FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE >

CARDIAC

TAPSE

TRICUSPID ANNULAR PLANE SYSTOLIC EXCURSION

The TAPSE calculation is used to help diagnose right ventricular dysfunction

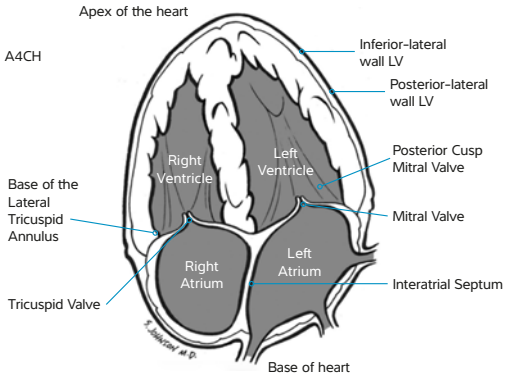


Fig 1

Fig 2

EDU20650

FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE

CARDIAC

TAPSE

TRICUSPID ANNULAR PLANE SYSTOLIC EXCURSION

TAPSE is the distance the right lateral tricuspid annulus travels towards the apex during the systolic phase of the heart (when the ventricles are emptying).

This measurement assumes that the entire right ventricle's longitudinal systolic function is represented by the height the base of the annulus travels during the emptying or systolic phase of the right ventricle and has been shown to have a good correlation to right ventricle ejection fraction.

TAPSE aids in the diagnosis of certain lung or right-sided heart disease such as; pulmonary hypertension, congested heart disease, ischemia, infarction, tricuspid valvular disease or left to right shunts.

Performing measurement:
Obtain an apical four-chamber heart view (A4CH) (Fig. 2)

- Place the M-Mode curser through the base of the lateral tricuspid annulus (Fig. 3)
- Measure the vertical height using the TAPSE measurement tool. Measuring at peak systole to the base of annulus (Fig. 4 and 5)
- TAPSE normal value: 16mm and greater
- This is a vertical height measurement (noted in horizontal and vertical dotted lines (Fig. 5)

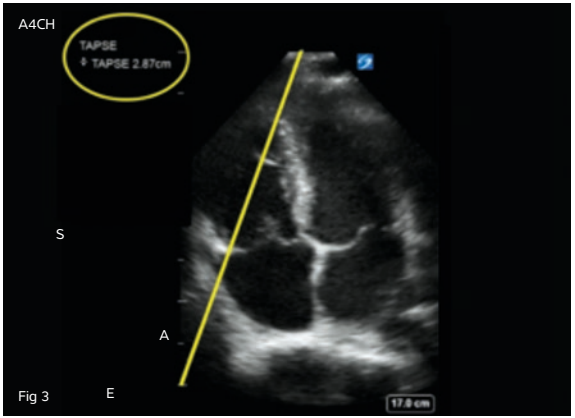


Fig 3

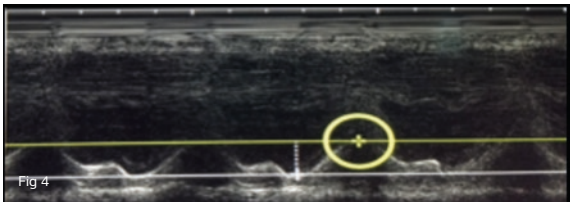


Fig 4

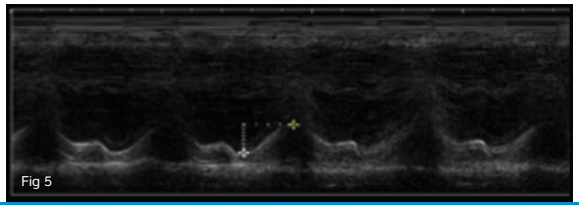


Fig 5

FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE

CARDIAC

CO

CARDIAC OUTPUT

CO = SV x HR

Cardiac output is the total volume of blood pumped through the heart per minute (L/min) Cardiac Output (CO or Q) is equal to the Stroke Volume (SV) times the Heart Rate (HR)

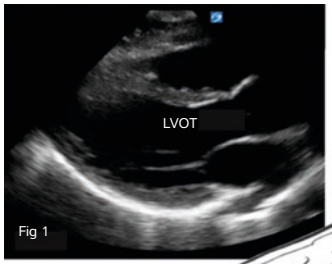
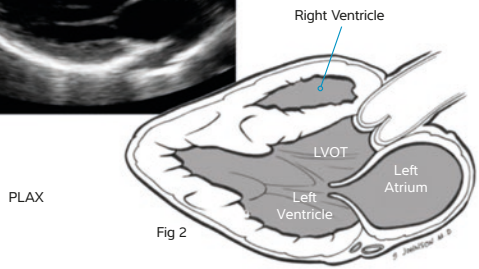


Fig 1



PLAX

Fig 2

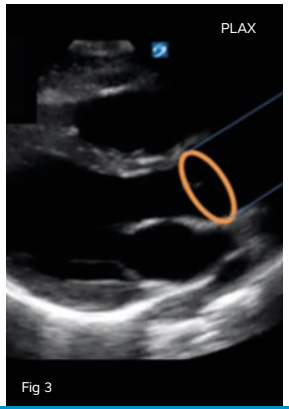


Fig 3

Fig 4

FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE

CARDIAC

CO

CARDIAC OUTPUT

Cardiac Output (CO) is an important indicator of how efficiently the heart can meet the demands of the human body. CO is used to assess hemodynamics and the monitoring of the body's fluid needs. It is also used to assess ejection fraction, discordances, hypovolemia, left sided heart failure and sepsis.

Measurements you will need:
LVOT Diameter
Heart Rate
LVOT VTI using PWD

Performing measurement:

- Obtain a Parasternal Long Axis View (PLAX) (Fig. 1). Freeze image, cine back to open the aortic valve (AoV) at mid systole, select Calc, select CO, click on Left Ventricular Outflow Track (LVOT), measure diameter in systole (Fig. 4).
- Measure HR by M-Mode, Doppler, EKG leads or from a manual input in the Patient Information screen.

  * HR taken from PSAX M-Mode (Fig. 5).

- In the A5CH view, place the PW Doppler sample in the LVOT just prior to the AoV (Fig. 6), activate PW Doppler, adjust baseline and scale to optimize aortic flow (below baseline) Freeze image, Select LVOT VTI (Velocity Time Integral) Measure the waveform (Fig. 7). Save calculation.
- Normal Cardiac Output is between 4-7 L/min. You will also need to index the cardiac output by dividing it by the patient's body surface area. This is important because a 300lb patient will need a higher cardiac output than a 100lb patient. The body surface area can be added on the Patient Information screen by adding the height and weight of the patient.

  * Newer SonoSite systems, Edge II and X-Porte 1.08 use the LVOT VTI in its calculations while older SonoSite systems use the AV VTI to trace the waveform.

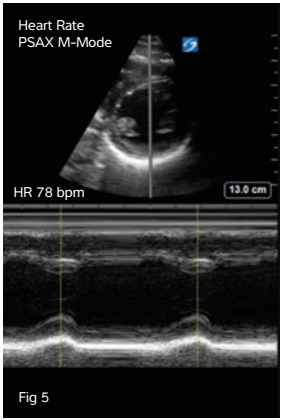


Fig 5

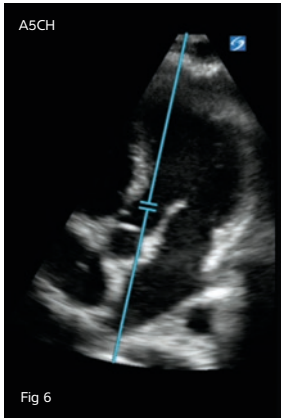


Fig 6

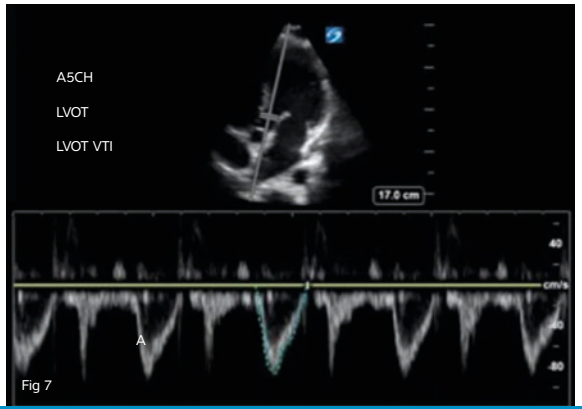


Fig 7

EDU20661

FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE >

CARDIAC

EF

EJECTION FRACTION

2D MEASUREMENT

Ejection Fraction is a measurable calculation of the percentage of blood being pumped from the heart with every contraction

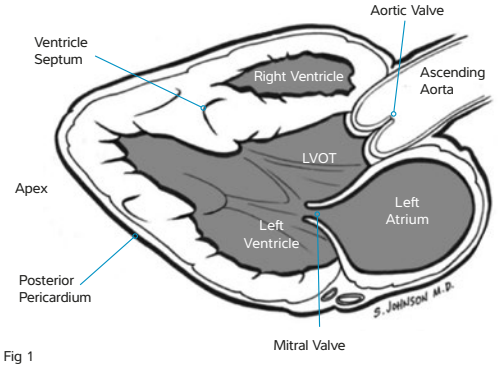


Fig 1

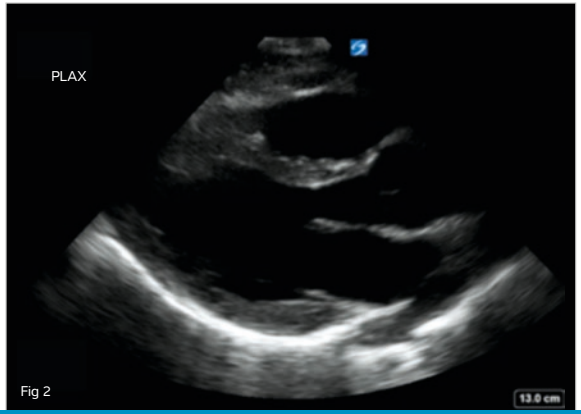


Fig 2

FUJIFILM
Value from Innovation

SonoSite

QUICK GUIDE

CARDIAC

EF

EJECTION FRACTION 2D MEASUREMENT

Ejection Fraction (EF) measures how well the heart is pumping and can be used to determine the severity of systolic heart failure and it's etiologies such as: valvular heart disease, coronary artery disease, ischemia, infarction, Infectious or congenital heart disease.

Performing measurement:
Obtain a 2D image in a Parasternal Long Axis view (PLAX) (Fig. 2). The Parasternal Short Axis (PSAX) view of the heart may also be used.

- For the 2D EF measurement, Freeze the image when the left ventricle is at it's fullest and when the mitral valves are open. (Diastole) (Fig. 2)
- Using the Ejection Fraction measurement tool, select Calc, then LV, select LVDd, (Left Ventricular Diameter in diastole) Measure the diameter of the left ventricle from the ventricular septum to the inner posterior myocardium being careful not to include the chordae tendinae (Fig. 3) – Save Calculation
- Cine to where the heart is emptying and the mitral valve leaflets are closed (Systole) Select LVDs (Left Ventricular Diameter in systole) Measure again from the ventricular septum to the inner myocardium (Fig. 4) – Save Calculation
- Both Ejection Fraction and Fractional Shorting are calculated from these measurements. Fractional Shorting (FS) is a measure of myocardial function and is calculated as the percentage of size the left ventricle changes from systole to diastole.
- Normal Ejection Fraction range values are: 55-70%

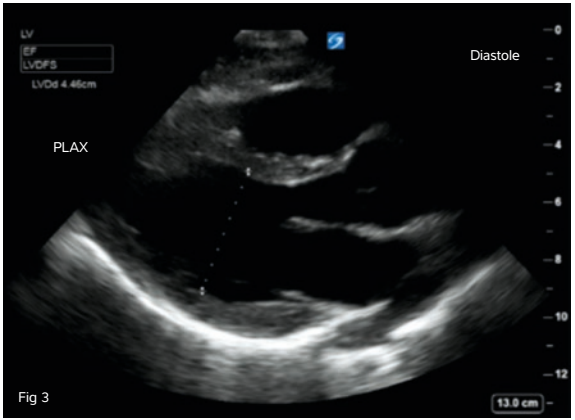


Fig 3

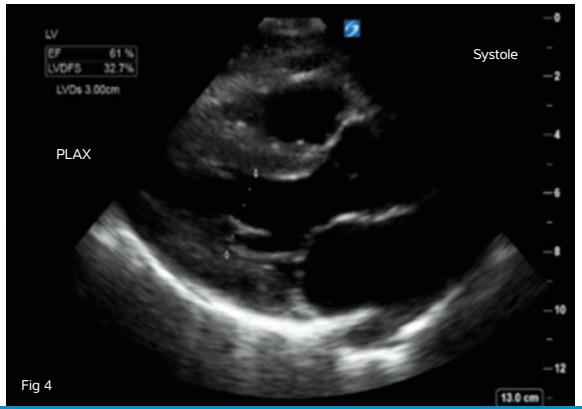


Fig 4