

## Abdomen Complete Ultrasound Protocol

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**\*\*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 (including hepatic/perihepatic vessels – IVC, hepatic veins, MPV + branches, *detailed below*)
- Gallbladder
- Biliary tree
- Pancreas
- Spleen
- Kidneys
- Aorta
- 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

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## **LIVER AND THE INTRAHEPATIC BILIARY TREE:**

### **LIVER:**

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

### **NOTE:**

*\*\*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.*

### **INTRAHEPATIC BILIARY TREE:**

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

### **OTHER at time of liver evaluation:**

- Right hemidiaphragm: document presence of effusion, if applicable

## **HEPATIC AND PERIHEPATIC VESSELS:**

- IVC (with color)

-Note: does not need to be measured

-Hepatic veins (with color)

→ Provide best image of the 3 hepatic veins at IVC

-MPV, including R and L branches (if possible)

→ Color + spectral doppler of the main portal vein

→ Greyscale image of the MPV - measure diameter but *do not include* on worksheet (discretion of radiologist whether to include in report)

## 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 or GB with obvious stones

-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 hepatis, 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, uncinata, body, tail)

→If mass is present, CINE through to show relationship to pancreatic parenchyma and duct

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

-Evaluate peripancreatic region for adenopathy or fluid

→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 pelvicaliectasis, 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 1 largest on each side**

**→ More than one simple renal cyst in a kidney can be measured at the discretion of the sonographer, for example if there are largest ones that are similar in size.**

**→ All cystic lesions with any complexity should be fully documented and measured.**

-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)\*\***

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

-Provide maximum dimension on worksheet

-Document atherosclerotic plaque, aneurysm, etc.

## **FLUID:**

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

→ Only include images if fluid is present or if order specifically asks for evaluation of ascites

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