Ultrasound Decision Support
Surrey Heartlands

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Based on:

- British Medical Ultrasound Society; Recommended Good Practice Guidelines for Justification of Ultrasound Requests, October 2021
- Royal College of Radiologists; iRefer, 8th Edition, 2018
- National Institute for Health and Care Excellence Guidelines

This document is intended to support healthcare professionals referring for ultrasound examinations to Diagnostic Imaging. Because of high demand, all requests are vetted to ensure that the examination is justified, requests have not been duplicated, other imaging has been considered, and to give guidance on when the examination should be performed and by whom.

All Imaging requests should include a **specific clinical question** to answer, and contain **sufficient information** from the clinical history, physical examination, and relevant laboratory investigations to support the suspected diagnosis.

Scope

This document and its principles apply to all healthcare professionals involved with referring for ultrasound examinations, the document is intended as a decision support tool for all referrers.

- Although US is an excellent imaging modality for a wide range of pathologies, there are many for which US is not an appropriate first line examination.
- Individual cases may not always be easily categorised, and referrers are encouraged to seek advice from their local radiology department.
- It is outside the scope of this document to include breast, biopsy, and aspiration referrals.

Ultrasound vetting

Is carried out in imaging departments to ensure:

- That ultrasound scans are justified, so that the correct examination can be arranged with the appropriate patient preparation.
- That clinically urgent requests are undertaken in a timely manner.
- The scans are undertaken by the right person, in the right place and at the right time.
- Requests are filled out correctly and comply with department policies.
- Clinically urgent requests will be flagged and the mechanism for dealing with such requests initiated according to local department practice.

Stakeholders affected

All healthcare professionals referring to and working in the ultrasound section of the Diagnostic Imaging Departments in the Surrey Heartlands area, together with all referring healthcare providers.

Operational Procedures

Please contact your local imaging service provider

Compliance monitoring arrangements

Please contact your local imaging service provider

Consultation

This document has been produced following consultation with the following organisations:

Ashford and St Peters Hospitals NHS Foundation Trust (ASPH)
Surrey and Sussex NHS Trust (SASH)
Surrey heartlands Primary Care
Surrey Sussex and Frimley Imaging Network

INDICATION	COMMENT	ACCEPTED
Non- site-specific symptoms **Reassurance Imaging**	Imaging for reassurance is not advocated	**NO**
Trauma	Ultrasound does not have a role in trauma outside of immediate triage FAST scanning in an ED setting. US imaging in the non-acute phase after trauma can be misleading and small lacerations cannot be excluded with confidence. Patients with suspected intra-abdominal injury need clinical assessment by the trauma team in ED.	**NO** **NO** **NO**
ABDOMEN		
GRADUAL UNEXPLAINED WEIGHT LOSS **WEIGHT LOSS & ANAEMIA**	US doesn't have a primary role in investigation of this due to low sensitivity and specificity. Consider referral to UGI, LGI USC or NSSC pathways as appropriate. US doesn't have a primary role in investigation of this due to low sensitivity and specificity. Consider referral to UGI, LGI USC or NSSC pathways as appropriate.	**YES** **If sufficient clinical information is provided** **YES** **If sufficient clinical information is provided**

WEIGHT LOSS & CHRONIC REFLUX	US doesn't have a primary role in investigation of this due to low sensitivity and specificity. Consider referral to UGI, LGI USC or NSSC pathways as appropriate.	**YES** **If sufficient clinical information is provided**
IRON DEFIENCY ANAEMIA	Ultrasound not indicated unless there is a specific clinical question.	**NO**
ALTERED/ RAISED LFTs **See Footnote 1**	Please include **duration and value** of abnormality. A single episode of mild – moderate elevation does not justify an US scan, advise lifestyle changes, and repeat LFTs. Abnormal LFTs with painless jaundice Abnormal LFTs with pain or jaundice (see Jaundice section for USC guidance) Two or more occasions of abnormal LFTs in otherwise asymptomatic patients Single episode raised ALT ALT > 200 on single test ALT >120 (3 months) and no other risk factors Patients with raised NAFLD scores or raised Fib4 scores or other risk factors (Diabetes Mellitus, obesity, statins & other medications) which affect the liver are indicated for liver ultrasound or secondary referral	 **NO** **Referral on Urgent Suspected Cancer (USC) pathway** **YES** **YES** **NO** **Discuss with gastro on call** **YES** **YES**

JAUNDICE	Any jaundice requires imaging, referral must state whether painless or not Bilirubin <150: Urgent US and USC referral to hepatobiliary Bil >150: Immediate referral to acute surgery. Imaging should not be requested via primary care, appropriate imaging determined in secondary care	 **Request urgent US and send concomitant USC referral to UGI in those >40yrs** **NO** **Referral to acute Surgery Team**
PAIN – as the only clinical detail given	Generalised or non-specific pain not justified; further information required. If appropriate clinical question is provided	**NO** **YES**
PALPABLE UPPER ABDOMINAL MASS	CT is more appropriate – needs UGI USC Referral	**NO**
SUSPECTED GALL STONE PATHOLOGY	Pain plus consistent history and/or dyspepsia	**YES**
GB POLYP	**If imaging prior to outpatient appointment date is needed, please state this in the request.** Any polyp ≥ 10mm should be referred for surgical opinion, rescan is not required unless on individual case basis by secondary care. Polyps of < 10mm in asymptomatic patients should have follow up scan in 1yr, requested by GP or secondary care No change in 1yr – patient discharged, to see GP if becomes symptomatic If patient becomes symptomatic, refer for surgical opinion. Interval US scan should be considered. If small increase in size, then annual follow until either ≥ 10mm,	 **NO** **YES** **NO** **YES**

	symptomatic or there is no change in size in 12mth interval.	
BLOATING/ABDOMINAL DISTENSION	Bloating as the only symptom If high suspicion malignancy – refer on an USC referral pathway Persistent or frequent occurring over 12 times in one month, in women especially over 50 with other symptoms or raised Ca125 Suspicion of malignant ascites – US scan should be considered	**NO** **NO** **YES** **(Urgent priority)** **Referral to relevant USC Pathway**
SUSPECTED PANCREATIC CANCER	Presenting symptoms of weight loss and diarrhoea or constipation, nausea or vomiting, or back pain **OR** New onset diabetes/ unexplained worsening control Urgent direct access CT scan is required or referral on UGI USC pathway. Ultrasound cannot assess the entire pancreas	**NO** **NO** **Urgent Suspected Cancer Referral**
ALTERED BOWEL HABIT/ DIVERTICULAR DISEASE	No role in management of IBS or diverticular disease. Acute presentations should be made via secondary care. If suspected bowel cancer, refer via Urgent Suspected Cancer (USC) route	**NO** **NO**
RENAL TRACT		
UTI (ADULT) https://www.nice.org.uk/guidance/ng136/chapter/Recommendations	First episode Recurrent (≥ 3 episodes in 12 months) Non-responders to antibiotics Frequent re-infection	**NO** **YES** **YES** **YES**

	Serial scanning for recurrent UTI's	**NO**
	H/O stone or obstruction	**YES**
Antenatal hydronephrosis in children	Antenatal diagnosis of hydronephrosis: 1st scan within 7 days of birth Follow up scan at scan 4 – 6 weeks In male infants with suspected posterior urethral valves, oligohydramnios or severe bilateral hydronephrosis, ultrasound should be performed within 24-48 hours of birth	**YES**
UTI (CHILDREN) *NICE guidance: Overview | Urinary tract infection in under 16s: diagnosis and management | Guidance | NICE*	Children 0 – 3years Infants <6-months, 1st UTI, scan at 4-6 weeks Babies and children with atypical UTI – scan during infective episode	**YES**
HYPERTENSION	Routine imaging is not indicated. RAS (renal artery stenosis screening) is **NOT** offered	**NO**
(reference Hypertension | Health topics A to Z | CKS | NICE)	Renal tract US to exclude renal causes of hypertension in line with NICE hypertension guidance	**YES**
RENAL FAILURE	Acute or acute on chronic	**YES**
	To assess renal size and rule out obstructive causes	**YES**
HAEMATURIA	Dysuria with unexplained non-visible haematuria ≥60yrs requires referral on USC pathway.	**NO** **Urgent Suspected Cancer Referral**
	Haematuria (visible and unexplained) either without UTI or persists/recurs after UTI treatment ≥ 45yrs – refer on USC pathway.	**NO** **Urgent Suspected Cancer Referral**
	Haematuria Adults aged ≥60yrs with unexplained non-visible haematuria and either dysuria or	**NO** **Urgent Suspected Cancer Referral**

	a raised white cell count on a blood test - refer on USC pathway. Visible haematuria with low Hb/ thrombocytosis/ high blood glucose levels/ unexplained vaginal discharge (>55yrs female) consider concurrent ultrasound to exclude endometrial pathology UTI (unexplained and recurrent/persistent) ≥ 60yrs	 **Ensure Urgent Suspected Cancer urology referral also sent** **YES**
LUTS	Male and female LUTS	**YES**
RENAL COLIC	Female >40yr and any male with high suspicion stones, including acute pain and/or haematuria Female <40yrs Suspicion of stone disease male/female of any age but no acute pain or haematuria	**NO, needs CT** **YES** **YES**
GYNAECOLOGY	If Imaging undertaken prior to Gynaecological appointment, please state this in the referral. This Information will enable the transfer of images to radiology.	
CERVIX assessment	US is not used in the primary diagnosis of occult cervical pathology Where a cervical polyp is clinically visualised, to assess for endometrial polyps	**NO** **YES**
Pelvic Inflammatory Disease	Ultrasound has no role in the management of suspected pelvic inflammatory disease US may be helpful if abscess/ hydrosalpinx is suspected, usually more appropriate via secondary care/ if symptoms persist following treatment	**NO** **YES**
FOLLOW-UP OF BENIGN LESIONS, e.g. FIBROID, DERMOID OR CYST	Usually there is no role for US in follow-up of these lesions in pre-menopausal women unless:	**NO**

	On the advice of secondary care The patient has undergone a **clinical change** Follow-up US of benign lesions can be performed as per Imaging dept protocol in **post-menopausal** women to ensure no change	**YES** **YES** **YES**
ABNORMAL PV BLEEDING (pre and perimenopausal) inter menstrual, post-coital, frequent, prolonged, irregular cycle	Need to specify symptoms, i.e. investigation of intermenstrual bleeding/ menorrhagia/ suspicion of fibroids Treatment options failed – **state** on referral If pelvic exam, cervical screening and swabs normal	**YES** **YES** **YES**
PROLONGED UNEXPLAINED OLIGOMENORRHEA OR SECONDARY AMENORRHOEA	Oligomenorrhoea <3mths Secondary amenorrhoea (no menses >6mths) US to assess endometrial thickness oligomenorrhoea >3mths	**NO** **YES** **YES**
PRIMARY AMENORRHOEA	Defined as absence of menses and secondary sexual characteristic by age 14 or absence of menses with normal secondary sexual characteristics by age 16. Abnormal prolactin and TSH – refer to endocrinology Normal prolactin and TSH results	 **NO** **YES**
PELVIC PAIN **Premenopausal patients**	US is unlikely to contribute to patient management if pain is the **only** symptom in patients <50yrs. Pelvic pain ?appendicitis / ovarian torsion - In patients with suspected endometriosis, pelvic pain plus one or more of following: cyclical pain, pain in the week before and after period, dysmenorrhea, dyschezia, dyspareunia	**NO** **Emergency Referral** **YES**

Postmenopausal patients	In patients **>50yrs**, the likelihood of pathology is increased, please include **specific clinical question**	**YES**
PELVIC PAIN + one of the following: **Palpable mass** **Raised CRP/WCC** **Nausea/vomiting,** **Menstrual irregularity** **Deep dyspareunia >6wks**	The addition of another clinical symptom justifies the request Please include a **specific clinical question**/ differential diagnosis.	**YES** **Consider Urgent Suspected Cancer referral for Palpable mass**
DYSMENORRHOEA	Cervical screening and STI swabs normal	**YES**
MENORRHAGIA	If uterus palpates normal size/ no pelvic mass on vaginal exam/ pharmaceutical treatment has not been tried- Change in menses in mature patient If known endometrial polyps/ palpable uterus abdominally/ pelvic mass on vaginal exam/ pharmaceutical treatment fails after 3mths	**NO** **YES** **YES**
BLOATING 1 Guidance | Ovarian cancer: recognition and initial management | Guidance | NICE	Bloating as the only symptom High suspicion malignancy – Urgent Suspected Cancer (USC) referral and CT scan recommended Persistent or frequent occurring over 12 times in one month, in women especially over 50 with other symptoms or raised Ca125 Suspicion of malignant Ascites – US scan should be considered	**NO** **NO** **YES (Urgent priority)** **Referral to relevant USC Pathway**
Post Menopausal Bleeding	Previous hysterectomy <12mths since previous LMP	**NO** **NO**

	< 3months In situ/recently removed Mirena/IUCD	**NO**
	Previous PMB and normal scan, repeat bleed <6mths since previous investigation	**NO**
	On Tamoxifen, consider USC referral	**YES**
	Women with PMB and gynae history review and vaginal examination, consider USC referral	**YES**
	Repeat PMB >6mths since previous investigation, consider USC referral	**YES**
POSTNATAL BLEEDING	Women who are up to 21 days PN should be referred to O&G for consultant input or EPAU scan	**NO**
	Women who are over 3 weeks PN should be seen in the EPAU **or** main scanning department	**YES**
	Dependent on local service pathway discuss with local EPAU	
Polycystic Ovary Syndrome (PCOS)	Diagnosis of PCOS should be based on: 1. Irregular menses 2. Symptoms and signs of hyperandrogenism 3. Biochemical evidence of hyperandrogenism with free androgen index 4. Biochemical exclusion of other confounding conditions	**NO** **Unless the diagnosis of PCOS is not obvious on clinical and biochemical grounds**
	Ultrasound should not be used for the diagnosis of PCOS in those with a **gynaecological age of < 8 years (< 8 years after menarche**), due to the high incidence of multi-follicular ovaries in this life stage.	**NO**
INVESTIGATION OF SUBFERTILITY	Accepted if concurrent referral made to fertility service	**YES**
IUCD/MIRENA	US to assess for presence of fibroids if placement of Mirena is considered	**YES**

	US to identify presence of IUCD when threads not visible *Sonographer will arrange AXR if IUCD not found on US*	**YES**
SUPERFICIAL STRUCTURES		
SOFT TISSUE LUMP Microsoft Word - BSG guidance for ultrasound screening of soft tissue masses in the trunk and extremity (britishsarcomagroup.org.uk)	Majority of soft tissue lumps are benign, and if there are classical clinical signs plus corresponding history Lipomata and ganglia <5cm, mobile, non-tender, no significant growth over 3mths Typical features of Dupuytrens, plantar fibromatosis, mobile nodules at the SI joint level, generalised lipomatosis at nape of neck, calf muscle hernias Signs of malignancy include increasing size, fixed mass, rubbery consistency. Please state if suspected malignancy.	 **NO** **NO** **YES**
LYMPHADENOPATHY	Patients with clinically benign groin, axillary or neck lymphadenopathy do not need US. Small nodes in the groin, neck or axilla are commonly palpable. If new and a source of sepsis is evident, US is not required Signs of malignancy include increasing size, fixed mass, rubbery consistency In children, an ultrasound scan is not required when: Size <2cm Site – cervical, axillary, inguinal History – recent viral infection or immunisation Examination- eczema, viral URTI Clinically suspicious paediatric lymph nodes should be referred urgently to paediatrics	**NO** **NO** **YES** **NO**

	Axillary firm lumps/enlarged lymph nodes FEMALE & MALE – needs breast USC referral as first line investigation	**NO** **Referred on USC breast form**
SCROTAL MASS	Following full clinical examination: Any patient with a swelling or mass in the body of the testis should be referred for URGENT US Extra-testicular mass, e.g. epididymal cyst Generalised scrotal swelling '?hydrocoele' Suspected varicocele	**YES** **NO** **NO** **YES**
SCROTAL PAIN	Chronic (>3 months) pain in the absence of a palpable mass does NOT justify US Acute pain ? torsion requires URGENT Urology/Surgical referral Acute pain in the absence of suspected torsion E.g. Epididymo-orchitis ?Abscess	**NO** **Consider with concurrent urology referral** **NO** **YES**
HERNIA	Characteristic history and exam findings including reducible palpable lump or cough impulse. Ultrasound NOT justified. Consider surgical referral. Irreducible and/or tender lumps may suggest incarcerated hernia and require URGENT surgical referral. Ill-defined soft tissue focus ?hernia. For determining management pathway	**NO** **Consider surgical referral** **NO** **Urgent surgical referral.** **YES**
HEAD & NECK		
Neck lump	If lesion characteristic of sebaceous or epidermoid cyst or present for substantial time with little or no change	**NO**

	Neck lump present >3wks plus clinical change Neck lump unexplained and present >6wks See Lymphadenopathy section	**YES** **USC Head and neck referral**
THYROID	Ultrasound may be required where there is doubt as to the origin of a cervical mass, i.e. thyroid in origin, or sudden increase in size, new sudden onset. Clinical features that increase the likelihood of malignancy include history of irradiation, male sex, age (70), fixed mass, hard/firm consistency, cervical nodes, change in voice, family history of MEN II or papillary cancer. Routine follow up of benign nodules (U2) and thyroid goitre is not recommended Incidental thyroid nodules demonstrated on cross-sectional imaging do not require automatic assessment.	**YES** **USC Head and neck referral** **NO** **NO**
SALIVARY GLANDS	History suggestive of salivary duct obstruction Suspected salivary mass/tumour needs referral via Urgent Suspected Cancer (USC) Pathway	**YES** **YES**
MSK	*There should be a clear working diagnosis/ clinical question on the referral*	
SOFT TISSUE	Tendinopathy, tenosynovitis, tendon sheath effusion, calcific tendinopathy, rupture, foreign body location	**YES**
JOINTS	Effusion (US cannot differentiate between infected and non-infected effusion) Septic arthritis, recommend acute secondary referral Investigation for synovitis/erosions should be directed through rheumatology pathway	**YES** **NO acute secondary referral** **NO rheumatology pathway**

SHOULDER	Impingement/rotator cuff pathology SCJ OA/pathology	**YES** **NO**
ELBOW	Distal biceps tendon, ulnar nerve neuropathy/subluxation, medial/radial nerve compression, common flexor/extensor tendinopathy	**YES**
HAND/WRIST	Specific tendon/joint Median nerve ?carpal tunnel syndrome Advise referral to Orthopaedics TFCC tear / calcification – refer to Orthopaedics	**YES** **NO** **referral to Local pathway** **NO**
HIP Adult	Effusion/synovitis, high grade muscle injuries, trochanteric pain	**YES**
Paediatric hip for possible developmental dysplasia (DDH)	Requests should fulfil the April 2021 NIPE criteria NIPE newborn hip screening: screen positive pathway - GOV.UK (www.gov.uk)	**YES**
KNEE **KNEE**	Suprapatellar/infrapatellar/ prepatellar bursitis, Patellar tendinopathy/tear/calcification, Quadriceps tendinopathy/tear/calcification, Bakers cyst Meniscal pathology Osteochondritis Knee injury ?ACL – needs referral for MRI	**YES** **NO** **NO** **NO**
ANKLE/FOOT	Effusion /Synovitis, Peroneal tendon, Tenosynovitis / subluxation, Posterior tibial tendinopathy, Achilles tendinopathy /tears/calcification, Retro calcaneal /pre-Achilles bursitis, Plantar fasciitis/fibroma, Morton's neuroma	**YES**

	Deltoid ligament – needs referral and MRI	**NO**
ANY BODY PART	Diffuse pain/swelling Non-specific requests, e.g. "joint/tendon/ligament pathology?" Palpable lump – if changing (see relevant section above) Whole limb requests Intra-articular/ cartilage pathology Labral pathology Loose bodies Back pain ?nerve, thigh, leg pain	**NO** **NO** **YES** **NO** **NO** **NO** **NO** **NO**
VASCULAR		
VTE	Referrals accepted if request fulfils NICE criteria; use local pathways where in place.	**YES**
Arterial and venous mapping	Refer to Vascular Surgery	

For indications that fall outside these guidelines, radiologist discussion is recommended on the Local Hot Desk telephone number:

ASPH: 01932 722797 (radiology medical secretaries) then ask for Hot Desk

SASH:	US Radiologist Lead:		07814 632351
	US Managers:	Non-obstetric	07967 275888
		Obstetric	07812 787427

FOOTNOTES

1. Liver Function tests – Isolated enzyme rises – US generally not indicated
   ALT alone: Fatty liver (risk factors; obesity, hyperlipidaemia, DM) or Drugs (statins/ oral contraceptive pill)

   ALP alone: Probably bone, not liver (adolescent growth, Paget's disease, recent fracture)

   GGT alone: Usually alcohol. Consider prescribed drugs. Fatty liver (risk factors; obesity, TGs, DM)

   AST alone: Muscle injury or inflammation.

Bilirubin alone: Gilberts syndrome (usually <80mols/L)

2. UTIs in under 16s.
   https://www.nice.org.uk/guidance/cg54/chapter/1-guidance

3. Ovarian cancer – NICE guidance for women aged 18 and over.
   1 Guidance | Ovarian cancer: recognition and initial management | Guidance | NICE

4. Heavy Menstrual Bleeding
   https://www.nice.org.uk/guidance/ng88

References:

1. *A Guide to Justification for clinical radiologists, ref no: BFCR (00) 5, RCR, August 2000*
2. *Sattar N et al, Non-alcoholic Fatty liver Disease; BMJ; 349:doi:10.1136/bmj. 2014*
3. *Fraser A. Interpretation of liver enzyme tests – a rapid guide. NZFP; 34, 3: 2007*
4. *BMUS guidelines 2015*
5. *ScoR & BMUS Guidelines for professional ultrasound – Revision 3 Dec 2018; Minor amendments March 2019*
6. *NICE guidelines Oct 2018, reviewed April 2019*
7. *http://www.irefer.org.uk/*
8. *Paddock M, Ruffle A, Beattie G, et al. Do otherwise well, healthy children with palpable cervical lymph nodes require investigation with neck ultrasound? Arch Dis Child, 2020; 105 (10): 1012-1016*
9. *Newborn Infant Physical Examination (NIPE) guidelines, April 2021*

Acronyms	
ACL	Anterior Cruciate Ligament
ALT	Alanine Transaminase Test
ASPH	Ashford and St Peters Hospitals
CT	Computerised Tomography
ED	Emergency department
EPAU	Early Pregnancy Assessment Unit
LFT	Liver function test
LGI	Lower Gastrointestinal
NAFLD	Non-Alcoholic Fatty liver Disease
NSSC	Non-specific symptoms and signs of cancer
OA	Osteoarthritis
O&G	Obstetrics and Gynaecology
PCOS	Polycystic Ovary Syndrome
PMB	Postmenopausal bleeding
PN	Post Natal
RAS	Renal Artery Stenosis screening
RSCH	Royal Surrey NHS Foundation Trust
SASH	Surrey and Sussex Healthcare NHS Trust
SCJ	Sternoclavicular Joint
TFCC	Triangular Fibrocartilage Complex Tear
UGI	Upper Gastrointestinal
URTI	Upper Respiratory Tract Infection
US	Ultrasound
USC	Urgent Suspected Cancer