

# Abdominal Ultrasound Protocol

Specific staff groups to whom this policy directly applies	Likely frequency of use	Other staff who may need to be familiar with policy
Sonographers	Daily	Health Care Assistants

<b>Main Author(s)</b>	Louise Wilcox (Clinical Lead)
<b>Consultation:</b>	Karl Sturtridge
<b>Date of Approval</b>	1/11/25
<b>Next Review</b>	1/11/27

<b>1. Purpose</b>	To ensure the imaging and reporting of normal and abdominal organs are optimally undertaken by ultrasound practitioners, with clear guidance for the referrer where needed.
<b>2. Relevant Policies and Guidance</b>	1. 2.

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## 1. Purpose

- To ensure all patients undergoing ultrasound examination of the upper abdomen are appropriately imaged with reports that answer the clinical question.
- To ensure all abdominal organs are examined in a minimum of two planes, i.e. longitudinal section (LS) and transverse section (TS), with additional views as required.
- To ensure age-related appearances and normal variants are recognised.

## **2. Best Practice**

- Sonographers recognise and work within their personal scope of practice, seeking advice from Senior Sonographer, if needed. If there is no sonographer available, please use Soliton, to message and ask for a 2<sup>nd</sup> opinion.
- Sonographers should follow the locally agreed protocols, working with reference to national and local practice and guideline recommendations.
- As advanced and autonomous practitioners, the examination should be performed according to the clinical presentation. The emphasis of examination may be altered according to the clinical scenario, previous imaging findings and patient history.
- Sonographers are responsible for arranging follow up scans by sending a message to admin /office team on Soliton. For InHealth CDC patients, the sonographer must advise the Referrer to arrange follow-up.

## **3. General Examination**

- Patients should be fasted for up to 6 hours prior to the scan – clear fluids only permissible.
- Correctly identify the patient by checking the date of birth and address against examination request.
- Explain procedure and ensure the Patient has adequate understanding to obtain informed consent.
- Use interpreters where necessary if Patient does not understand procedure due to language difficulties.
- Read the request carefully and may be supplemented by asking the Patient a few questions, particularly if the information supplied is inadequate.
- If the Patient has had prior ultrasound or radiological examinations, check any relevant reports prior to examination.

#### 4. Guidelines for the examination of organs (BMUS)

<b>Liver</b>	<ul style="list-style-type: none"> <li>• Position, size, shape and echo texture of the liver parenchyma should be assessed.</li> <li>• Any irregularities recorded and the echo texture in comparison to the right kidney observed and documented.</li> <li>• The liver outline should be identified and assessed for any irregularity.</li> <li>• The intra-hepatic ducts and CBD should be examined for any signs of dilatation.</li> <li>• The hepatic veins should be assessed for any dilatation. In cases of cirrhosis then patency of the vessels should be assessed.</li> <li>• The portal vein should be assessed with Doppler when appropriate and clinically indicated.</li> <li>• Document any focal lesion and which segment of liver. If appearance are those of a haemangioma See Appendix.</li> </ul>
<b>Kidneys</b>	<ul style="list-style-type: none"> <li>• Assessment should be made of the size, shape, position and orientation, outline and ultrasound characteristics of cortex, medulla, collecting system.</li> <li>• If a kidney is not within the renal fossa, then check for its location elsewhere.</li> <li>• Renal size should be documented on the image with a measurement taken in the longitudinal section between the two renal poles. Any discrepancy in size between the two kidneys exceeding 2cm should be noted. Eg. "L &gt; R"</li> </ul>

	<ul style="list-style-type: none"> <li>• The renal cortex and medulla should be assessed and any alteration in echogenicity documented.</li> <li>• If there appears to be hydronephrosis with a full bladder then the patient should be rescanned with an empty bladder</li> </ul>
<b>Renal cysts</b>	<ul style="list-style-type: none"> <li>• Should be documented and assessed for complexity. Ultrasound of simple/minimally complex cysts is sufficient.</li> <li>• More complex renal cysts require formal Bosniak grading with either CEUS or CT, according to local guidelines. See Appendix</li> </ul>
<b>Angiomyolipomas</b>	<ul style="list-style-type: none"> <li>• Cortically based echogenic renal lesions measuring less than 1 cm are likely incidental angiomyolipomas, no routine follow up.</li> <li>• Lesions over 1cm but less than 3 cm are likely benign and should be offered a scan at 6 months to ensure the lesion has not grown. Lesions above this size GP should be advised to discuss with a urologist for likely referral to MDT for further</li> <li>• See Appendix</li> </ul>
<b>Pancreas</b>	<ul style="list-style-type: none"> <li>• Size, shape, outline and ultrasound characteristics of head, uncinate process, body, tail and main duct should be assessed.</li> <li>• The pancreatic duct should be assessed for dilatation (pancreatic duct increases in calibre with age) with a measurement &gt;4mm considered abnormal in all patients.</li> <li>• Any inhomogeneity, calcification or masses should be recorded and discussed as well as any adjacent free fluid, collections or lymphadenopathy.</li> </ul>
<b>Aorta/Para Aortic regions</b>	<ul style="list-style-type: none"> <li>• Examination of the aorta should include LS and TS including the bifurcation.</li> </ul>

	<ul style="list-style-type: none"> <li>• The aorta should be measured at its widest point in the transverse section measuring AP diameter (ITI).</li> <li>• If an aneurysm is detected, a measurement &gt; 3 cm ITI – the aneurysm should be documented i.e. proximal, mid, distal or iliac</li> <li>• Both kidneys should be assessed for renal size.</li> <li>• Please refer to the flow chart no. 1 below.</li> <li>• If an AAA is identified this should be flagged to referrer on report as significant and unexpected. If substantially large &gt;9cms – this is urgent and the referrer needs to be phoned same day.</li> <li>• Check for para-aortic lymphadenopathy.</li> </ul>
<b>Gallbladder</b>	<ul style="list-style-type: none"> <li>• Good visualisation of neck, body and fundus. Size, shape, outline and surrounding area. Ultrasound characteristics of the wall and the nature of any contents</li> <li>• The wall should be thin (no more than 3mm), smooth and well-defined.</li> <li>• The presence of any calculi should be recorded.</li> </ul> <p><b>GB Polyps</b></p> <ul style="list-style-type: none"> <li>• Gall bladder polyps are not an unusual finding (approximately 5% of population) and should be noted in the report.</li> <li>• Polyps 5 mm or smaller are unlikely to be clinically significant.</li> </ul>

	<ul style="list-style-type: none"> <li>• Polyps 6 – 10 mm should be rescanned in a year to make certain they remain unchanged. Polyps greater than 1 cm should be reported as significant.</li> <li>• see Appendix</li> </ul>
<b>CBD</b>	<ul style="list-style-type: none"> <li>• Maximum diameter and contents; optimally it should be visualised from porta to head of pancreas</li> <li>• The normal CD diameter is variable, but the upper limit of normal calibre is generally accepted as 6mm in an adult. This can increase after cholecystectomy and in older adults due to loss of elasticity of the duct wall.</li> </ul>
<b>Spleen</b>	<ul style="list-style-type: none"> <li>• Size, shape, outline and ultrasound characteristics including the hilum. Assessment of splenic vein blood flow and presence/absence of collateral vessels</li> <li>• The spleen is homogeneous and smooth in echotexture and outline. The splenic parenchyma should be compared to that of the left kidney if it is hyperechoic compared to the liver. Its size is variable and dependent on patient demographics, but 5–12cm is taken as a normal adult range (upper limit of normal is 13cm)</li> </ul>

## 5. Recording Images

- Images are recorded on PACS. If PACS is down, record images on hard drive of machine and ensure images are transferred when system working again.
- Images should support the written report and include any abnormalities.

## **6. Recommended Images**

The sonographer is required to perform comprehensive abdominal survey, scanning area of interest and adjacent structures in two planes.

If an abnormality is found, image in two planes with relevant measurements and the application of colour Doppler should be used when relevant.

Optimise machine controls and remove processing technology if appropriate.

Document any limitations such as body habitus, respiration artefact and immobility etc..

The following structures should be examined:

1. LS of the abdominal aorta demonstrating origin of SMA and along the length to the bifurcation (if possible), with AP measurement ITI. CIA's to be viewed.
2. TS of aorta with maximum diameter ITI measurement.
3. TS pancreas.
4. LS pancreas.
5. TS left lobe of liver with left HV.
6. LS left lobe of liver.
7. LS through caudate lobe.
8. LS through long axis IVC with left lobe.
9. Sagittal/coronal view through Right kidney and right lobe of liver for comparison.
10. Assessment of the liver edge.
11. Image of the porta hepatis showing CBD with maximum AP diameter. The max length possible of the CBD should be demonstrated.
12. Assess PV flow (with Doppler trace in fatty liver).
13. LS right lobe liver showing diaphragm.
14. TS right lobe liver showing diaphragm.
15. TS oblique view through hepatic veins and IVC confluence.
16. (Assessment for recanalization of the umbilical vein in patients in liver disease).
17. LS of gallbladder demonstrating neck and fundus (in 2 positions).
18. TS of gallbladder.
19. Bi-polar view of Right kidney with measurement.
20. TS views of right kidney (upper, mid and lower pole).
21. Bi-polar view of Left kidney with measurement.
22. TS views of Left kidney (upper, mid and lower pole).
23. LS of Spleen with measurement diagonally.
24. Check pelvis for free fluid when appropriate.

## **7. Examination Report.**

- All examinations require a written report on the Soliton. All reports need to be verified.
- The written report should be concise, clear and easily understood and should address the clinical question.

- Include any relevant surgery or medical history ie. Cholecystectomy, nephrectomy,
- If the examination is limited this should be stated in the report i.e. suboptimal views due to increased BMI, obscured by bowel gas etc
- If the examination cannot be completed, for example if the patient has not starved for a gallbladder scan, rebook the Patient ensuring they understand reasons for preparation compliance. Document this in report.
- The written report should be verified by the Sonographer undertaking the examination unless a 2<sup>nd</sup> opinion is required by a Senior Sonographer or needs Consultant review. Please add the 2<sup>nd</sup> sonographer on the report and select in box.
- For consultant review select in Edit box at bottom of report.
- Significant and unexpected Findings and Urgent referral - see Policy

## **8. References**

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