



ECHOCARDIOGRAPHY...

From a Sonographer's Perspective:

THE NOTEBOOK 7

Chapter IV: The Transthoracic Echocardiogram

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ECHO...THE NOTEBOOK 7 & THE WORKBOOK 7
are approved by the SDMS as a self-instructional activity for

26 SDMS CME credits

until 6 May 2020 & hopefully longer!

Please visit www.echonotebook.com or check out the
yellow pages in the back of THE WORKBOOK for details!

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IV. THE TRANSTHORACIC ECHO (TTE)

OBJECTIVES

Upon completion of this section, the reader will be able to

1. Identify the Cardiac Sonographer's role prior to the TTE, including paperwork, patient positioning, & scanning options.
2. Apply the steps of the TTE, including 2D, M-mode, & Doppler of all the views incorporating the cardiac dimensions and routine calculations of the cardiac anatomy.
3. Better understand & recognize the cardiac anatomy and interpret the findings.
4. Acquire & interpret the updated LV diastolic function parameters; as well as an introduction to RV diastolic function.
5. Although no longer recommended, recognize, define, & acquire the M-mode dimensions.

NOTES: TTE PREP

- verify order/indication
- gather equipment
- check records/previous echo
- intro & reason for visit
- enter/verify patient's data
- gown
- EKG
- adjust bed height
- left vs right hand scanning
- patient position
- consider...
 - ✓ policy & procedure
 - ✓ flexibility
 - ✓ abnormal findings
 - ✓ utilize zoom/enlarge
 - ✓ optimize settings
 - ✓ if necessary call for assistance!

VIEW	PROTOCOL	IMAGES
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LAX LV

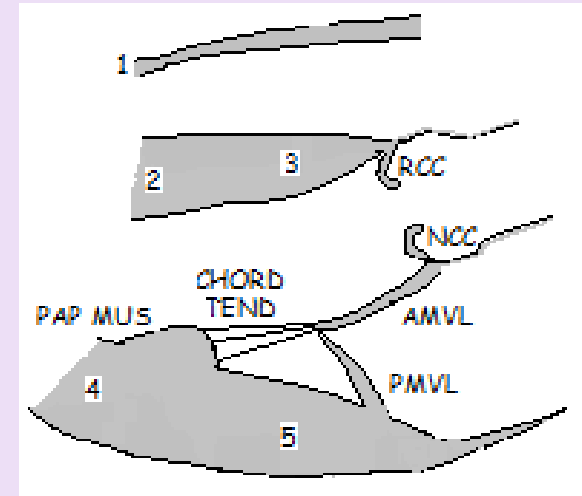
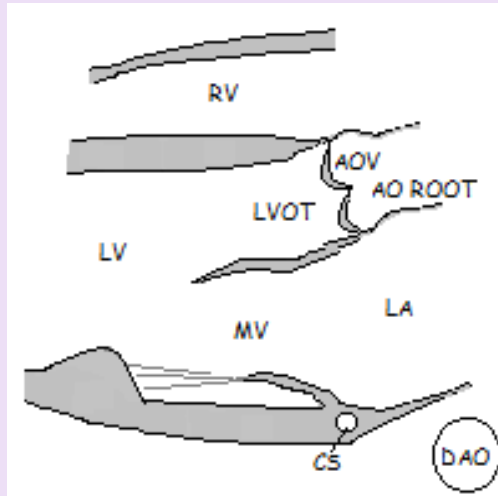
- 4th ICS
- indicator toward right shoulder

1) Increase depth

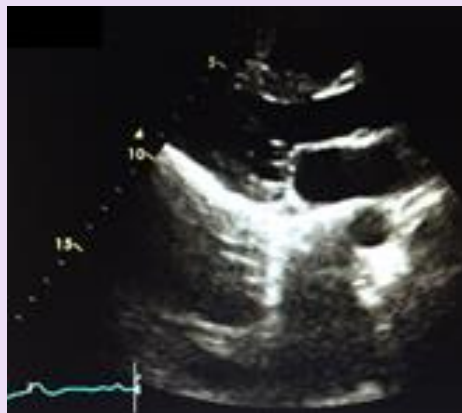
- entire cardiac structure & surroundings

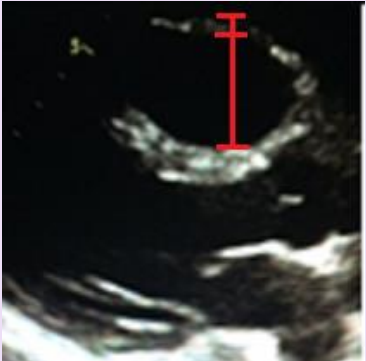


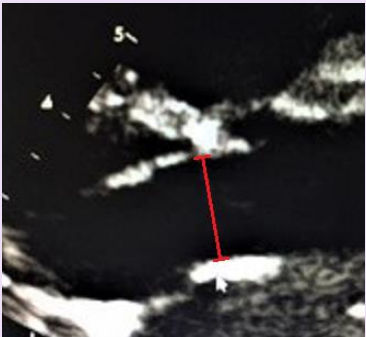
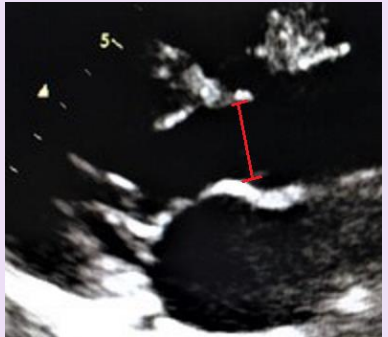
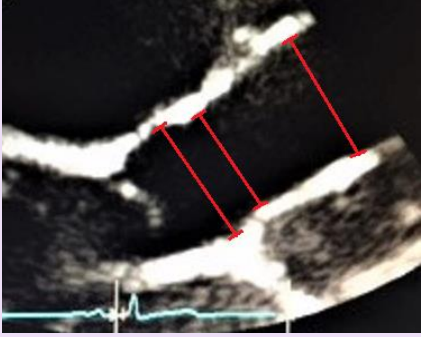
2) Decrease depth

- chamber size
- wall thickness
- global function
- valve function



POP QUIZ!
Label the wall segments #1 – 5.



VIEW	PROTOCOL	IMAGES		
LAX LV & LAX AO	<p>3) 2D dimensions</p> <ul style="list-style-type: none"> • RVFW • RV • IVS • LVIDd • PWT • LVIDs • LA • LVOT • AOV annulus • sinus of Valsalva • sinotubular junction • proximal AAO 			
				

POP QUIZ!



What phase(s) of the cardiac cycle
are the dimensions acquired?

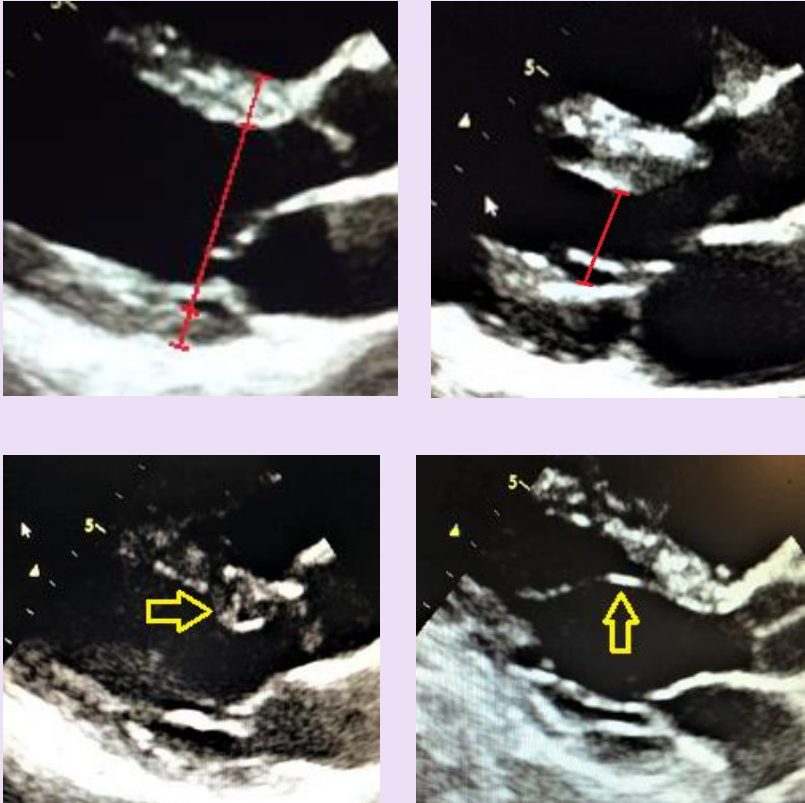
NOTES: LVEF

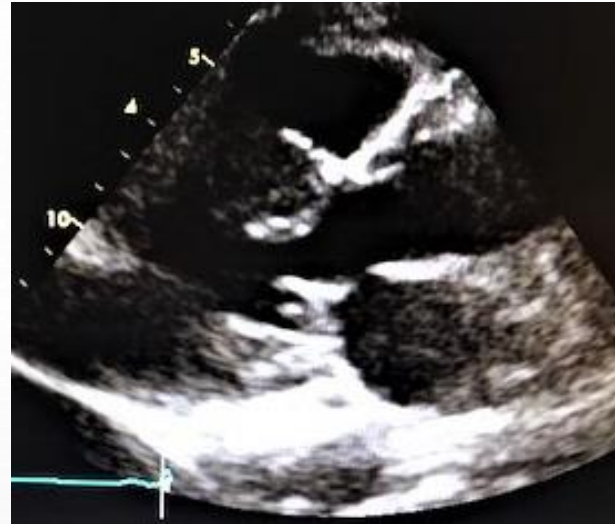
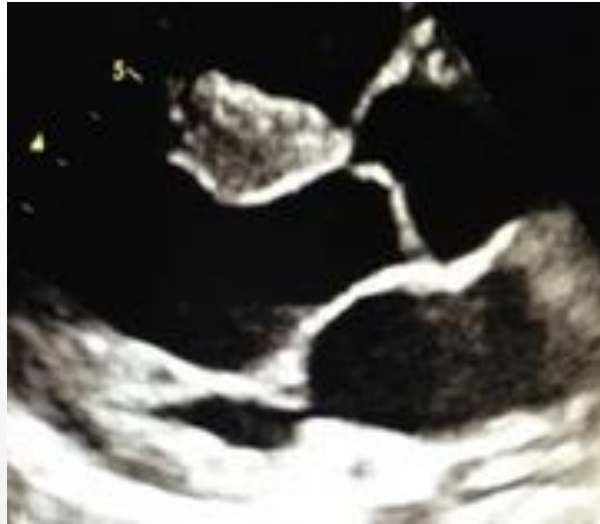
- visually estimate LVEF – useful, need experience
 - Teicholtz linear method – out of date
 - Biplane method of disk summation – recommended!
-
- ✓ EDV
 - ✓ ESV

POP QUIZ!

What does LVEF measure?

VIEW	PROTOCOL	IMAGES
LAX LV	<p>4) RV anterior wall</p> <ul style="list-style-type: none"> • thin • squeezes concentrically • end-diastolic RV wall thickness (1 – 5 mm) <p>5) RV</p> <ul style="list-style-type: none"> • most anterior chamber • smaller than LV • complex crescent shape • moderator band • end-diastolic RVOT_{prox} diameter (20 – 30 mm) 	 <p>POP QUIZ! What does the arrow reveal?</p> 

VIEW	PROTOCOL	IMAGES
<p>LAX LV</p> <p>Acquire LV dimensions perpendicular to cardiac structures, in a straight line, at or immediately below tips of MV leaflets, with calipers placed at myocardial wall/cavity interface & wall/pericardium interface.</p> <p>(ASE guidelines, J Am Soc Echocardiogr 2015;28:1-39)</p>	<p>6) IVS & INF LAT WALL</p> <ul style="list-style-type: none"> • 1:1 ratio • thicker than RV walls • squeeze concentrically • sigmoid shaped septum • end-diastolic IVS & INF LAT WALL (aka PWT) dimensions (women 6 – 9 mm & men 6 – 10 mm) <p>7) LV</p> <ul style="list-style-type: none"> • posterior & lateral to RV • forms apex • ellipsoid • larger & less trabeculated than RV • false tendon • end-diastolic LV dimension (LVIDd) (women 37.8 - 52.2 mm & men 42.0 – 58.4 mm) • end-systolic LV dimension (LVIDs) (women 21.6 – 34.8 mm & men 25.0 – 39.8 mm) 	 <p>POP QUIZ! What do the arrows reveal?</p>



LVH SEVERITY SCALE

	NORMAL (mm)	MILD LVH (mm)	MOD LVH (mm)	SEVERE LVH (mm)
MEN	6 - 10	11 - 13	14 - 16	≥ 17
WOMEN	6 - 9	10 - 12	13 - 15	≥ 16

POP QUIZ!

If the IVS & PWT both measure 15 mm, what is the degree of LVH?