Ultrasound – Protocol General Guidelines for Ultrasound Imaging

PURPOSE:

To outline the general guidelines applicable to all ultrasound examinations.

SCOPE:

Applies to all ultrasound studies performed in:

- UT Southwestern William P. Clements Jr. University Hospital and Clinics, Imaging Services (UTSW Radiology)
- Parkland Health (Hospital and Clinics), Department of Radiology (PHHS Radiology)

INDICATIONS:

- Relevant clinical indications must be provided by the ordering provider.
    - Indications like "rule out", "concern for" etc. cannot be used alone**; a sign or symptom is required.**
- Patient signs, symptoms, or complaints may be included if properly documented (e.g., in Epic Study Notes/tech notes).

CONTRAINDICATIONS:

- Most ultrasound examinations have no absolute contraindications unless specified in exam-specific protocols.
- If uncertain, consult with the supervising radiologist **prior** to starting the examination.

EQUIPMENT:

- Ultrasound machines offer multiple transducers (e.g., curvilinear, linear).
- Use the probe that provides the highest resolution (higher frequency) while still achieving the necessary depth (lower frequency).
- **Switching transducers during an exam may be necessary.**
- Machines include factory and site-specific presets.
    - **Use site-specific presets when available.**
    - Select the preset that best matches the anatomy or study indication (e.g., US Neck for thyroid imaging rather than US Soft Tissues).

PATIENT PREPARATION:

- Refer to exam-specific protocols for detailed patient preparation requirements.
- Many exams require the patient to be NPO for 4-6 hours prior to the study, which improves distention of the gallbladder, for instance, and reduces bowel gas.

EXAMINATION:

GENERAL GUIDELINES:

Always review any prior imaging and note findings that require re-evaluation.

EXAM INITIATION:

- Introduce yourself to the patient/family
- Verify patient identity using patient name and DOB
- Load patient/exam from scanner worklist, and verify exam type

- Explain test
- Obtain patient history including symptoms. Enter and store data page
- Place patient in appropriate position for exam.

TECHNICAL CONSIDERATIONS:

- Obtain appropriate cine sweeps for focal or indeterminate findings (e.g., renal or liver masses, thyroid nodules, abnormal lymph nodes, uterine abnormalities, or ovarian mass), and annotate sweep direction (e.g., Sup→Inf, Lt→Rt, Lat→Med).
- Deep inspiration may improve subcostal imaging of upper abdominal organs.
- In LLD position, the liver, gallbladder, and right kidney shift towards midline, improving access and intercostal views of the posterior liver.
- Use graded compression to displace bowel gas and increase visualization of deeper structures.
- Measure **arteries** outer wall–to–outer wall; for the abdominal aorta, the most accurate dimension is AP in the Long orientation.
- Measure **veins and bile ducts** inner wall–to–inner wall.
- Measure masses in three dimensions using consecutive long and transverse images, or in a **dual/split screen.**
- Image abnormal structures with and without color Doppler using consecutive images, or **dual/split screen.**
  - For Doppler evaluation, most machines now offer a "micro-flow" or "micro-vascular" setting – this should be used preferentially instead of power Doppler.
- Confirm presence of flow in a mass, and exclude artifact, by spectral Doppler tracing.
- Use widescreen or panoramic views for structures wider than the probe footprint. This is particularly important for soft tissues (e.g. Abdominal wall; extremities) where areas of interest may be large/long/broad. This is also useful to compare the area of interest to adjacent normal anatomy.
- For focal pain or palpable abnormalities, obtain images labeled "Region of pain/mass/concern" and **comparison images of the contralateral side** for abdominal/chest wall and extremity soft tissue findings.

DOCUMENTATION:

- All images should be annotated with:
  - Anatomy or region
  - Transducer orientation
    - Longitudinal (Long); Transverse (Trans)
    - For breast imaging: radial and anti-radial
  - Patient position if not supine (e.g., LLD, upright)
  - Dynamic maneuvers (e.g., Valsalva, augmentation)
- Exam Study Notes (tech notes) should document relevant exam findings (e.g., "+/- Murphy's", tenderness in RUQ, swelling, rash, etc.)
- Report relevant labs, NPO status, LMP, UPT, HCG, etc. per exam-specific protocols.
- Data page(s)

PROCESSING:

- Review examination images and data on scanner
- Export data to PACS and confirm images sent/arrived

- Confirm Imorgon measurement data transfer; Complete Imorgon digital worksheet, if applicable.
- Document relevant history, altered mental status, received pain medication, and any study limitations or challenges

REFERENCES:

- ACR-AIUM Practice Guideline

CHANGE HISTORY:

DATE:	SUBMITTED BY: (NAME, TITLE)	APPROVED BY: (NAME, TITLE)	SUMMARY:
11/8/2015	Dr. David Fetzer, Medical Director	Dr. David Fetzer, Medical Director	Created
2/3/2026	Jana Smith, RDMS, RVT	Dr. David Fetzer, Medical Director	Reviewed
6/16/2026	Skye Sayarath, RDMS, RVT	Dr. David Fetzer, Medical Director	A11y Updated heading styles for the protocol template