Ultrasound – Spleen

PURPOSE:
To measure spleen size and to evaluate for focal abnormalities such as masses or infarctions.

SCOPE:
Applies to all studies performed in:
- UT Southwestern Zale-Lipshy University Hospital, William P. Clements Jr. University Hospital, and all University Hospital-based Clinics Imaging Services (UTSW)
- Parkland Health and Hospital System Department of Radiology (PHHS)

INDICATIONS:
- Left upper quadrant mass or tenderness
- Palpable spleen
- Thrombocytopenia or other conditions associated with splenomegaly (portal hypertension, lymphoproliferative disorders, infiltrative disorders, infections, etc)
- Follow up known splenomegaly

CONTRAINDICATIONS:
No absolute contraindications

EQUIPMENT:
Curvilinear array transducer with a frequency range of approximately 2-9 MHz that allows for appropriate penetration and resolution depending on patient's body habitus.

PATIENT PREPARATION:
- None

EXAMINATION:

GENERAL GUIDELINES:

A complete examination includes evaluation of the spleen including the left hemidiaphragm and adjacent pleural space if possible

EXAM INITIATION:
- Review any prior imaging, making note of abnormalities or other findings requiring further evaluation.
- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms
- Place patient in supine and/or right lateral decubitus (RLD) positions

TECHNIQUE CONSIDERATIONS:
- Deep inspiration may facilitate imaging of the spleen.
- Cine sweeps allows for better evaluation of focal or indeterminate findings.

- Longitudinal spleen measurement, from inferior most tip to highest point along diaphragm (**Red Line**), *crossing through the splenic hilum.*
- *Height (AKA. Width or Thickness)* calipers placed at hilum and measures greatest thickness (**Green Line**) in Longitudinal orientation.
- Transverse measurements (Trans, AP or Height): *oriented 90 degrees* relative to longitudinal measurement at the hilum/hilar vessels (**Blue Line**) measured transverse to longitudinal measurements at same position.
- Focal abnormalities should be documented with size measurements and color Doppler.
- Evaluate for splenic vein thrombosis and perisplenic varices with color Doppler at the hilum, with spectral Doppler, if abnormal.
- Microflow/Microvascular imaging is helpful in showing parenchymal vascularity and showing segmental infarctions

DOCUMENTATION:

- Spleen
  - Longitudinal images:
    - Representative images from medial to lateral, including left hemidiaphragm and adjacent pleural space if possible, with cine sweep of any focal abnormality.
    - Measurements
      - *Length:* From inferior most tip to highest point along diaphragm (**Red Line**), *crossing through the splenic hilum (arrow).*
      - *Width/Thickness: oriented 90 degrees* relative to longitudinal measurement at the hilum/hilar vessels, calipers placed at greatest thickness (**Green Line**).
    - Cine
  - Transverse images:
    - Representative images of the spleen from dome to tip, with cine sweep of any focal abnormality.
    - Measurement
      - *AP/Height/Trans:* (**Blue Line**) measured at level of hilum/hilar vessels, does not have to cross through hilum but calipers placed at greatest width
    - Cine
  - Color Doppler evaluation at splenic hilum to document vessel patency, direction of flow; detect varices.
    - For splenomegaly, LUQ pain, abnormalities on prior imaging, or if requested by provider, power, and/or microflow may be used to further evaluate splenic perfusion for segmental hypoperfusion/infarction
  - Splenic Volume**See appendix for examples of accurate spleen measurements.*

PROCESSING:

- Review examination images and data
- Export all images to PACS
- Document relevant history and any study limitations

REFERENCES:

ACR-AIUM Practice Guideline (Revised 2007) Chow, et al. Radiology 2016
Arora et al. JASI 2013
Spielmann, et al. AJR 2005
De Odorico, JUM 1999

REVISION HISTORY:

STATUS	NAME & TITLE	DATE	BRIEF SUMMARY
Submission	David Fetzer, MD	6/9/2016	Submitted
Approval	David Fetzer, MD, Director	11/09/2015	Approved
Review	David Fetzer, MD	11/12/2018	Reviewed
Revisions	David Fetzer, MD	09/11/2016	New protocol for measuring spleen. Added new size cutoffs.
	David Fetzer, MD	07/10/2020	Removed NPO requirement.
	David Fetzer, MD	09/26/2023	Added long spleen cine and trans spleen cine
	Jana Smith, RDMS, RVT	05/01/2025	Added images for spleen measurement clarification. Added Parkland logo. Reformatted revision history table.
	Skye Smola, RDMS, RVT; David Fetzer, MD	08/27/2025	Revised spleen measurement requirements and added additional images for clarification on orientation of the probe and corresponding view.

APPENDIX:

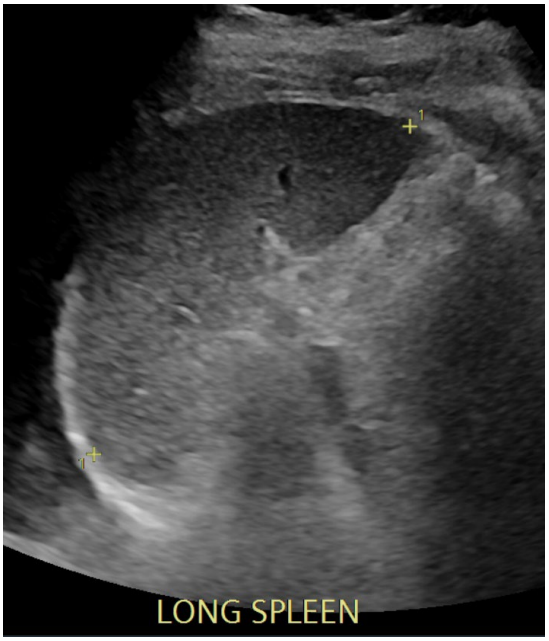
- NORMAL
  - Normal Length: < 12 cm in most patients
  - Normal volumes^{+}: 209, SD +/- 76 cc (< 231 cc in women; < 334 cc in men)

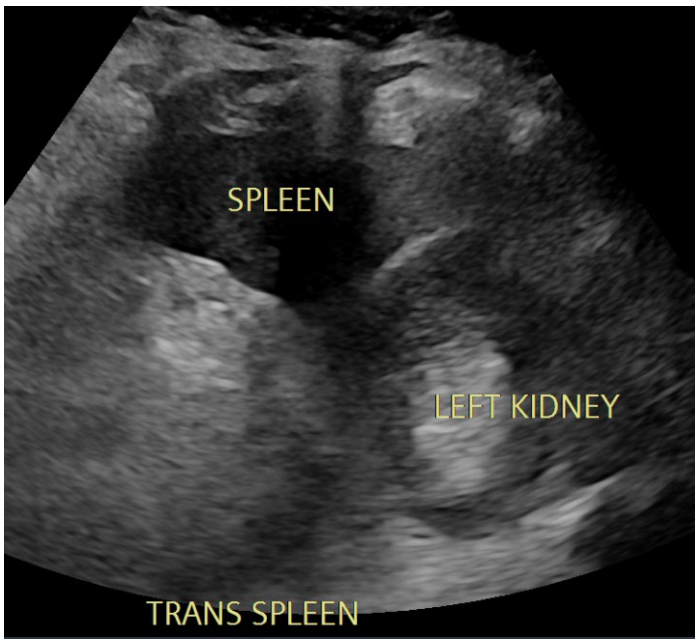
- SPLENOMEGALY
  - Consider splenomegaly ("borderline") when:
    - Length ≥ 12 cm in women; ≥ 13 cm in men –or–
    - Volume^{+} > 250 cc in females; > 300 cc in males

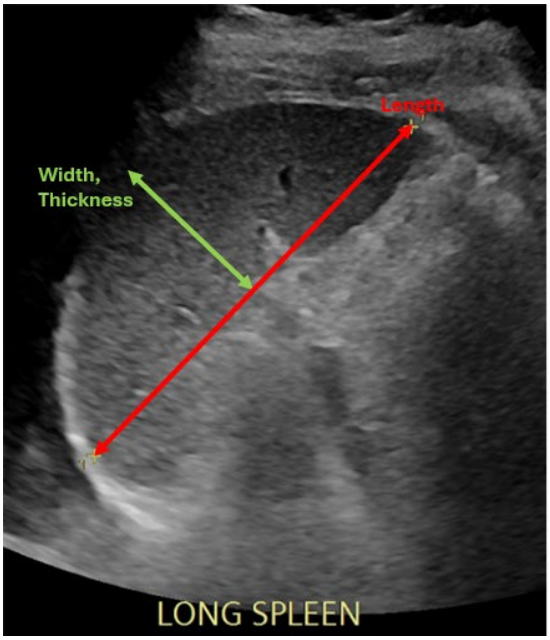
  - Definite splenomegaly when:
    - Length ≥ 13 cm in women; ≥ 14 cm in men –or–
    - Volume^{+} > 300 cc in females; > 350 cc in males

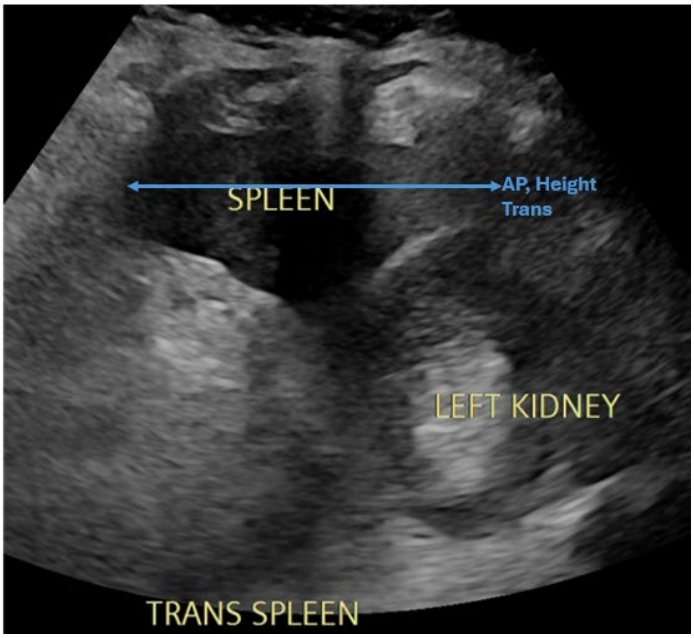
Additional reference images for Spleen measurements found here.

Caliper Placement



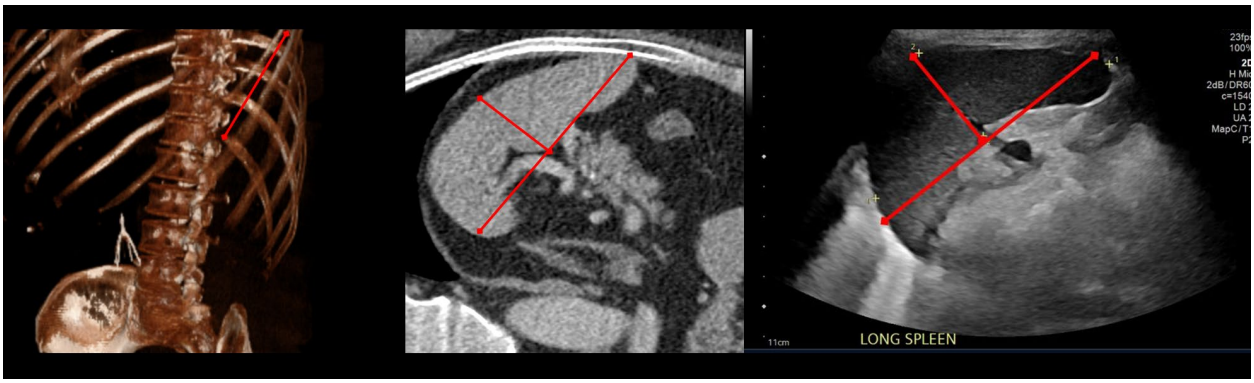




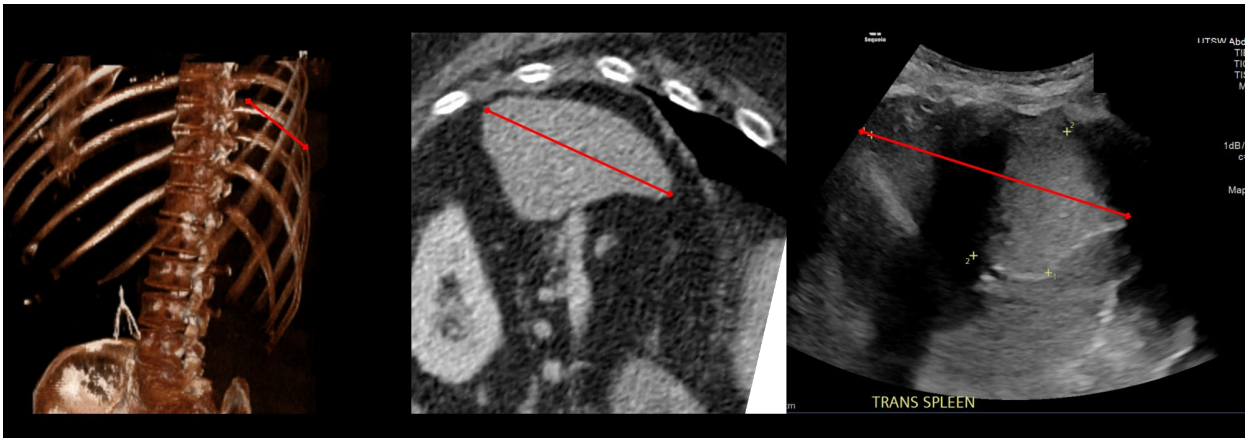


CT/US Correlation

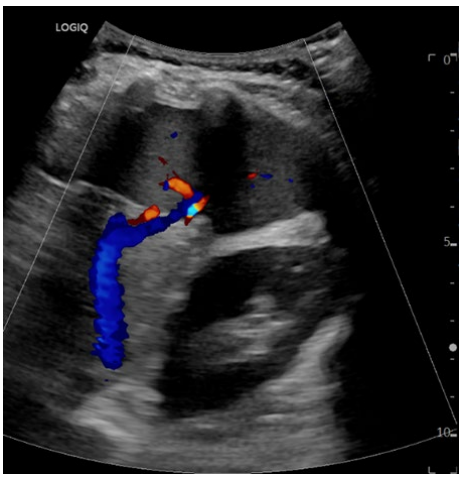
LONG

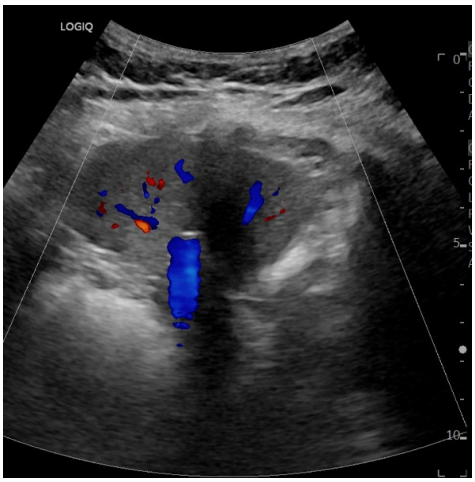
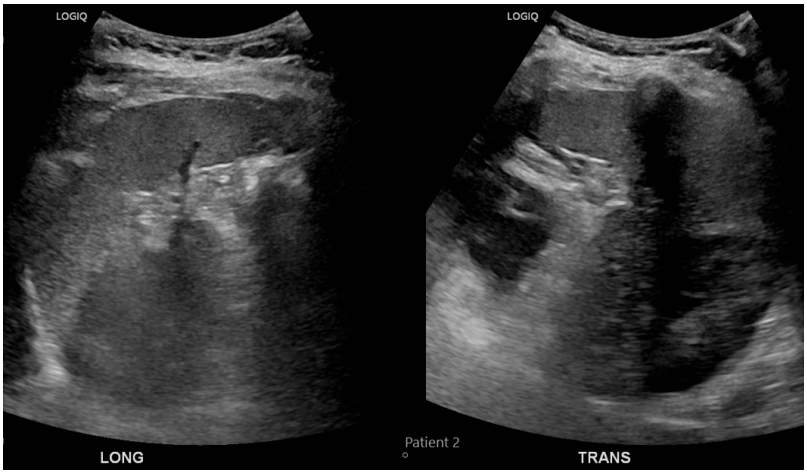
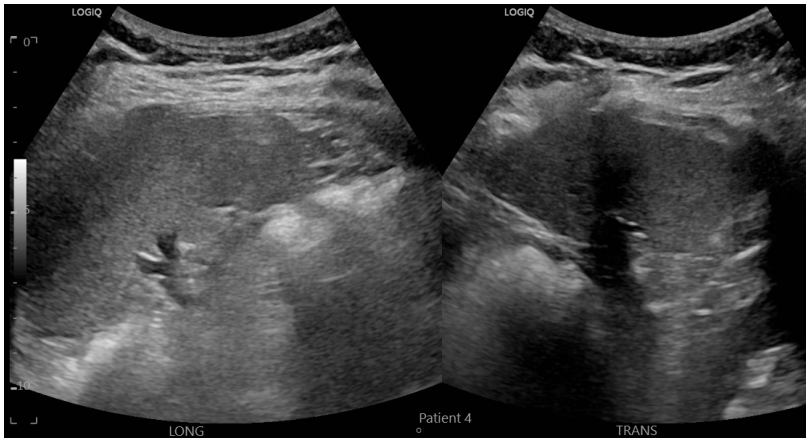


TRANS



Color at the Hilum





Body Marker with Corresponding Image