

Ultrasound Protocol: Liver Elastography

Review by: Daniel Van Roekel, MD; Melinda Martinez, RDMS; Candice Baujan-Carr, RDMS; Maggie Roberts, MHL, RDMS
Last Reviewed: 3/11/2025 Link to: [General Imaging Requirements and Pathology Protocol PDF](#)

List of Required Images

Elastography

- Take 10-12 elastography measurements. Technique described on next page.
- If technically unable to acquire diagnostic elastography measurements, save images of 3 attempts at elastography measurements. Document “Non-diagnostic elastography measurements” on the worksheet.
- Record median kPa and InterQuartile Range/Median ratio – IQR/M (ideally less than 30%)

Liver Anatomy

- **Left Lobe**
 - **Sagittal** - At least three gray scale images of the left lobe to include:
 - Medial to include IVC
 - Mid
 - Lateral
 - **Sagittal** – Cine through the left lobe
 - **Transverse** - At least three gray scale images of the left lobe to include:
 - Level of HV
 - Level of PV
 - Inferior to include caudate lobe
 - **Transverse** – Cine through the left lobe
 - **Right Lobe**
 - **Sagittal** - At least four gray scale images of the right lobe to include
 - Far lateral
 - Lateral to include renal parenchyma
 - Mid with and without **length measurement**
 - Medial to include porta hepatis
 - **Sagittal** – Cine through the right lobe
 - **Transverse** - At least three gray scale images of the left lobe to include:
 - Dome
 - Level of HV
 - Level of MPV
 - Inferior
 - **Transverse** – Cine through the right lobe
- **Portal and Hepatic Veins**
 - Portal Vein: Color and Spectral Doppler image
 - Hepatic Veins: Provide best image of the 3 hepatic veins at the IVC
- **Hepatic Contour** with linear probe, representative images of the left and right hepatic capsule

For how to document general pathology, such as focal hepatic lesions, see the [Imaging Requirements and Pathology Protocol](#) document.

Patient Prep and Elastography Imaging Technique

Patient Prep: Fasting 4 to 6 hours.

Technique (for GE Logiq E9 and E10's):

- Utilize supine position (obtain slight left lateral decub as needed)
- Elevate right arm above head
- Scan intercostally with enough pressure to maintain stable contact
- Take measurements in segment 7 or 8 of the liver
- Place top of Shear Wave (SWE ROI) box 1 – 2 cm below liver capsule with middle of the Shear wave box between 3 – 6 cm from the probe for best results
- SWE ROI box in middle of image
- Avoid rib shadows
- Avoid vessels in the Shear Wave box
- Factory default gain only, do not adjust gain
- SWE ROI contains at least 50% color fill-in
- Obtain measurement on suspended breath hold, not inspiration
- Acquire 10-12 measurements
- Circular Measurement should be 1 cm in diameter
- For patients with high BMI, use Penetration setting. If you only get some color fill but it is homogenous, you can take a measurement in this area.
- More than 1 measurement can be taken within a SWE ROI box, but measurements should not overlap.
- Delete measurements that are widely different than others.

Common Indications for Liver Elastography

Indications for ultrasound liver elastography include:

- Abnormal liver function tests
- Concern for or history of cirrhosis
- Chronic liver disease