Estimating left atrial pressure

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Reference; Nagueh S. et al, Recommendations for the Evaluation of Left Ventricular Diastolic Function by Echocardiography: An update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. *J Am Sec Echocardiogr*. 2016;29:277-314.

⚠ CAUTION This is an advanced skill and should be reserved to those with advanced training or adequate supervision

Left atrial pressure can be derived from the following Nagueh Formula:

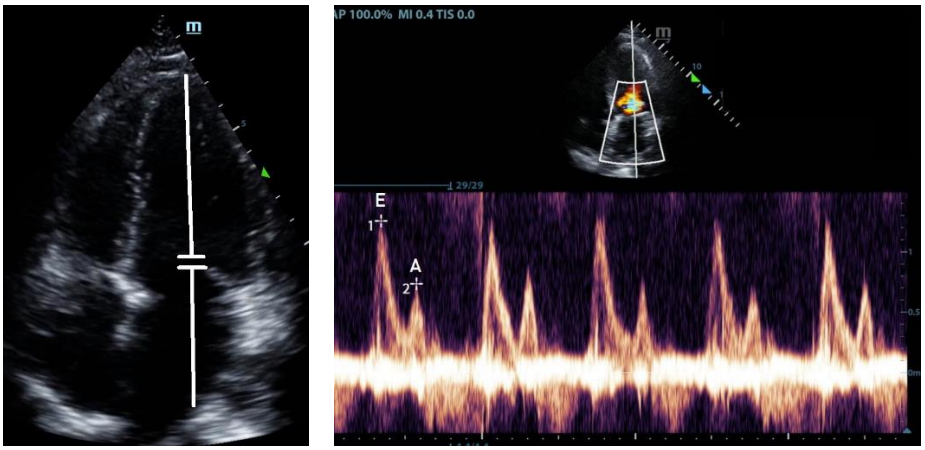
Left atrial pressure (LAP) = 1.24 x [Mitral valve (MV) E/e'] + 1.9

Where:

- E is the peak velocity of mitral inflow in diastole
- e' is the average of tissue doppler velocity at the septal and lateral mitral valve annulus

How to obtain E

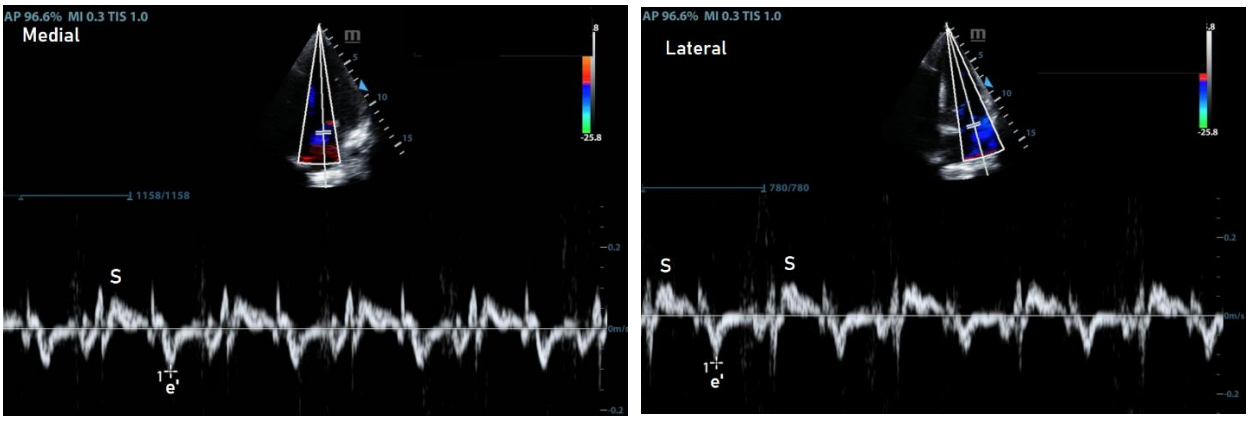
1. Obtain an apical four chamber view
2. Ensure your septum is well centered on your screen, perpendicular to your probe
3. Place color box to visualize flow across the mitral valve
4. Place a pulsed-wave Doppler (PW) sample volume gate between the mitral leaflet tips
5. Measure peak E velocity (there will either be a preset on your machine or use the caliber tool)



E represents early passive LV filling whereas A represents atrial kick in late diastole

How to obtain e'

1. Obtain an apical four chamber view
2. Ensure your septum is well centered on your screen, perpendicular to your probe
3. Place tissue doppler on your septal wall
4. Place pulsed-wave (PW) Doppler sample volume gate at the septal mitral annulus
5. Measure e' (there will either be a preset on your machine or use the caliber tool)
6. Repeat 3-5 on the lateral mitral annulus
7. Average septal and medial e'



e' represents descent of the mitral annulus with LV relaxation during passive LV filling

⚠ Limitations: There are many limitations to this technique such as but not limited to; poor image acquisition, poor doppler signal, atrial fibrillation, mitral valve disease; mitral annular calcification, mitral stenosis or mitral regurgitation, LBBB, ventricular paced rhythm, pericardial disease.