



**LSU HEALTH NEW ORLEANS
EMERGENCY MEDICINE
RESIDENCY PROGRAM**

Emergency Ultrasound Intern Rotation Manual



2026-2027

Welcome to your LSU EM Intern Ultrasound Rotation!

We hope that you are excited to embark on a journey of discovery. This rotation is designed to create a foundation of understanding of the basic images that are the cornerstones of bedside emergency ultrasound. As you progress through your residency training, we endeavor to help you hone the skills of image acquisition, as well as interpretation of those images with the ultimate goal of incorporation of this information into your daily patient care and practice.

This manual is intended to serve as a guide for your self-learning, and it should be utilized to monitor your progress not only through the dedicated two week ultrasound block, but through the entire first year of training.

For your scheduled rotation, your time will be divided between Anesthesia in the mornings and Ultrasound in the afternoons. You are expected to attend the regular Wednesday morning Resident Conference.

It is expected that you will use your rotation time to work through the required self-guided training modules, for bedside scanning to collect the required “normal scans,” and to complete your Butterfly Worksheets (don't forget the worksheet must be completed within 30 days of the scan to receive credit for the scan)

Happy scanning!

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INTERN US ROTATION CURRICULUM

[How to use Butterfly](#)

Sonosite Modules

E-FAST
Aorta
Cardiac imaging #1
Pelvic First Trimester Pregnancy Evaluation
RUSH
Gallbladder

To register for an **Sonosite Institute account to access the modules, use this link:

- **Sonosite Institute:** www.sonositeinstitute.com
- Serial number is required to register; Our PX serial # **051LVC**

For your rotation, your time will be divided between Anesthesia in the mornings and Ultrasound in the afternoons.

On the 1st Tuesday:

Meet with the US faculty at 1pm for a scanning shift in the ED.

On the 2nd Wednesday:

Meet with the US faculty from 1:00pm-3:00pm for “Academic Day” where you will participate in the Butterfly QA review process, discussing learning points and tips on your scans, and participate in other US related educational activities.

On all other weekday afternoons you should be scanning in the ED with the following goals:

Rotation Scanning Goals

	#
FAST	12
Aorta	12
Cardiac Echo	12
Renal	12
Pelvis – TA	10
Pelvis – TV	5
Gallbladder	5

FAST EXAM

The FAST exam is typically used in evaluation of the trauma patient to identify potential causes of shock. You will evaluate for:

- Free fluid in the abdomen and/or pelvis (hemoperitoneum)

- Fluid in the chest (hemothorax)

- Fluid in pericardial sac (hemopericardium)

- Lung sliding to evaluate for pneumothorax.

Required images:

R Flank:

- Hepatorenal recess (Morison's Pouch)

- Inferior edge of liver

- Right costophrenic recess

L Flank:

- Splenorenal recess

- Subphrenic space (region between diaphragm and spleen)

- Left costophrenic recess

Pelvis--Both transverse and sagittal planes

Subxiphoid or Parasternal video of heart

Right and Left anterior chest for slide sign (when indicated)

AORTA

The aorta exam will include evaluation and measurement of the diameter of the aorta at multiple levels to evaluate for signs of abdominal aortic aneurysm and aortic root dilation.

You may also be able to identify an aortic dissection/intimal flap.

Your evaluation may also include assessment for signs of leakage or rupture of the structure (free fluid, pericardial effusion, etc.) So, you should also consider performing a FAST to look for intraperitoneal free fluid or pericardial fluid collections if you suspect an aortic injury.

Required images:

Measure outer wall to outer wall in the anterior-posterior diameter at:

- Proximal Aorta (just after entrance into abdomen, should be <3cm)

- Mid Aorta (about midway between xiphoid & bifurcation, should be <3cm)

- Distal Aorta (just superior to bifurcation, should be <3cm)

Longitudinal evaluation for intimal flap, asymmetry

BASIC CARDIAC ECHO

The basic cardiac exam will include evaluation of the following:

- Presence or absence of cardiac activity
- Size of the chambers
- LV function/contractility
- RV function (dilation, collapse, sign off septal bowing, etc)
- Presence or absence of a pericardial fluid collection

Required videos:

Must have at least 3 of the 4 standard cardiac views:

- Parasternal Long axis
- Parasternal Short axis
- Apical 4 chamber
- Subxiphoid
- Long axis view of IVC

RENAL

The renal exam will include evaluation of both kidneys and the bladder.

It is useful to evaluate for signs of obstructing renal stones (hydronephrosis, absent ureteral jet), for bladder outflow obstruction, and for evaluation of patients with hematuria (evaluate for bladder stone, bladder mass, clots, etc)

Required images:

- Longitudinal of each kidney
- Transverse of each kidney
- Bladder in 2 dimensions (sagittal and transverse)
- Measure bladder volume if appropriate
- Ureteral jets if appropriate

PELVIS

Pelvic US can be performed both trans-abdominally (TA) and trans-vaginally (TV). You should perform the TA study first.

Goals of the scan in pregnant patients include:

- determine location of the pregnancy (intrauterine vs ectopic)
- if no pregnancy located, diagnose a “pregnancy of unknown location”
- confirmation of fetal heart rate
- estimation of gestational age
- evaluate for sign of hemorrhage (retroplacental or free fluid)

Required images:

- Uterus in 2 planes—note presence or absence of IUP
- Sagittal uterus (for TA), coronal uterus (for TV)
- Transverse uterus
- Fetal heart rate in **M-mode** (do not use Doppler)
- Date fetus using appropriate measurement (for early preg: CRL; for later preg: BPD, HC)
- Eval for free fluid: Show a clear posterior cul de sac
- Show adnexa in trans-vaginal scans

GALLBLADDER

Gallbladder US can be used to assess for biliary pathology such as gallstones and for signs of acute cholecystitis in patients with upper abdominal pain.

Required images:

- Longitudinal gallbladder
- Transverse gallbladder
- Demonstrate relationship to portal vein
- Measurements:
 - Anterior gallbladder wall thickness in transverse (normal <3mm)
 - Common bile duct (inner to inner wall, normal <6mm)

HELPFUL ULTRASOUND RESOURCES/SITES

Basic ultrasound:

<https://coreultrasound.com/knobology/>

AAA:

https://www.acep.org/sonoguide/abdominal_aortic_aneurysm.html

Renal:

<https://coreultrasound.com/bladder-volume-measurement/>

<https://coreultrasound.com/hydronephrosis/>

FAST:

<https://coreultrasound.com/efast/>

<https://www.acep.org/sonoguide/FAST.html>

https://www.youtube.com/playlist?list=PL4Wbz_6EGC6_EAq_dJ2b7YZ6G8--D2Rln

Cardiac Basics:

<https://www.acep.org/sonoguide/cardiac.html>

<https://coreultrasound.com/how-to-obtain-cardiac-windows/>

<https://coreultrasound.com/basic-cardiac-function/>

<https://coreultrasound.com/pericardial-effusion/>

Pelvis (TA & TV):

<https://www.acep.org/sonoguide/obgyn.html>

<https://coreultrasound.com/ob-gyn-scanning-technique-5ms/>

<https://coreultrasound.com/intrauterine-pregnancy-assessment-5ms/>

<https://coreultrasound.com/fhr/>

https://coreultrasound.com/5ms_gestational_age/

<https://www.youtube.com/watch?v=gV4q8ZB25JM>

<https://www.youtube.com/watch?v=4clxpcVLOS0&t=4s>

Gallbladder:

<https://www.coreultrasound.com/gallbladder/>

SFinding the CBD https://www.youtube.com/watch?v=U50O8_fsemY

Advanced Applications

Advanced Cardiac:

<https://www.coreultrasound.com/5minsono-cardiac/>

Right heart strain: <https://coreultrasound.com/right-heart-strain/>

Tamponade Assessment: <https://coreultrasound.com/pericardial-tamponade/>

VTI: <https://coreultrasound.com/volume-responsiveness-lvot-vti/>

Cardiac Output: <https://coreultrasound.com/cardiac-output-measurement-made-easy>

DVT:

<https://www.coreultrasound.com/dvt/>

Case: <https://litfl.com/ultrasound-case-054/>

Lung:

<https://www.coreultrasound.com/5ms-lung/>

Case: <https://www.coreultrasound.com/uotw-98/>

Case: <https://www.coreultrasound.com/uotw-90/>

MSK:

<https://coreultrasound.com/5minsono-msk/>

<https://www.acep.org/sonoguide/musculoskeletal.html>

Nerve Blocks:

[LSU EM Nerve Block Guide](#)

<https://coreultrasound.com/5minsono-nb/>

<https://www.nysora.com/regional-anesthesia-archive/>

<https://www.neuraxiom.com/>

<https://highlandultrasound.com/>

Ocular:

<https://www.coreultrasound.com/5minsono-ocular/>

https://www.acep.org/sonoguide/smparts_ocular.html

<https://www.coreultrasound.com/uotw-104/>

<https://www.coreultrasound.com/uotw-12/>

<https://www.coreultrasound.com/uotw-5/>

Soft Tissue:

<https://www.coreultrasound.com/5ms-soft-tissue/>

Case: <https://www.coreultrasound.com/uotw-88/>

Case: <https://www.coreultrasound.com/uotw-82/>

Case: <https://www.coreultrasound.com/uotw-66/>

Case: <https://www.coreultrasound.com/uotw-58/>