

# PAEDIATRIC ABDOMEN ULTRASOUND

## Paediatric Abdominal Ultrasound

**Objective** To ensure that all staff follow correct procedure for abdominal ultrasonography of paediatric patients.

**Responsibility** All sonographers, trainee sonographers, registrars and radiologists performing paediatric ultrasound examinations.

**Frequency** For all paediatric ultrasound examinations when an abdominal ultrasound is requested by a clinician and subsequently prioritized by a radiologist.

**Procedure** The following table describes the process to be followed for ultrasound examination of the abdomen in the paediatric patient.

Step	Action
1	Children should be kept nil per mouth except clear fluids for: <ul style="list-style-type: none"> <li>• 0-3 years - 3 hours prior to examination</li> <li>• 4-12 years - 4 hours prior to examination</li> <li>• Over 12 years – 6 hours prior to examination if possible otherwise 4 hours.</li> </ul> <p>Clear fluids include clear cordial or Ribena but no milk drinks. One to two dry crackers is also okay.</p>
2	Look at any previous imaging before starting the examination.
3	Determine what the clinical question is. The referral may not give all of the relevant/pertinent clinical information so check clinical history with parent/child if appropriate.
4	Try anything to keep the child still – dummy or feeding (if allowed), bribery/distraction of older children e.g. lollipop, DVD, book reading.
5	Wash your hands and use clean transducers and warm gel.
6	Use the highest frequency curvi-linear array probe (relation to the child's size). Make sure your depth/focus/gain settings are correct and appropriate.
7	Record an image without measurements before taking one with measurements.
8	Start upper abdominal examination with transverse view in the sub-xiphoid area.
9	A four chamber view of the heart is good practice as occasionally pericardial effusion, right atrial abnormality or obvious cardiac anomaly may be apparent.

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10	<p>Document transverse images of the upper abdomen:</p> <ul style="list-style-type: none"> <li>• Hepatic veins entering the IVC</li> <li>• Left portal vein</li> <li>• Left hepatic lobe</li> <li>• Right branches of the portal vein</li> <li>• Porta hepatis/gallbladder</li> <li>• Right lobe of liver with kidney</li> </ul>
11	<p>Longitudinal images of the upper abdomen:</p> <ul style="list-style-type: none"> <li>• Right to left evaluation of the hepatic parenchyma</li> <li>• Right lobe of liver with right kidney</li> <li>• IVC and caudate lobe</li> <li>• Aorta</li> <li>• Left hepatic vein</li> </ul>
12	Obtain cine-loop if appropriate of any hepatic abnormality.
13	Use high frequency linear array probe to assess the liver echotexture if appropriate.
14	Longitudinal and transverse images of the gallbladder. If the gallbladder is thick-walled in a fasted patient then include a measurement of wall thickness.
15	Image main portal vein including a measurement of the diameter and colour Doppler trace to demonstrate flow direction.
16	Image the common bile duct (CBD), measure and visualise the entire length of the CBD to the pancreas.
17	<p>Image right kidney:</p> <ul style="list-style-type: none"> <li>• Longitudinal view with measurement.</li> <li>• Longitudinal view of medial and lateral aspects.</li> <li>• Transverse views of upper/mid/lower poles.</li> <li>• Linear array scans if appropriate for areas of abnormality</li> </ul>
18	Image transverse pancreas.
19	Image transverse SMA/SMV
20	<p>Image left kidney:</p> <ul style="list-style-type: none"> <li>• Longitudinal view with measurement.</li> <li>• Longitudinal view of medial and lateral aspects.</li> <li>• Transverse views of upper/mid/lower poles.</li> <li>• Linear array scans if appropriate for areas of abnormality.</li> </ul>
21	<p>Image spleen:</p> <ul style="list-style-type: none"> <li>• Longitudinal view of spleen with measurement – appropriate splenic length = age/3 + 6.</li> <li>• Transverse view of the spleen. Document vascular pedicle to hilum.</li> <li>• Transverse view of spleen/left kidney.</li> <li>• Document any accessory splenic tissue if present.</li> </ul>

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22	Image coronal aorta showing the aortic bifurcation
23	In the neonate, image the adrenal glands if visualised.
24	Image bladder and pelvis. Document free fluid if present.

#### Note:

1	The above images do not preclude real-time assessment of the entire organ.
2	Cine loop images could be useful in cases where there is the need to clarify movement of a mass/masses in relation to other organs, changes in heterogeneity of organs or motility of bowel.
3	Linear array transducers provide parenchymal detail of solid organs, bowel wall morphology, etc.
4	Document vascularity within/adjacent to any abnormal structures with colour flow Doppler +/- spectral Doppler
5	In neonates image the gallbladder first if this is of clinical concern. The baby can then be fed.
6	If a stone is seen in the gallbladder sit the patient erect (if age appropriate) and document stone movement. If sitting the patient erect is inappropriate roll the patient into left lateral decubitus position and document stone movement.