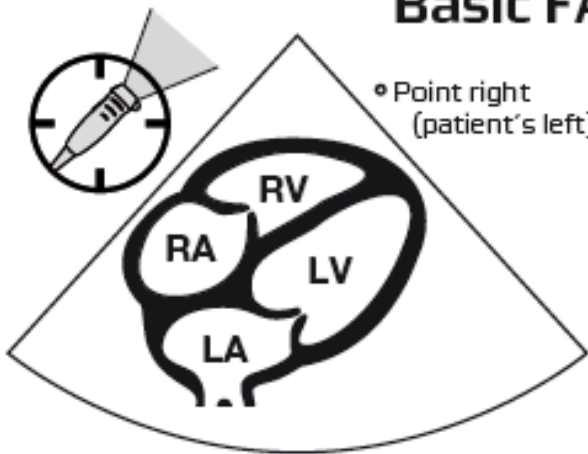


Tips and tricks to be happy with FATE scanning

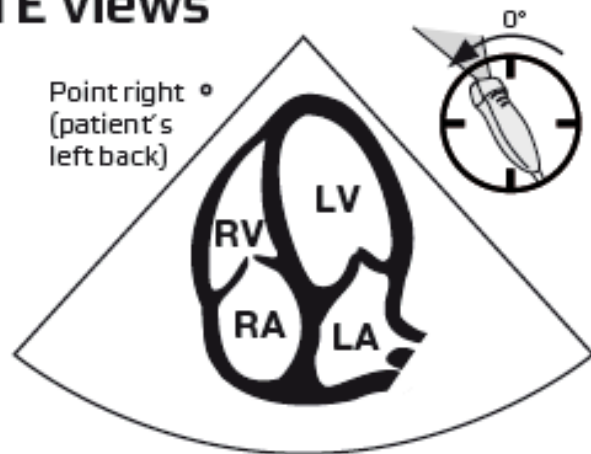
Focus Assessed Transthoracic Echo (FATE)

Scanning through position 1-4 in the most favourable sequence

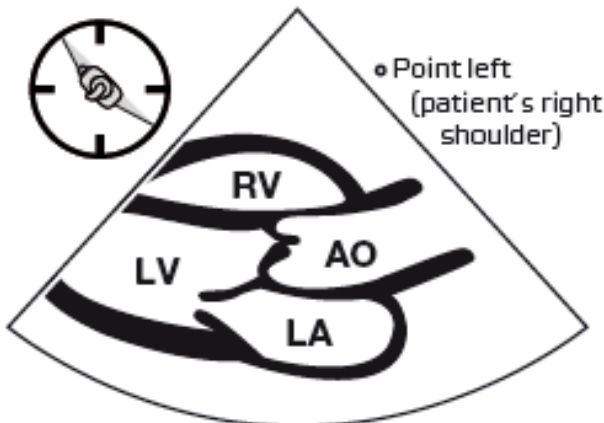
Basic FATE views



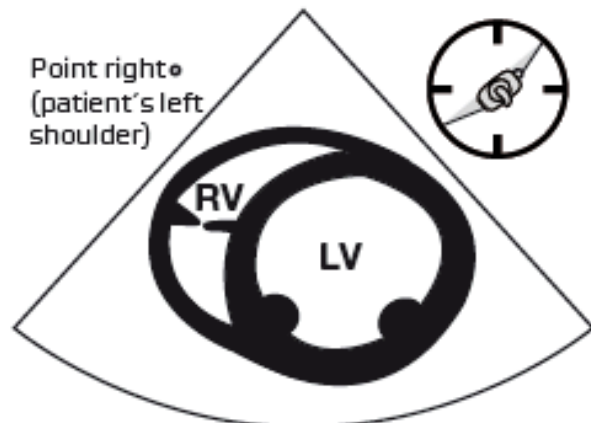
Pos 1: Subcostal 4-chamber



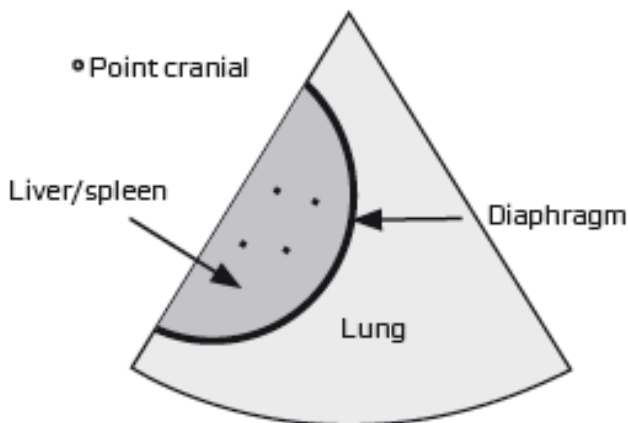
Pos 2: Apical 4-chamber



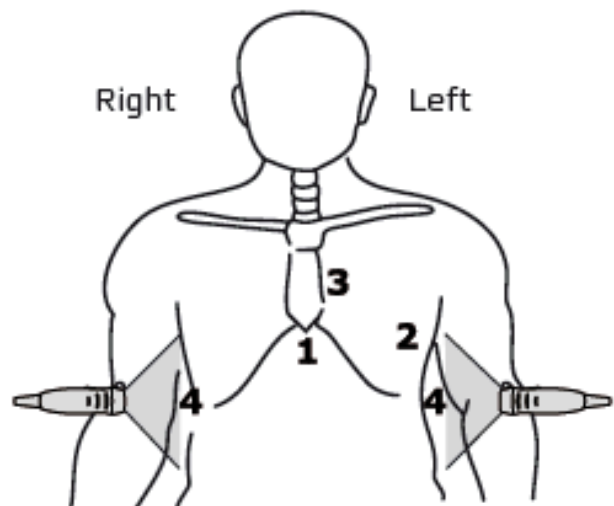
Pos 3: Parasternal long axis



Pos 3: Parasternal LV short axis



Pos 4: Pleural scanning



A systematic approach will help you to learn how to achieve and interpret the standard views of the FATE protocol

Before you start of scanning state to yourself:

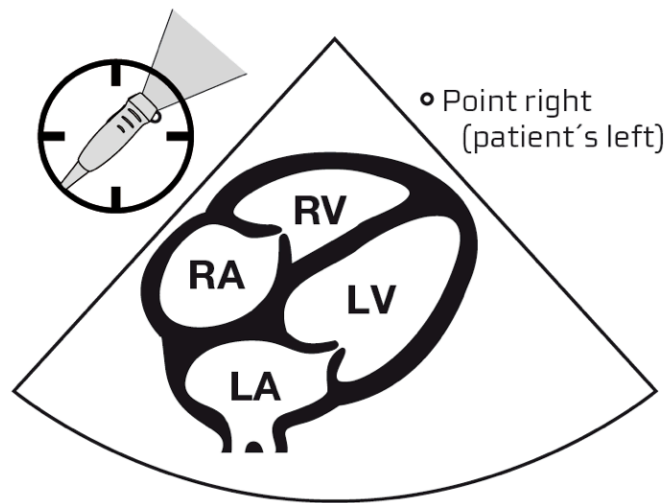
1. Which position 1, 2, 3 or 4?
2. How should I hold the probe?
3. Where to should the orientation marker (OM) be pointed?
4. What should appear on the screen?

Holding the probe in your right hand:

1. apply gel without touching the footprint of the probe with the gel dispenser
2. place the transducer on the chest wall where you expect to get the desired image
3. move your hand in small circles until you recognize any anatomical structures on the screen
4. then stop circling and optimize the image in only one plane at the time by means of:
 - rotating
 - tilting
 - slidingof the transducer

Make use of the FATE card until you have learned the standard views and again when you start to teach other novices

The Subcostal 4-Chamber View



Pos 1: Subcostal 4-chamber

Anatomy

- All four chambers should be visible in full length (expand sector width if necessary)
- The aortic valve should not be visible
- Note that when the aortic valve becomes invisible there is often limited visualization of the right atrium and ventricle

Depth: Adjusted depth to capture approximately two cms deep to the left atrium

Gain: Structures should be clearly visible with all chambers completely black. Too much gain will result in glare and shiny white areas

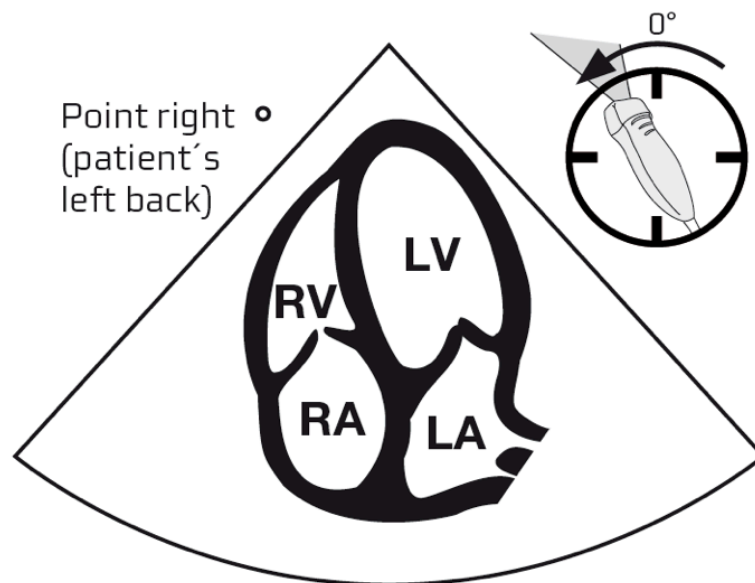
Resolution: The borders of the endocardium should be easily distinguished

Image interpretation: It should be possible to assess 1) left ventricle systolic function 2) pathology e.g. presence of pericardial effusion 3) chamber dimensions 4) wall thickness

Tips and tricks

- Patient should be lying in the supine position, arms resting beside. If possible, legs should be bent, but relaxed
- Note that the orientation marker should be directed towards the patients left side (not the shoulder, but directly towards the left)
- If the chambers are not open, try tilting the probe up and down gently and rotate 10 degrees counter clockwise
- If the aortic valve is visible, the tail of the probe should be tilted upwards
- If you get a lung-shadow across the apex try moving the probe to the patient's right
- A deep inspiration often improves image quality (remember to lift the tail of the probe as the heart is displaced towards the abdomen)

The Apical 4-Chamber View



Pos 2: Apical 4-chamber

Anatomy

- The apex of the heart should be centered in the screen with the intraventricular septum perpendicular and the lateral wall visible
- Visualization of the LV lateral wall is the priority, but ideally both ventricles should be seen in entirety
- The atria should be fully “open” – neither the coronary sinus nor the aortic valve should be visible

Depth: Adjust the depth to capture approximately 2 cm below the atria

Gain: Structures should be clearly visible with all chambers completely black. Too much gain will result in glare and shiny white areas

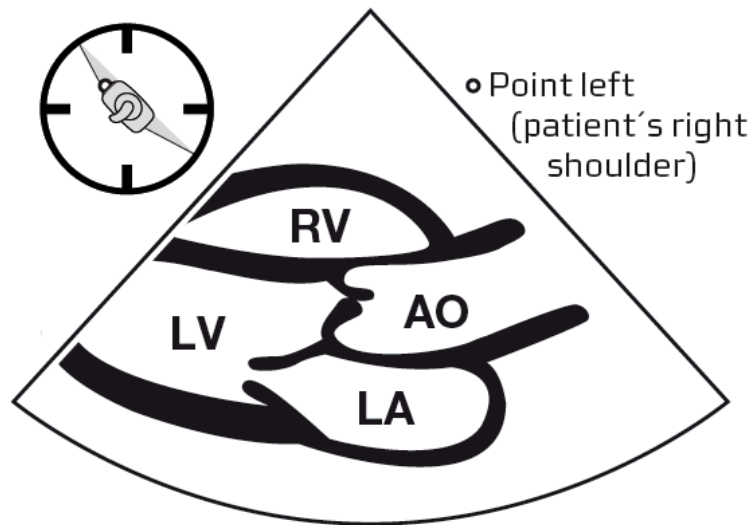
Resolution: The borders of the endocardium should be easily distinguished

Image interpretation: It should be possible to assess 1) left ventricle systolic function 2) pathology e.g. presence of pericardial effusion 3) chamber dimensions 4) wall thickness

Tips and tricks

- The optimal patient positioning is lying 45 degrees on the left hand side – note that this angle can be adjusted depending on image quality
- The OM should be pointed to the left/back (not towards the shoulder)
- If the right ventricle is centered in the screen and not the apex of the left ventricle then slide the probe laterally on the chest wall
- If the heart is seen diagonally across the screen then move the tail of the transducer laterally
- If the aortic valve is visible, the tail of the probe should be lifted
- If the coronary sinus is visible, the tail of the probe should be lowered

The Parasternal Long-Axis View



Pos 3: Parasternal long axis

Anatomy

- LV, RV, LA, ascending Aorta should be visible
- LV should be fully open, the apex is often not visible
- The aortic valve (2 cusps) and both mitral leaflets should be visible
- Parts of the tricuspid valve are often visible in the RV near the aortic valve

Depth: Adjust the depth to capture approximately 2 cm below the LV posterior wall and the LA

Gain: Structures should be clearly visible with all chambers completely black. Too much gain will result in glare and shiny white areas.

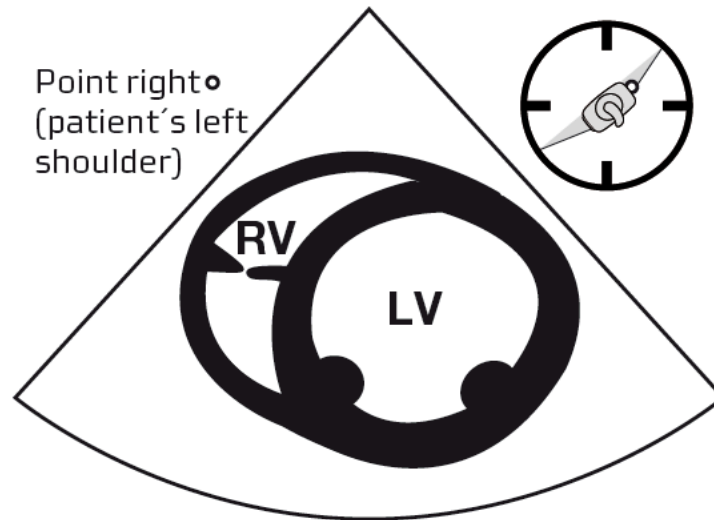
Resolution: The borders of the endocardium should be easily distinguished

Image interpretation: It should be possible to assess 1) left ventricle systolic function 2) pathology e.g. presence of pericardial effusion 3) RV and LV dilatation 4) wall thickness 5) 2D signs of diastolic dysfunction (LA dilation and increased LV myocardial thickness)

Tips and tricks

- The optimal patient positioning is lying 90 degrees on the left hand side – note that this angle can be adjusted depending on image quality
- The OM should be pointed directly towards the right shoulder
- Generally stay close to the border of the sternum
- To “open up” the LV in both planes make small angulation and rotational movements
- The ventricular septum and posterior wall should equally thicken during systole (Unless segmental wall motion abnormalities (SWMA) are present)
- If the image is grainy press slightly harder and let the transducer rest on the rib
- Moving the tail of the transducer towards the right shoulder will center the LV and make the ventricular septum more horizontal

The Parasternal Short-Axis View



Pos 3: Parasternal LV short axis

Anatomy

- LV and RV, should be visible in short axis, LV totally round
- The correct view displays the papillary muscles without any mitral components
- Parts of the tricuspid valve are often visible in the RV

Depth: Adjust the depth to capture approximately 2 cm below the posterior wall of the LV

Gain: Structures should be clearly visible with all chambers completely black. Too much gain will result in glare and shiny white areas.

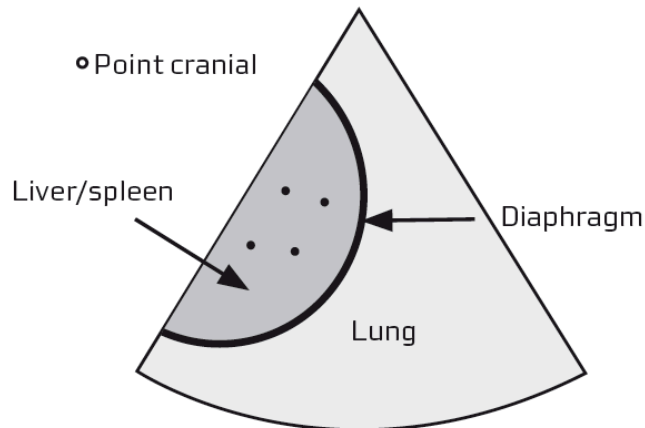
Resolution: The borders of the endocardium should be easily distinguished

Image interpretation: It should be possible to assess 1) left ventricle systolic function 2) pathology e.g. presence of pericardial effusion 3) RV and LV dilatation 4) wall thickness 5) If segmental wall motion abnormalities (SWMA) are present

Tips and tricks

- The optimal patient positioning is lying 90 degrees on the left hand side – note that this angle can be adjusted depending on image quality
- The OM should be pointed directly towards the left shoulder
- Start with the long-axis view then center the LV and the papillary muscles in the image by tilting the tail of the probe towards the right shoulder. Then rotate clockwise.
- To “open up” the LV in both planes make small angulation and rotational movements
- The correct view with two papillary muscles generally require a 20-30 degree insonation of the transducer with the chest wall
- Too much mitral valve – tilt the tail of the transducer towards the right shoulder
- Too much apical view – tilt the tail of the transducer away from the right shoulder
- If the LV is cut oblique and opens towards the right side of the screen, the transducer has too much clockwise rotation – “over rotation”
- If the LV is cut oblique and opens towards the left side of the screen, the transducer does not have enough clockwise rotation – “under rotation”

Pleural Views



Pos 4: Pleural scanning

Anatomy

- The diaphragm must be visible and is a mandatory anatomical land mark
- The abdominal organs to the left of the screen
- The lung to the right of the screen
- The part of the diaphragm closest to the transducer generally not visible in healthy

Depth: Adjust depth to view the entire diaphragm with an additional 2-5cm visible at the bottom of the screen.

Gain: Structures should be clearly visible. Too much gain will result in glare and shiny white areas.

Resolution: The diaphragm should be clearly visible.

Image interpretation: It should be possible to assess 1) lung sliding 2) pathology e.g. presence pleural effusion, atelectasis 3) B-lines (few is normal, multiple indicate increased interstitial fluid content)

Tips and tricks

- Optimal position supine with elevated thorax
- The OM should be pointed cranial
- Start scanning posteriorly in the upper abdomen - hand on the bed - and move the transducer cranial until the diaphragm is clearly visible
- Scan always as inferior and close to the bed as possible
- The left side is more challenging than the right side - move the transducer around
- Rotate the transducer so the image plane is parallel with the ribs to optimize the image