Ultrasound – Bladder Evaluation

PURPOSE:
To evaluate the urinary bladder for wall thickening, intraluminal findings, and for urinary retention (when appropriate).

SCOPE:
Applies to all ultrasound Bladder 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)

ORDERABLE:

- UTSW - US Bladder
- PHHS - US Bladder

INDICATIONS:

- Decreased urinary output
- Hematuria; bladder clot
- Urinary tract infection
- Conditions associated with urinary retention (eg. neurogenic bladder)
- History of bladder outlet obstruction
- Confirmation of Foley catheter placement
- Follow up known bladder abnormalities

CONTRAINDICATIONS:

- No absolute contraindications

EQUIPMENT:

- Curvilinear transducer with a frequency range of 1-9 MHz that allows for appropriate penetration and resolution depending on patient's body habitus

PATIENT PREPARATION:

- Patient should be well hydrated.
- The patient should be kept from voiding 30 minutes prior to study.
- If patient has a suprapubic or Foley catheter, the catheter should be clamped 1 hour prior to exam to allow for bladder filling unless otherwise contra-indicated based on provider instructions/preferences.
- If patient has continuous bladder irrigation (CBI), ask the patient's nurse for assistance to pause CBI after clamping Foley to allow the bladder to fill. This should be done once sonographer has entered room and should be closely monitored to ensure there is no bladder overfilling or excessive patient discomfort. Communicate with nurse once exam has ended so Foley can be unclamped and CBI can restart.

EXAMINATION:

GENERAL GUIDELINES:

A complete examination includes evaluation of the urinary bladder and calculation of post-void fluid volume when requested or otherwise indicated.

EXAM INITIATION:

- Review any prior imaging, making note of associated abnormalities requiring evaluation.
- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page
- Place patient in supine position

TECHNICAL CONSIDERATIONS:

- Review any prior imaging, making note of associated abnormalities requiring evaluation.
- Bladder lumen and wall abnormalities should be noted. Focal abnormalities should be documented without and with size measurements and color Doppler.
- For intraluminal stones, debris, or potential clot with or without a Foley catheter in place, obtain images in lateral decubitus to show presence of mobility.
- Document bilateral ureteral jets if there is a concern for urinary obstruction.
- Survey of the ureterovesicular junctions with color Doppler can also be used for twinkling artifact from distal ureteral stones.
- Measure pre- and post-void bladder volumes utilizing 3 orthogonal planes (longitudinal, AP, transverse) when specifically requested, or if history includes risk factors for urinary retention.
- If prostate appears enlarged (lobulated; deforming the overlying bladder lumen), obtain multiple dedicated images (long and transverse) through prostate gland.
- Measure prostate gland in 3 dimensions, including a volume, only if specifically requested by ordering provider or interpreting radiologist.

DOCUMENTATION:

- Bladder
  - Grayscale
    - Longitudinal images:
      - Right lateral
      - Midline
      - Left lateral
      - Cine from right to left
    - Transverse images:
      - Superior
      - Mid
      - Inferior
      - Cine from superior to inferior
  - Color Doppler
    - Right and left ureteral jets (when appropriate)

- Typically, only indicated if there is concern for urinary tract obstruction, or otherwise requested by the radiologist or ordering provider.
- Images without and with color Doppler of any focal abnormality

- Bladder Volumes (see appendix)
  - **Indications** for obtaining:
    - History of, or concern for, urinary retention (unless patient requires catheterization to void)
    - Post-void residual noted during exam
    - If specifically requested
  - **Images required**:
    - Measure and calculate pre-void bladder volume.
    - Have patient void. Re-measure and calculate post-void bladder volume.
- Cine sweep of any focal abnormality not well shown in cine sweeps through whole bladder
- Stationary cine images of mobile debris, if present
- Repeat images in lateral decubitus to show stones, debris and/or potential clot, with or without a Foley, are mobile

- Prostate
  - Dedicated images in men only, and only if appearing enlarged or requested by ordering provider
  - Longitudinal and transverse images through the prostate, particularly if lobulated and deforming the overlying bladder.
  - Measurements in 3 dimensions (transverse, AP, and long)
  - Ensure prostate volume is calculated (see appendix)

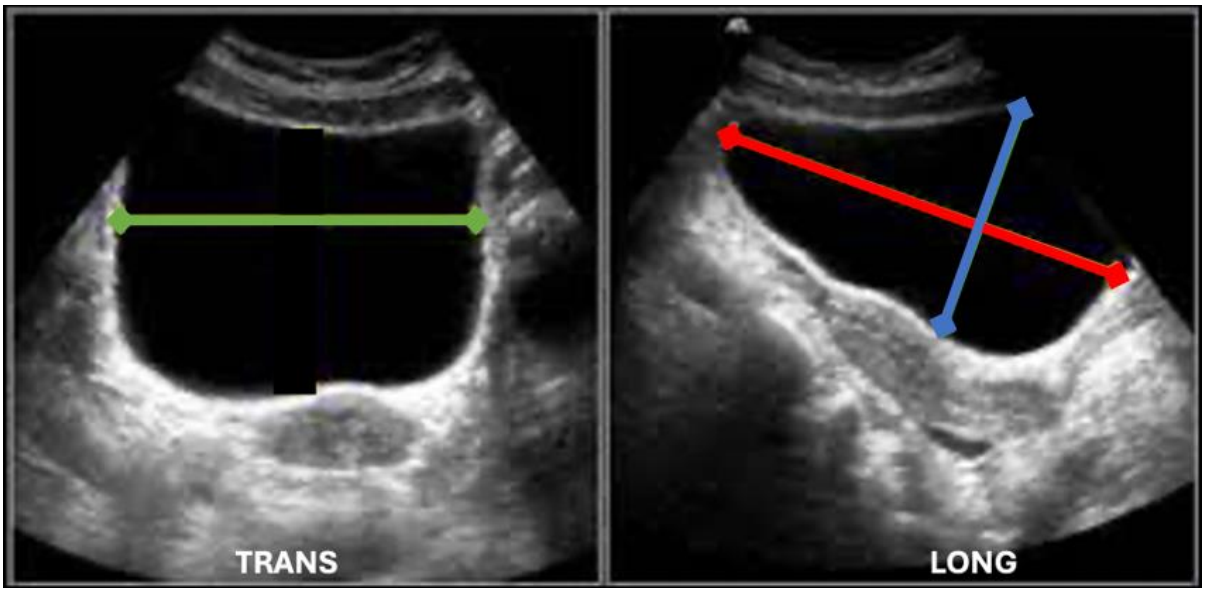
- Data page(s)

PROCESSING:

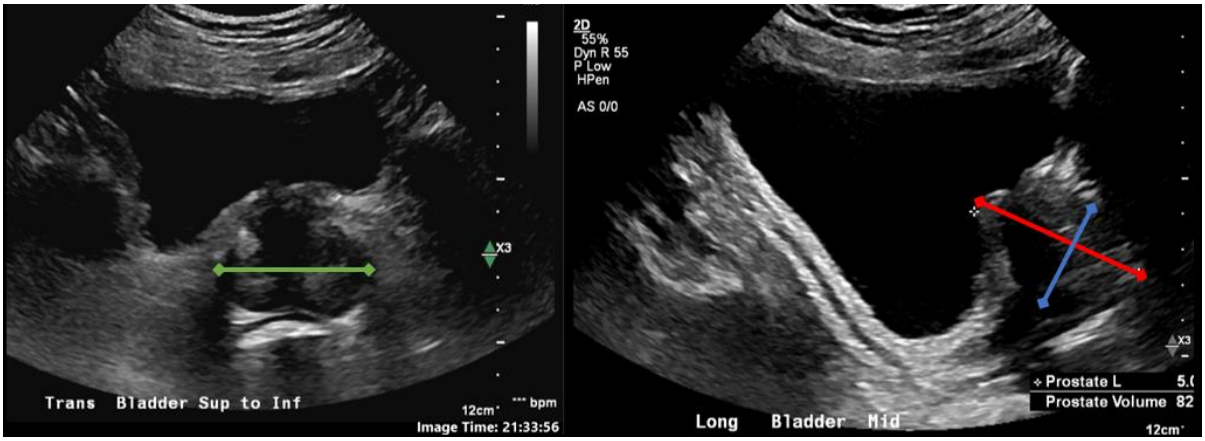
- Review examination images and data
- Export all images to PACS
- Confirm data in Imorgon (where applicable)
- Document relevant history and any study limitations

APPENDIX:

BLADDER MEASUREMENTS:



PROSTATE MEASUREMENTS



KEY FOR MEASUREMENTS:

- Length = Red line
- Width/Thickness = Green line
- Height/Trans/AP = Blue line

REFERENCES:

- ACR-AIUM Practice Guideline (Revised 2007) https://www.aium.org/docs/default-source/accreditation/case-study-requirements/urologic.pdf

CHANGE HISTORY:

DATE:	SUBMITTED BY: (NAME, TITLE)	APPROVED BY: (NAME, TITLE)	SUMMARY:
11/15/2015	David T. Fetzer, MD, Medical Director	David T. Fetzer, MD, Medical Director	Submitted & Approved
10/25/2018	Kanupriya Vijay, MD	Kanupriya Vijay, MD	Reviewed
11/12/2018			Clarified requirements for evaluating prostate gland
02/23/2020			Clarified info regarding bladder volume calculation
04/24/2023			Added statement: "Typically, only indicated if there is concern for urinary tract obstruction, or otherwise requested by…"
08/27/2025	Skye Smola, RDMS, RVT	David T. Fetzer, MD, Medical Director	Updated indications for pre- and post-void volumes. Add "volume" requirement for prostate when applicable, clarified rolling for patients with clot to eval mobility
07/02/2026	Christine Ernst, RDMS, RVT	David T. Fetzer, MD, Medical Director	Added approved bladder and prostate measurement acquisition locations, clarified wording; converted to A11y