**NOTE for all examinations:**

1. If documenting possible flow in a structure/mass, all color/Doppler should be accompanied by a spectral gate for waveform tracing
2. CINE clips to be labeled:
   - MIDLINE structures: “right to left” when longitudinal and “superior to inferior” when transverse
   - RIGHT/LEFT structures: “lateral to medial” when longitudinal and “superior to inferior” when transverse
   **each should be 1 sweep, NOT back and forth**

**WHAT TO INCLUDE:**

Abdomen complete:

- Liver
- Gallbladder
- Biliary tree
- Pancreas
- Spleen
- Kidneys
- Aorta
- IVC
- Fluid
Adding images to “Complete” order (still charge as Abd Complete):

→ Hydronephrosis or pelvicaliectasis (more than prominent renal pelvis): add representative bladder image (do not need to do volume; show jet only if readily seen); if bladder full, see if dilatation persists after void

**Abdomen limited, RUQ** – indication is PAIN or any mention of possible renal issue:

- Liver
- Gallbladder
- Biliary tree
- Pancreas
- Right kidney: full kidney imaging
- IVC
- Fluid

**Abdomen limited, RUQ** – indication is NOT pain AND there is no mention of possible renal issue (i.e., abnormal LFTs, cirrhosis, etc.):

- Liver
- Gallbladder
- Biliary tree
- Pancreas
- Right kidney: SINGLE sagittal with liver***
- IVC
- Fluid

***If there is hydronephrosis or any other abnormality, include FULL right kidney imaging
Adding images to “Limited” order (still charge as Abd Limited):

→ Right hydronephrosis or pelvicaliectasis (more than prominent renal pelvis): add representative left kidney and representative bladder image (do not need to do volume; show jet only if readily seen); if bladder full, see if dilatation persists after void

Abdomen limited, OTHER:

- Evaluate organ of interest (i.e., spleen for LUQ)
- If hernia evaluation requested, see separate HERNIA protocol for instructions

Retroperitoneum or Renal/Bladder

If indication is related to the urinary tract (this will be nearly all exams):

- Kidneys
- Bladder: full always, attempted jets always (see notes below re: when to have patient void and when to do bladder volumes)

Notes:

- Aorta images or measurements do not need to be included if indication is urinary

**WHEN should the patient void:

(1) Indication = retention, urgency, UTI or similar; or, bladder VERY distended
   - Void + pre/post volumes

(2) Hydronephrosis with full bladder seen at time of kidney imaging
   - Void and re-assess if hydro persists afterward; pre/post volumes are NOT necessary

- Prostate (in men) does not need to be measured UNLESS indication is: retention, urgency or similar; OR, grossly enlarged

If indication is anything else (rare; example indication: renal artery hypertension):

- Kidneys
- Bladder (see note above)
- Aorta
Liver and the intrahepatic biliary tree:

- Measure: sagittal in mid-clavicular line
- Long axis and transverse: provide images of the right, left and caudate lobes
- Capsule/contour: linear 9Hz transducer over the left and right hepatic capsules
- Document focal and/or diffuse abnormalities

**Provide at least 1 image comparing echogenicity of the liver to the right kidney**

- Image vessels: hepatic and perihilar vessels, including the inferior vena cava (IVC), the hepatic veins, the main portal vein, and, if possible, the right and left branches of the portal vein.
  
  → Spectral Doppler of the main portal vein
  
  → Provide image with MPV measurement but do not include on worksheet (discretion of radiologist whether to include in report)

- Right hemidiaphragm: document presence of effusion, if applicable

- If there is intrahepatic ductal dilatation: provide images with color to show differences between vessels and adjacent dilated bile ducts; include CINE with color.

- If a mass is detected, CINE images in 2 planes should be provided; assess Doppler (color and spectral)

**In patients with hepatitis B or C, provide CINE of the entire liver** - number of CINE necessary to cover liver will vary depending on liver anatomy, body habitus, etc.

Gallbladder and extrahepatic biliary tract:

Gallbladder

- Long-axis and transverse views in supine and decubitus

- Gallbladder wall thickness: ensure measurement is of the wall and not of the wall + adjacent pericholecystic fat; this is best done in the transverse plane, measuring the wall closest to transducer
- Evaluate for stones, sludge and polyps
  
  → Document mobility of stones and lack of mobility of polyps
  
  → Color and spectral Doppler over sludge and polyps; please comment on worksheet if color appears artifactual in real-time (i.e., related to motion); provide Spectral if color is real
  
  → CINE through polyps and sludge
  
  → Do NOT need to CINE through empty gallbladder

- Assess for sonographic Murphy sign; if unable to assess, document reason (i.e., altered mental status, medicated, etc.)

**Extrahepatic Bile duct:**

- Extrahepatic bile duct: evaluate and measure at the porta hepatis, assess for intraluminal abnormalities
  
  → Attempt to assess and measure distal CBD up to the pancreatic head, if possible; special attention should be paid to the distal CBD in cases of biliary ductal dilatation or pancreatic ductal dilatation

**Note regarding appropriate naming of the extrahepatic bile duct:**

→ At the porta hepatitis, label as “Extrahepatic bile duct”

→ At mid to distal portion duct (or clearly beyond junction of cystic duct), label as “Common bile duct” or “CBD”

**Pancreas:**

- Attempt to visualize all portions (head, uncinate, body, tail)

- Specific attention to distal CBD near pancreatic head, pancreatic ductal dilatation

- Evaluate peripancreatic region for adenopathy or fluid
  
  → If mass is present, CINE through to show relationship to pancreatic parenchyma and duct
  
  → If adenopathy is present, CINE through it to show separate from liver and pancreas

**Spleen:**

- Provide maximum dimension in any plane
L x W x H and volume are no longer required

**When possible, obtain images showing left kidney and spleen together**

- Attempt to visualize left hemidiaphragm and pleural space

**Kidneys:**

- Maximum renal length only for all patients (adult and pediatric)
  
  -->AP and Trans measurements and renal volume are not required

- Cortex does not need to be measured

- Longitudinal and transverse, with color images in the region of the hilum (mid) – 6 representative images each (including mid color), as follows:
  
  → Longitudinal: Far lateral (should see some perinephric fat), lateral, mid (grayscale and color), medial, far medial (should see some perinephric fat)
  
  → Transverse: High superior (should not see renal sinus), superior, mid (grayscale and color), inferior, low inferior (should not see renal sinus)
  
  **Consider placing the patient prone if renal poles are difficult to fully visualize**

- If hydronephrosis or pelvicalectasis, provide AP pelvis measurement
  
  → At end of exam, assess if dilatation improves or resolves post-void

- If there is ANY complexity to a mass or cyst, provide CINE images
  
  → If mass is a cyst, must clearly show it to be anechoic, imperceptible wall and increased through-transmission (may need to turn off spatial compounding to show this)

  **NOTE:** When there are multiple simple renal cysts, measure the 3 largest on each side

- If known stent in place:
  
  → Nephroureteral stent: attempt to visualize proximal coil (ideally in renal pelvis) and distal coil (ideally in bladder).
  
  → If known nephrostomy tube: attempt to visualize coil (ideally in renal pelvis).
  
  → If unable to visualize all or part of the stent, provide representative still images of attempt and CINE through relevant anatomy to document.

  **Provide images of right kidney with liver**

  **Provide images of left kidney with spleen**
**If indication is hematuria, transverse and longitudinal CINE through both kidneys (even if appear initially normal)**

**Bladder:**

- Longitudinal and transverse of distended bladder always

- Lumen/wall abnormalities: provide CINE if abnormality is present; document if debris/mass is mobile or immobile by changing patient position; demonstrate color/spectral Doppler (or lack thereof)

- Evaluate distal ureter for dilatation or other abnormality
  - Document ureteral jets

- In men, measure prostate size and volume ONLY when indication is: urinary retention, urgency, or similar; OR, grossly enlarged

- NO need to have the patient void

  **UNLESS:**

  **WHEN** should the patient void:

  (1) Indication = retention, urgency, UTI or similar; or, bladder VERY distended
    - Void + pre/post volumes

  (2) Hydronephrosis with full bladder seen at time of kidney imaging
    - Void and re-assess if hydro persists afterward; pre/post volumes are NOT necessary

**Aorta:** representative images and measurements (proximal, mid, distal)

- Does NOT need to be included on Retroperitoneum/Renal orders that have “urinary” indication

**IVC:** representative images with and without color, document patency

- Note: does not need to be measured

**Fluid:**

- Evaluate RUQ, LUQ, periphery of abdomen (left and right) in paracolic gutters, pelvis

- Document location and presence, if applicable (trace, small volume, moderate volume, large volume)