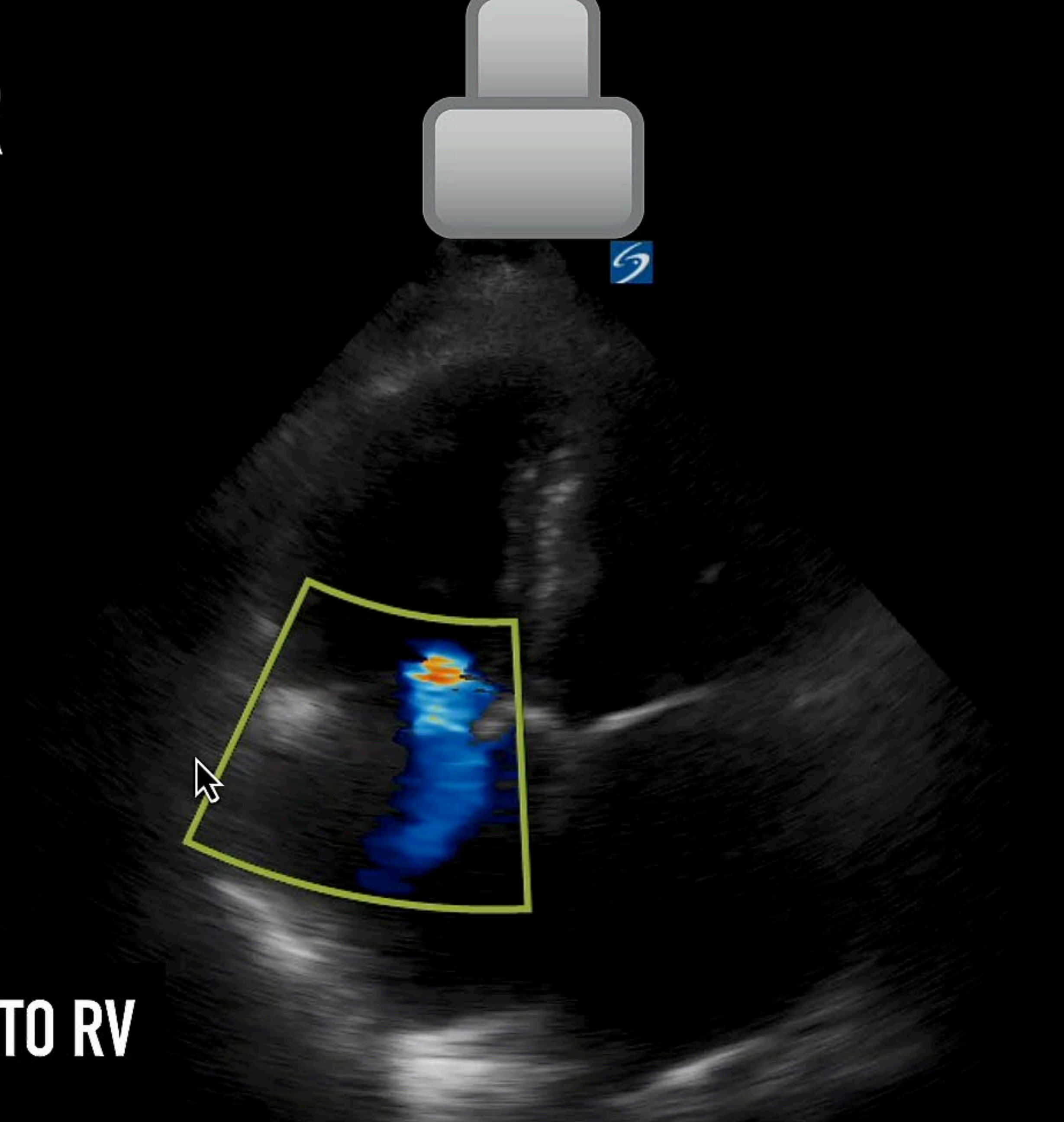




# What is colour doppler?



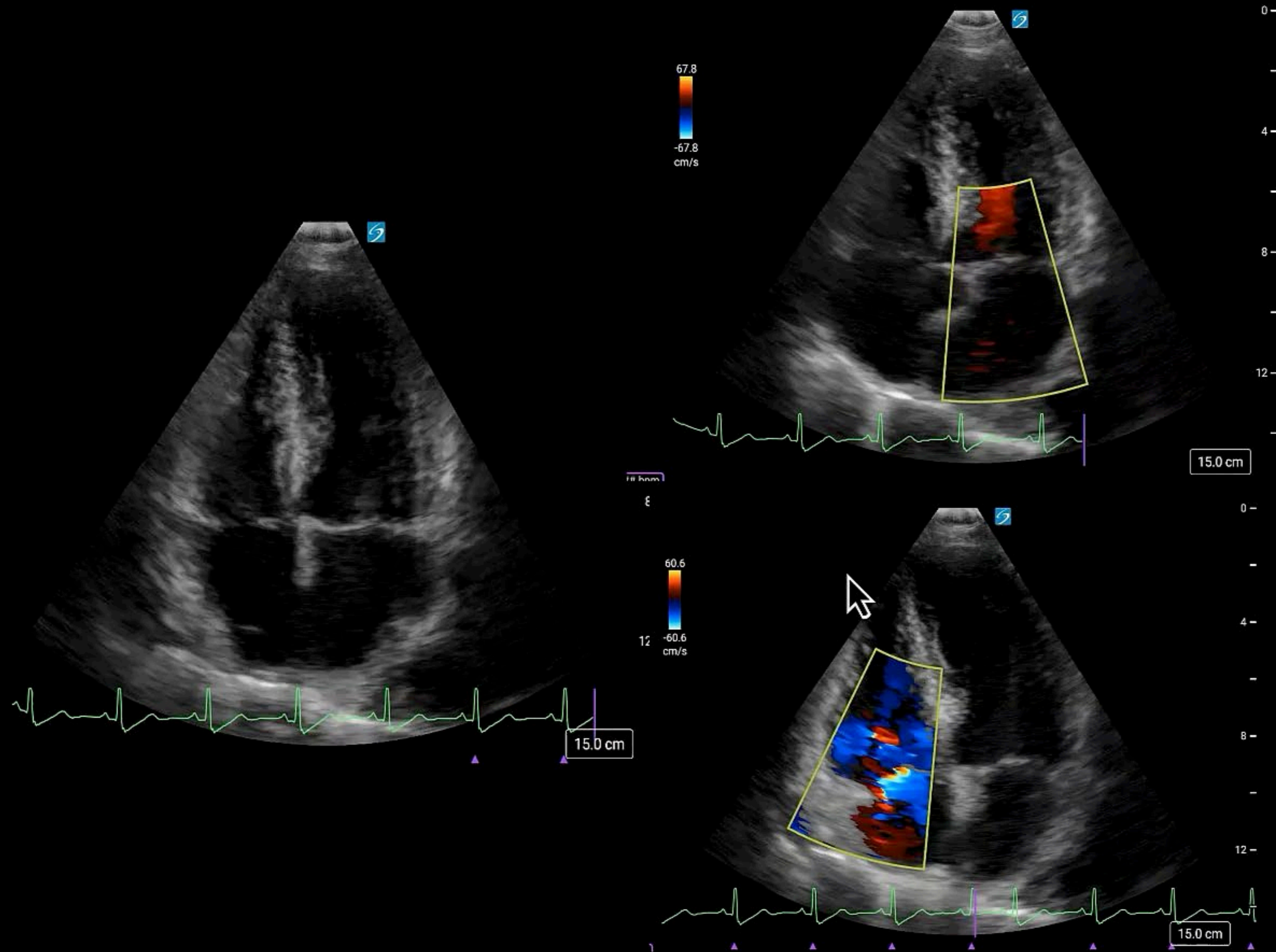
# COLOR DOPPLER

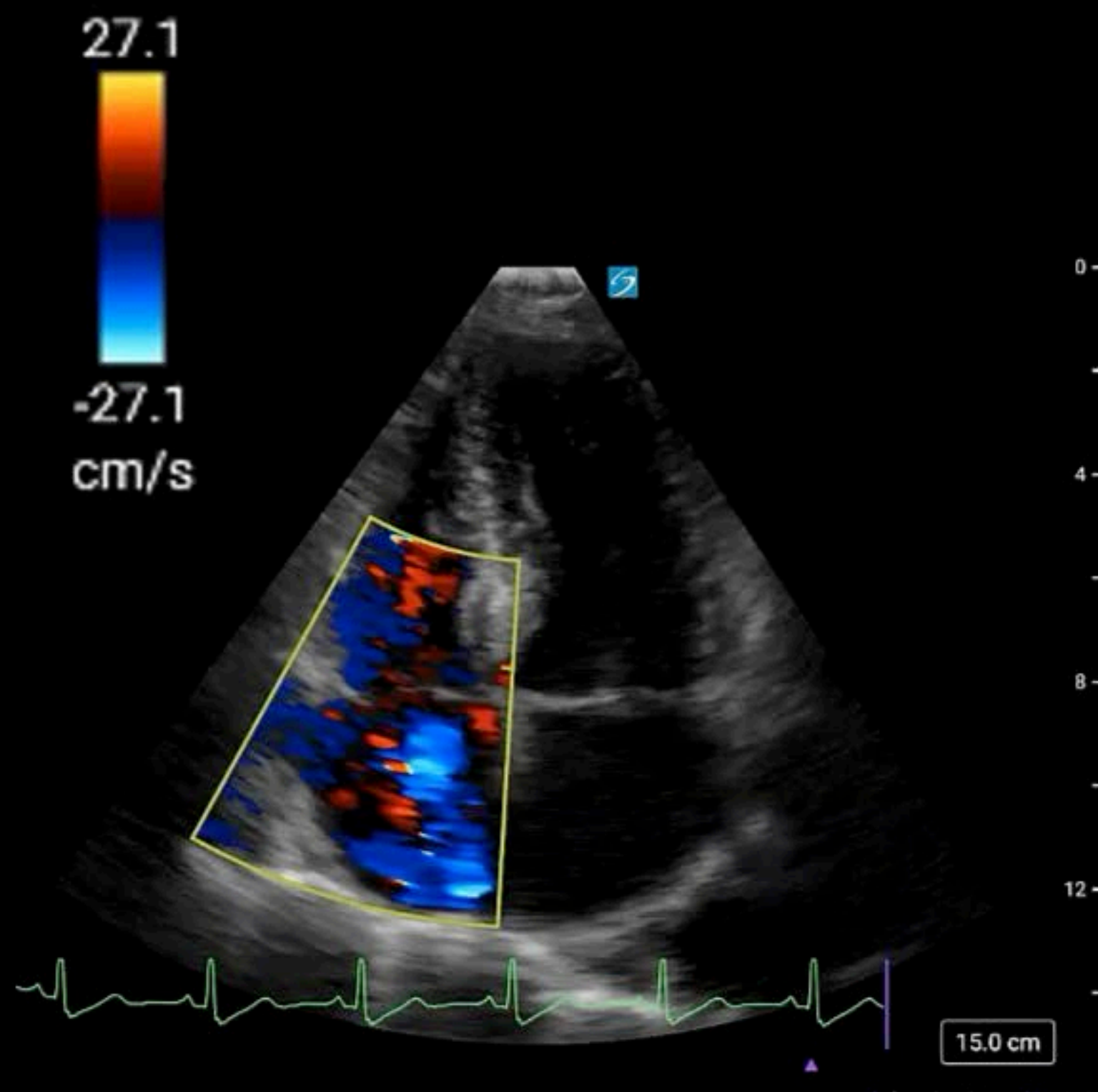


**RED: DIASTOLIC FLOW INTO RV**

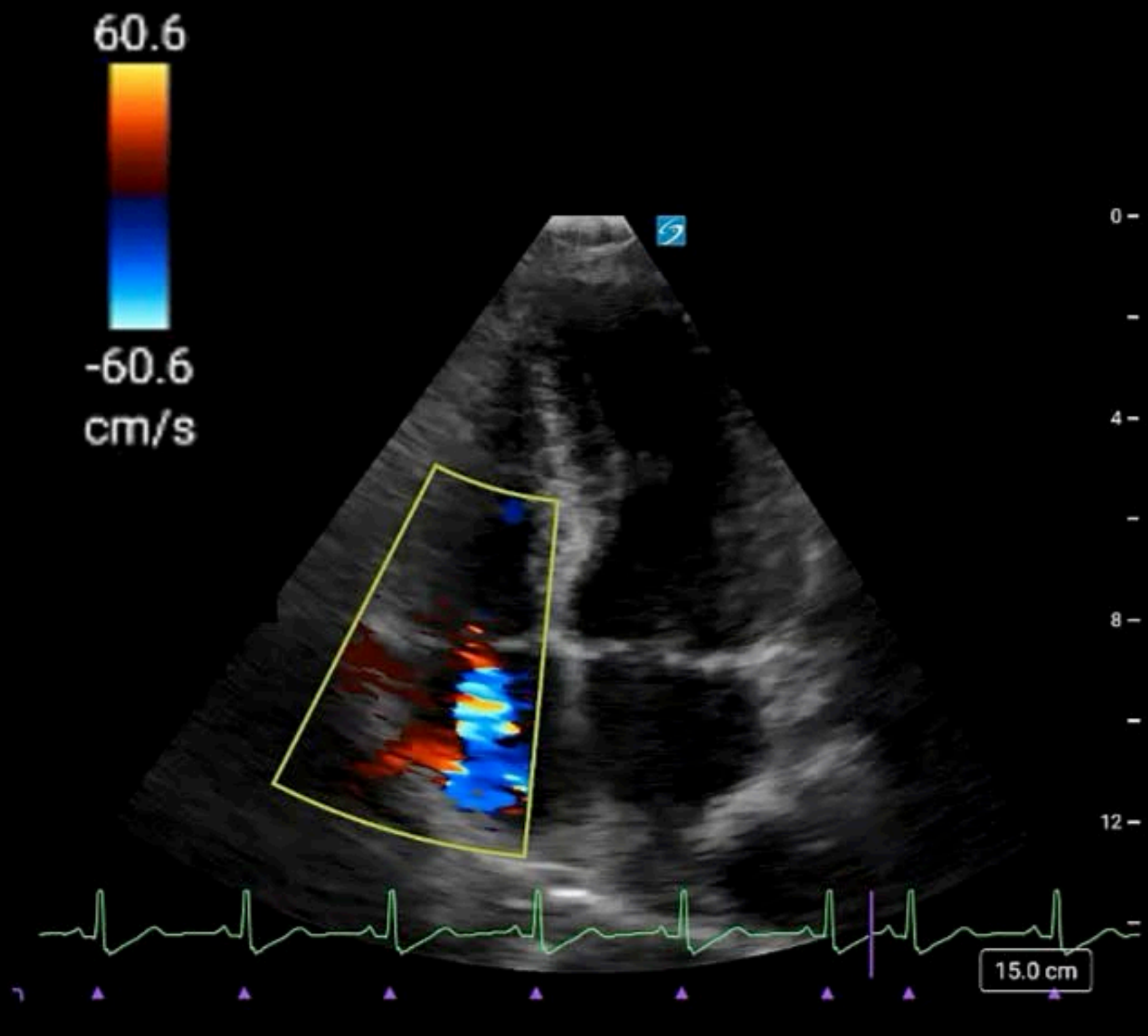
**BLUE/ MOSAIC = FLOW IN REGURGITATION**

# COLOR BOX PLACEMENT

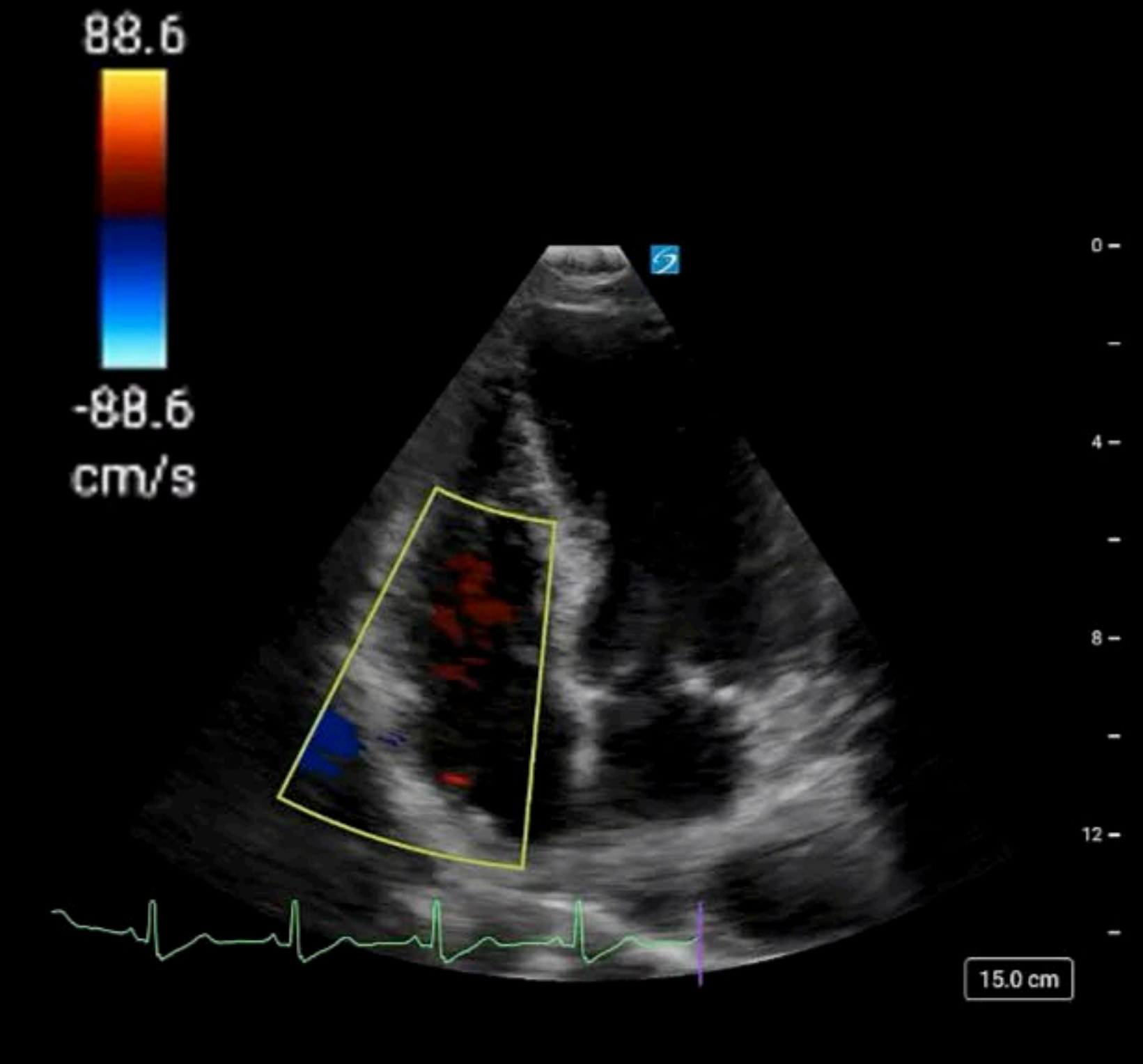




**NYQUIST TOO LOW  
(OVERLY SENSITIVE)**

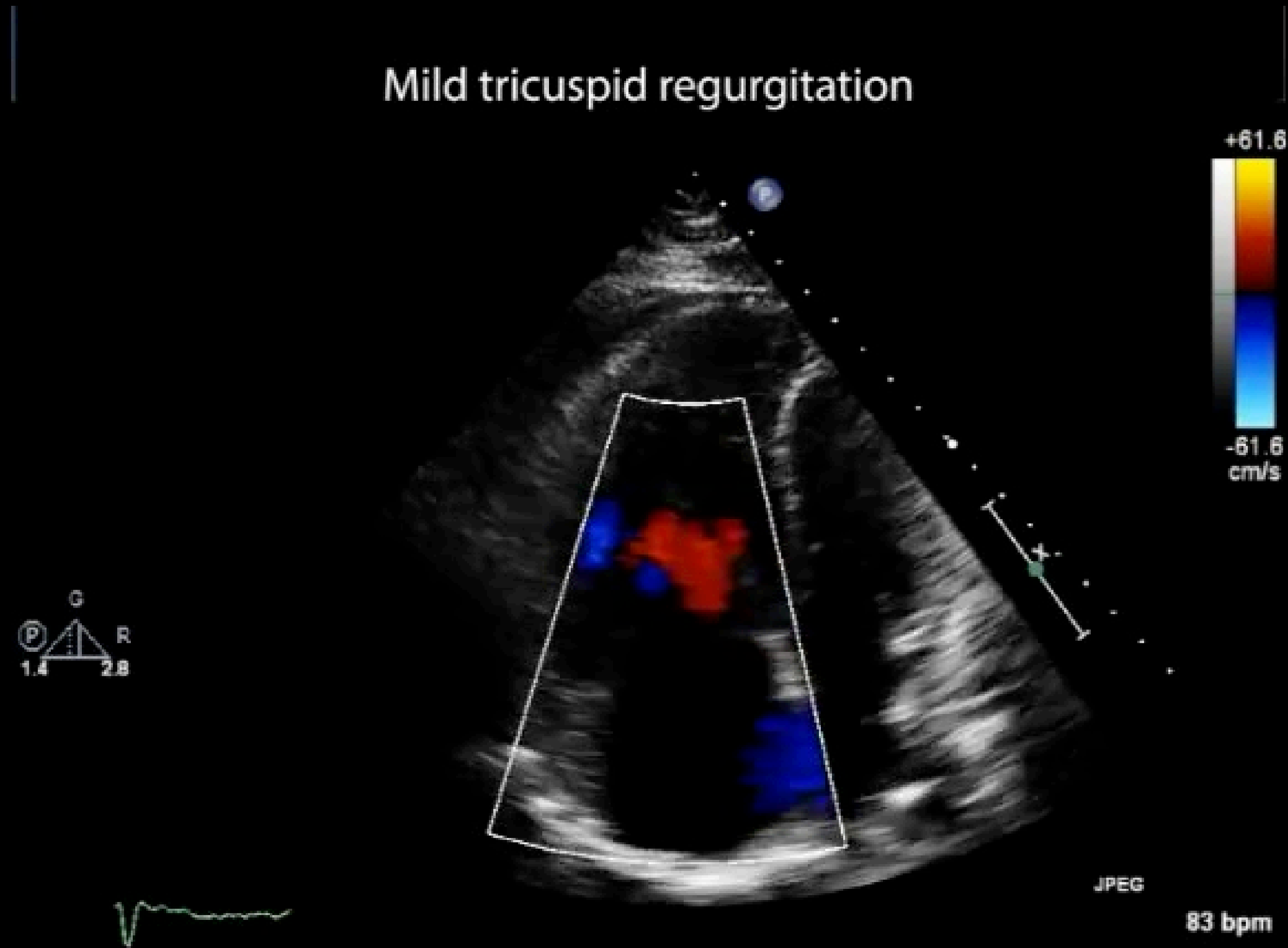


**APPROPRIATE NYQUIST**

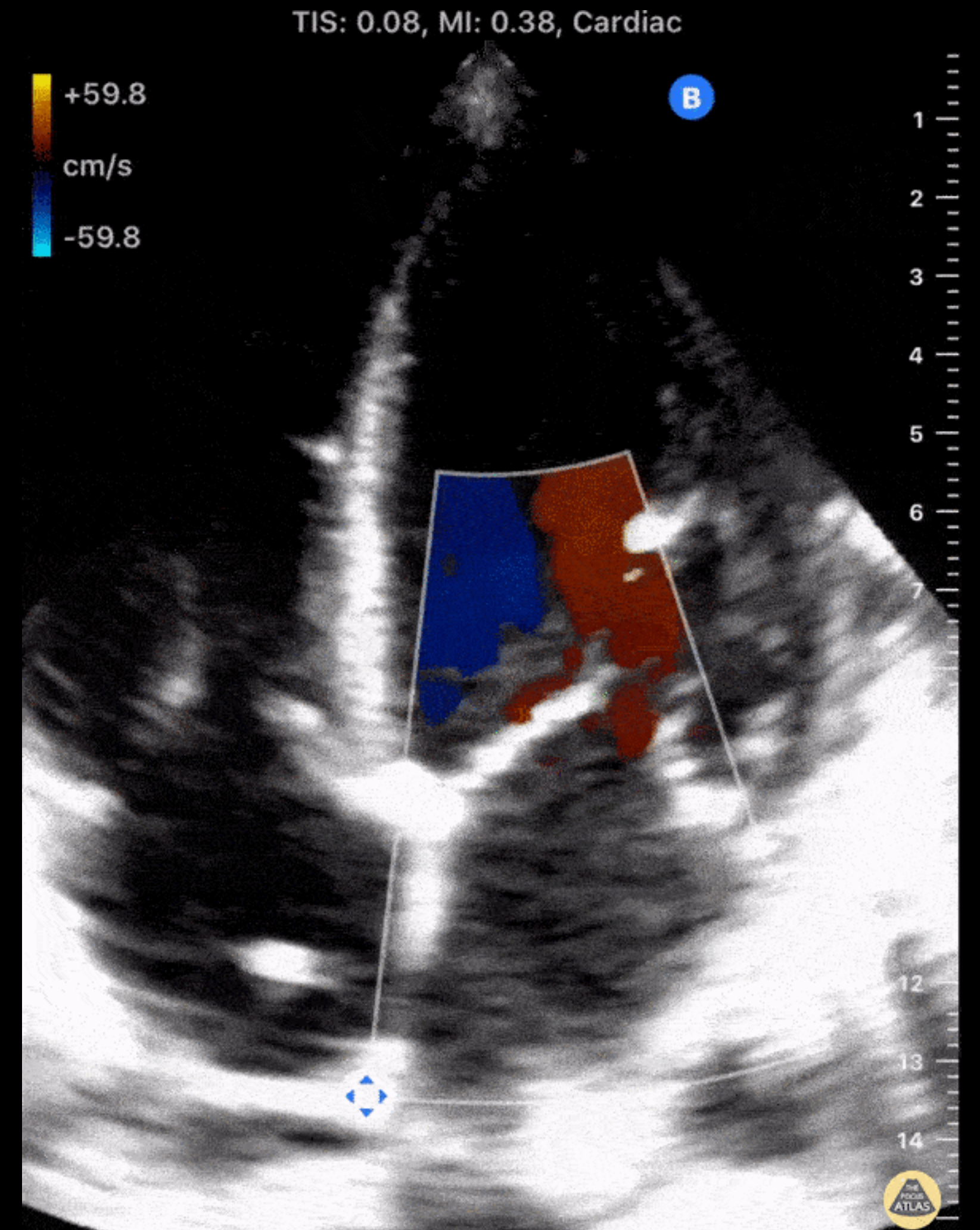


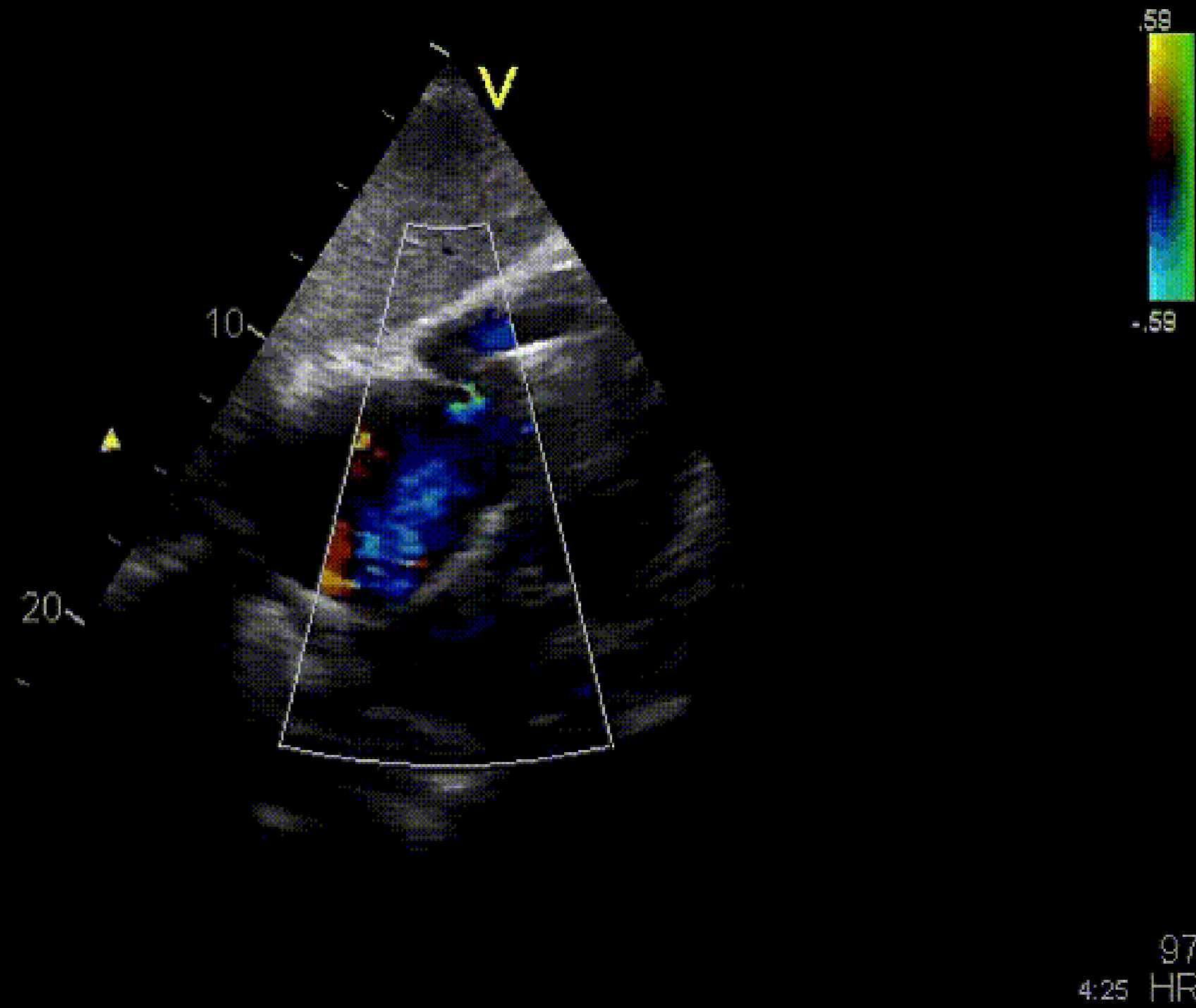
**NYQUIST TOO HIGH**

Mild tricuspid regurgitation



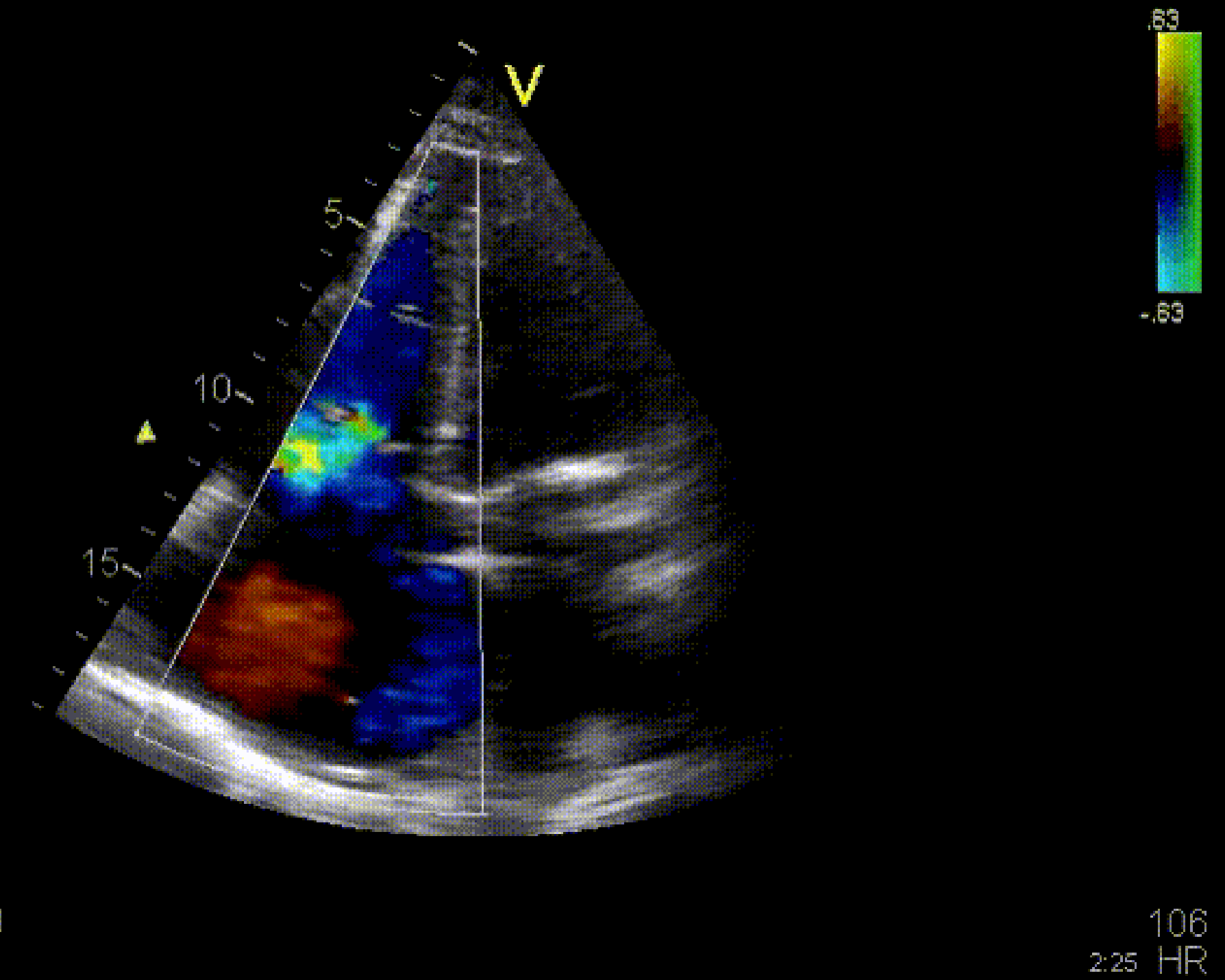
Moderate mitral regurgitation





Courtesy of the AMC Echolab, AMC, The Netherlands

ECHO PEDIA .ORG



Courtesy of the AMC Echolab, AMC, The Netherlands

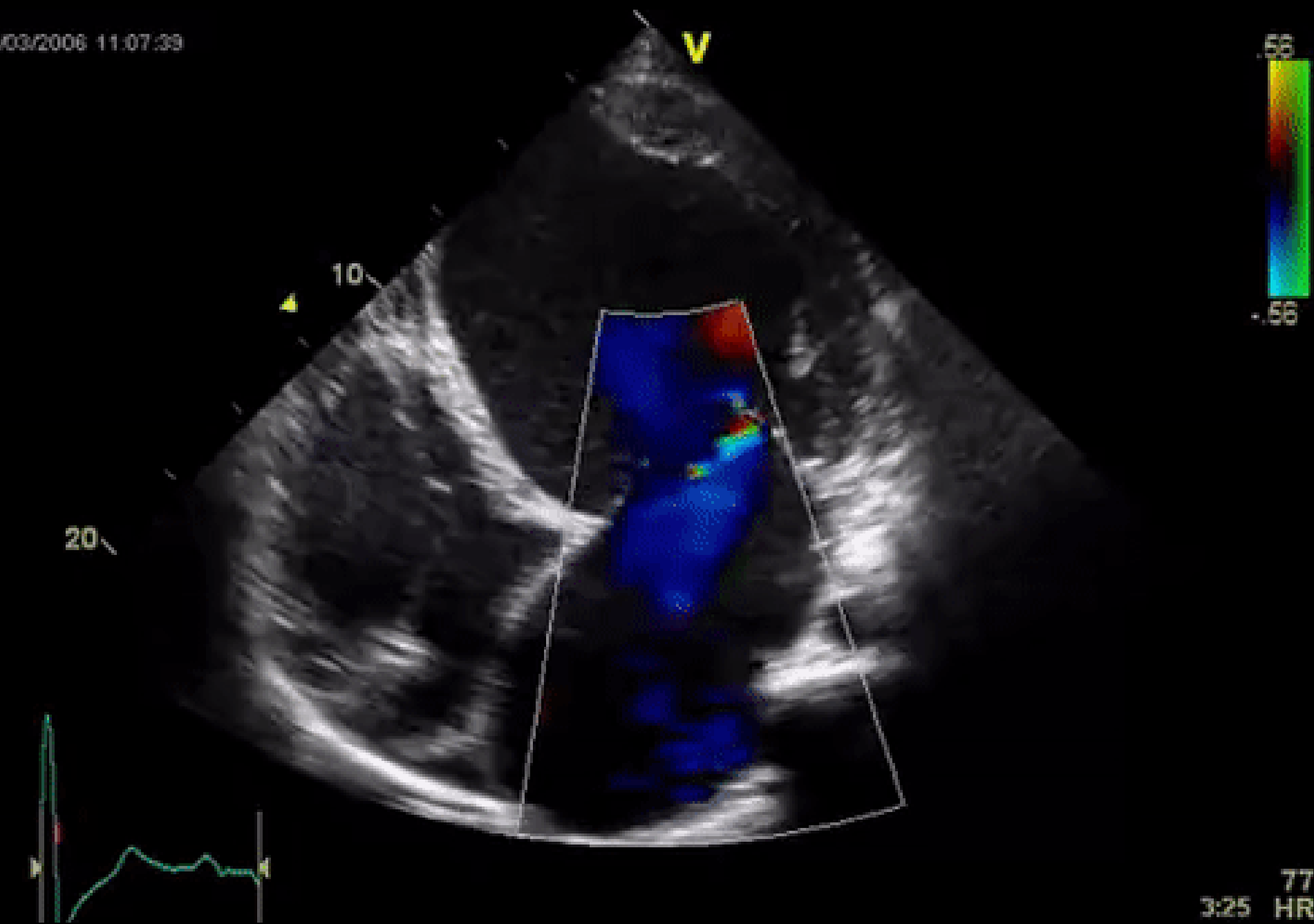
ECHO PEDIA .ORG

TR is severe if >50% of RA

## Echocardiographic Criteria to Grade Mitral Regurgitation

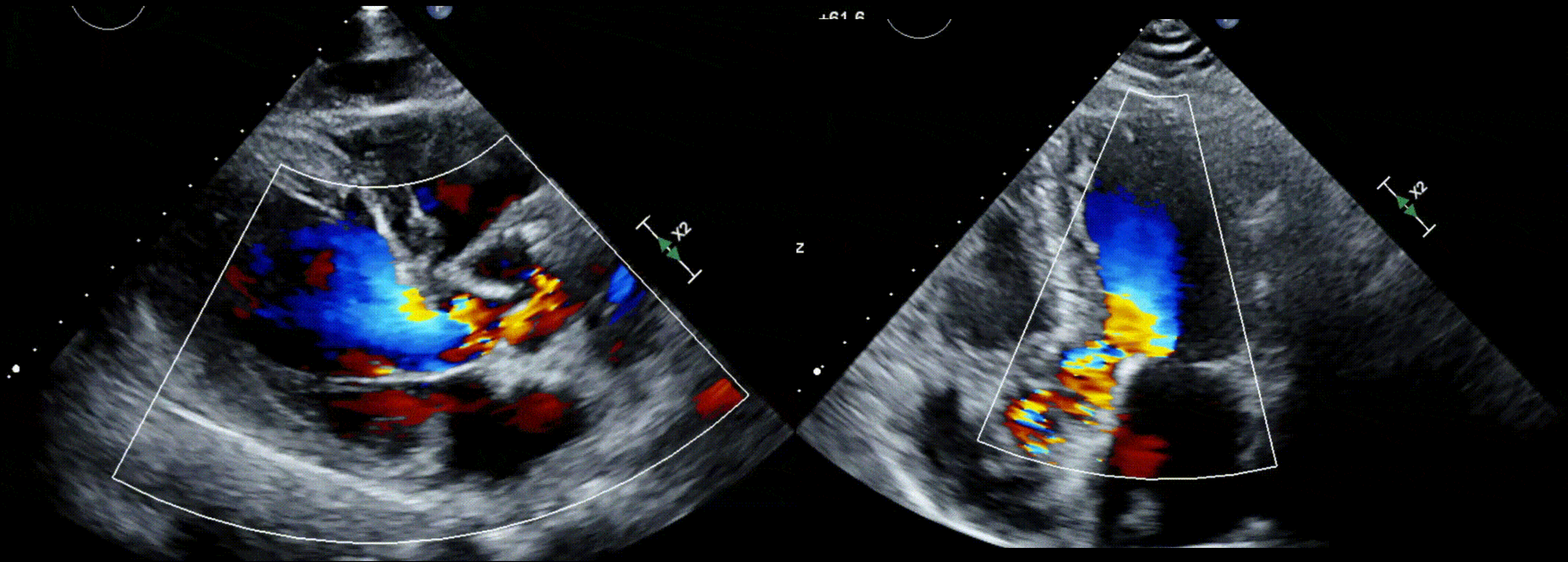
		Mild	Moderate		Severe
			Mild to moderate	Moderate to severe	
<b>Jet Area</b>	%	< 20 (of atrium)	Variable		> 40
<b>Pulmonary venous flow</b>		Systolic prevalent	Reduced systolic		Systolic backflow
<b>Vena contracta</b>	mm	< 3	3 – 6.9		≥ 7
<b>Mitral pattern</b>		A dominant	Variable		E dominant(> 1.5 cm/s)
<b>Regurgitant Volume</b>	ml	< 30	30-44	45-59	≥ 60
<b>Regurgitant Fraction</b>	%	< 30	30-39	40-49	≥ 50
<b>EROA</b>	cm <sup>2</sup>	< 0.20	0.20-0.29	0.30-0.39	≥ 0.40

21/03/2006 11:07:39



MR is severe if >40% of LA





AR is severe if  $>65\%$  of LVOT

A classical painting depicting a prophet, likely Isaiah, standing on a rocky outcrop. He has a long, flowing white beard and is wearing a brown, textured robe. He holds a large, rectangular scroll aloft with both hands, as if presenting it to the sky. The scroll contains faint, illegible text. The background is a dramatic, cloudy sky with a bright light source, possibly the sun or moon, creating a strong contrast. Below the prophet, a crowd of people is visible, some with their arms raised in a gesture of praise or supplication. The overall style is characteristic of 17th or 18th-century religious art.

Get the best views **FIRST**

Look at valves in 2D

vegetation, thickening, stenosis

Use colour doppler

mild-moderate vs severe

Stay humble but curious

# Questions?

