



BMUS RECOMMENDED GOOD PRACTICE GUIDELINES

JUSTIFICATION OF ULTRASOUND REQUESTS

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Introduction

This document is intended to support referrers to Ultrasound (US) and ultrasound providers in the appropriate selection of patients for whom ultrasound would be beneficial in terms of diagnosis and or disease management. Whilst the document is primarily directed at primary care, the guidance is relevant for other referrer groups. It has been written to aid ultrasound providers in justifying that an ultrasound examination is the best test to answer the clinical question posed by the referral. This document has been compiled by a panel of ultrasound experts to support good practice in vetting and justifying referrals for US examinations. It has been written with a pragmatic approach to managing referrals based on the panel's expert opinion. This document can be used to assist and underpin any local guidelines that are produced. Reference is made to the evidence based iRefer publication and should be used in conjunction with this <http://www.irefer.org.uk/>

The NICE guidance (NG12, Suspected Cancer: Recognition and Referral) published in June 2015 has also been considered in the production of this updated publication. In many instances NICE advise urgent direct access CT but if this is unavailable they advise that patients are referred for an urgent ultrasound examination. Local practice will dictate appropriate pathways, following consideration of capacity and demand. This BMUS document has been produced with the aim of providing practical advice as to best practice in the acceptance and justification of US referrals.

Principles

This document is based on several non-controversial principles:

- Imaging requests should include a **specific clinical question(s)** to answer, and
- Contain **sufficient information** from the clinical history, physical examination and relevant laboratory investigations to support the suspected diagnosis(es)
- The majority of US examinations are now performed by sonographers not doctors. Suspected diagnoses must be clearly stated, not implied by vague, non-specific terms such as %pain query cause+or %pathology+etc
- Although US is an excellent imaging modality for a wide range of abdominal diseases, there are many for which US is not an appropriate first line test (e.g. suspected occult malignancy)

- Given sufficient clinical information, most NHS providers will re-direct US requests to CT or MR if this is the more appropriate modality, (with the agreement of local commissioners).

This general guidance is based on clinical experience supported by peer reviewed publications and established clinical guidelines and pathways. Individual cases may not always be easily categorized and local arrangements for prompt access to specialist advice are essential.

Local guidelines should include identification of who justifies the referral, timescales for vetting and appropriate training for individuals undertaking this process.

Changes to guidelines and pathways should be approved by local governance processes. It is recommended that any referrals returned to the referrer have an accompanying letter explaining the rationale behind this. All actions should be documented and recorded on the local radiology information system(RIS).

The following examples of primary care referrals address the more common requests and are not intended to be exhaustive.

Clinical details	Comments	Justified
General Abdominal		
Abnormal/Altered LFTs	<p>Refer back for further information if this is the only information given</p> <p>Liver Function tests - Isolated enzyme rises . US generally not indicated</p> <p>ALT alone: Fatty liver (risk factors; obesity, hyperlipidaemia, DM) or Drugs (statins/ OC)</p> <p>ALP alone: probably bone NOT liver (adolescent growth, Paget's disease, recent fracture)</p> <p>GGT alone: usually alcohol. Consider prescribed drugs. Fatty liver (risk factors; obesity, TGs, DM)</p> <p>AST alone: Muscle injury or inflammation.</p> <p>Bilirubin alone: Gilberts syndrome (usually <80mols/L)</p>	X
+ one or more of the following:		

<p>Patient is symptomatic Persistent (3-6 months) duration of abnormality</p> <p>Specific LFT results must be included in the referral</p> <p>A specific diagnosis is considered</p>	<p>US not useful if asymptomatic</p> <p>NB. A single episode of mild . moderate elevation does not justify an US scan</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
<p>Raised ALT (other LFTs normal)</p> <p>US is justified if raised ALT is persistent (3-6 months) despite following weight loss and altered lifestyle guidance, and/or change in medication</p> <p>US is justified in pts with persistently raised ALT (3-6 months) and no other risk factors</p>	<p>Refer back for further information if this is the only information given</p> <p>US is NOT justified in patients with high risk factors (DM, obesity, statins & other medications which affect the liver)</p> <p>US is not justified for a single episode of raised ALT</p>	<p>X</p> <p>X</p> <p>X</p> <p>✓</p> <p>✓</p>
<p>Jaundice</p>	<p>Request must state whether painless or not. Overt &/or painless jaundice - new onset, cause unknown - requires urgent US and referral to 2 week wait clinic.</p>	<p>✓</p>
<p>Pain (RUQ/ Iliac fossa)</p>	<p>Refer back for further information Generalised or localised pain as the only symptom is not a justification for US</p>	<p>X</p>
<p>Upper abdominal mass</p>	<p>Consistent with stomach cancer</p> <p>Consistent with an enlarged gallbladder</p> <p>Consistent with an enlarged liver</p>	<p>X</p> <p>✓</p> <p>✓</p>
<p>Suspected gallbladder disease</p>	<p>Pain plus fatty intolerance and/or dyspepsia</p>	<p>✓</p>

Gallbladder polyp	There is little evidence to support the monitoring of small (<10mm) gallbladder polyps.	Local guidelines may apply
Bloating/ Abdominal distension	As the only symptom Persistent or frequent occurring over 12 times in one month, in women especially over 50 With a palpable mass Ascites? Usually due to liver or heart failure or malignancy. Likely cause should be indicated on request: Liver/Cardiac Malignancy/cancer . CT scan	X ✓ ✓ ✓ ✓ X
Altered bowel habit/ Diverticular disease	US does not have a role in the management of IBS or diverticular disease. Refer back for further information (if bowel cancer is suspected then referral via the 2 week wait is indicated)	X
Suspected Pancreatic Cancer Presenting symptoms of any of the following: Diarrhoea or constipation Nausea or vomiting Back pain with weight loss New onset Diabetes with weight loss	Consider an urgent direct access CT scan (to be performed within 2 weeks) Ultrasound imaging in the first instance may be appropriate depending upon local pathways. Advise to discuss and agreed local guidelines with secondary care physicians	x Local guidelines may apply ⁽⁶⁾
Diabetes - known	US does not have a role in the management of diabetes. Up to 70% of patients with DM have a fatty liver with raised ALT. This does not justify a scan	X
Renal Tract		
Urinary tract Infection	First episode Recurrent (> = 3 episodes in 12 months) , especially in the over 60 age group	X ✓

	Non-responders to antibiotics Frequent re-infections H/O stone or obstruction	✓ ✓ ✓
Hypertension	Routine imaging not indicated. RAS (renal artery screening) no longer offered.	Local guidelines may apply
Haematuria Suspected Bladder Cancer/Suspected Renal Cancer	2WW referral required if they are (usually as part of a one stop clinic): <ul style="list-style-type: none"> • Aged over 45 and over and have unexplained visible haematuria without urinary tract infection or • Visible haematuria that persist or recurs after successful treatment of a UTI • Are aged over 60 and have unexplained non-visible haematuria and either dysuria or raised white cell count 	✓ (7)
Small Parts		
Lymphadenopathy	Patients with clinically benign groin, axillary or neck lymphadenopathy do not benefit from US Small nodes in the groin, neck or axilla are commonly palpable. If new and a source of sepsis is evident, Ultrasound is not required.. If malignancy is suspected US +/- FNA or core biopsy is appropriate. Signs of malignancy include : increasing size, fixed mass, rubbery consistency Appropriate imaging will depend upon the nature of the suspected primary.	X
Soft Tissue Lump	The majority of soft tissue lumps are benign and if there are classical clinical signs of a benign lump then US is not routinely required for diagnosis. <5cm stable, soft ,mobile ,non-tender lumps do not routinely warrant US. Uncomplicated ganglia and small lipomata do not routinely require	X X

	<p>imaging.</p> <p>If findings are equivocal however and diagnosis is essential to management eg wrist mass ?ganglion?radial artery aneurysm,excision planned+ . then US is clearly warranted on a routine basis .</p> <p>Significant findings (including >5cm,fixed,tender mass ,increasing in size, overlying skin changes , etc) should either be scanned on an urgent basis or referred into a soft tissue sarcoma pathway (depending on local policy)</p>	<p>✓</p> <p>✓</p>
Scrotal mass	Any patient with a swelling or mass in the body of the testis should be referred urgently.	✓
Scrotal pain	<p>Acute pain, in the absence of suspected torsion or acute epididymo-orchitis is an appropriate indication for an ultrasound referral. (Suspected torsion requires urgent urological referral which should not be delayed by imaging) Where the clinical diagnosis is unclear US is indicated and will influence management.</p> <p>Uncomplicated epididymo-orchitis does not require routine US examination.</p> <p>US is appropriate to evaluate suspected complications eg abscess or when pain and symptoms persist despite antibiotic treatment .</p> <p>Chronic varicocele ,uncomplicated hydrocele and epididymal cysts do not require routine ultrasound evaluation providing that the clinical examination is unequivocal in identifying that the mass is extra testicular.</p> <p>However where there is clinical doubt, and if the testicle cannot be palpated separate to the mass (eg large hydrocele) then US is warranted.</p>	<p>✓</p> <p>X</p> <p>✓</p> <p>X</p> <p>✓</p>

	<p>Ultrasound in chronic testicular pain in the absence of a mass/abnormal examination is generally unhelpful; it may be more prudent to stream these referrals through a local urological pathway .</p>	X
?Hernia	<p>If characteristic history& exam findings, eg reducible palpable lump or cough impulse, then US not routinely required.</p> <p>If there is clinical doubt however then US is of value.</p> <p>Irreducible and/or tender lumps suggest incarcerated hernia and require urgent surgical referral.</p> <p>If groin pain present, clinical assessment should consider MSK causes and refer accordingly</p>	<p>X</p> <p>✓</p> <p>X</p> <p>X</p>
Head and Neck		
Thyroid Nodule	<p>Local guidelines may be in place but routine imaging of established thyroid nodules/goitre is not recommended. Ultrasound may be required where there is doubt as to the origin of a cervical mass ie is it thyroid in origin.</p> <p>Routine fine needle aspiration (FNA) of benign thyroid nodules is not indicated, FNA is reserved for when equivocal, suspicious or malignant features are detected on US. Routine follow up of benign nodules is not recommended. Use of the BTA guidelines: as to stratification of risk of malignancy based on sonographic features ,is advised .</p> <p>Clinical features that increase the likelihood of malignancy include :history of irradiation, male sex, age (<20,>70),fixed mass, hard/firm consistency, cervical nodes, change in voice, family history of MEN II or papillary Ca.</p>	<p>X</p> <p>(6 & 8)</p>

Salivary mass	<p>If there is a history suggestive of salivary duct obstruction, sialography may be the more appropriate initial investigation, depending on local practice.</p> <p>For a suspected salivary tumour, US (+/- FNA/core biopsy)is recommended. The majority of parotid tumours will be benign however US guided FNA or core biopsy is recommended when a mass is detected to exclude malignancy</p>	
Gynaecology		
Pelvic Pain ? cause	<p>US is unlikely to contribute to patient management if pain is the only symptom.</p> <p>In patients >50, the likelihood of pathology is increased, and the request may be accepted, provided a specific clinical question has been posed.</p>	<p>X</p> <p>✓</p>
Pain + Palpable mass Raised CRP or WCC Nausea/Vomiting Menstrual Irregularities Dyspareunia >6 wks duration	<p>A specific clinical question / differential diagnosis is required</p> <p>The addition of another clinical symptom justifies the request.</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
Pain + H/o ovarian cyst H/o PCOS Severe or sudden pain Rule out or ?appendicitis Rule out or ?ovarian cyst Rule out or ?anything else	<p>A specific clinical question / differential diagnosis is required</p> <p>These do not represent further clinical symptoms, and the request should be referred back.</p> <p>Vague 'notions' of a diagnosis with no real basis, or requests for purposes of reassurance should be rejected pending more information</p>	<p>X</p>

Bloating	<p>Refer back for further information.</p> <p>Persistent or frequent occurring over 12 times in one month, in women especially over 50 with a palpable mass Persistent bloating <i>with the addition</i> of other symptoms, such as a palpable mass/ raised Ca 125, is acceptable.</p> <p>A specific clinical question is required.</p> <p>Intermittent bloating is not acceptable.</p> <p>(CT may be the preferred test in GI tract related symptoms, and further clinical info is required.)</p>	<p>X</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>X</p>
Follow-up of benign lesions e.g. fibroids, dermoids	<p>There is no role for US in follow-up or in treatment monitoring.</p> <p>If the pt has undergone a clinical change, then re-scan is acceptable</p>	<p>X</p> <p>✓</p>
Follow-up of benign cysts Pre Menopausal Women	<p>Repeating ultrasound assessment in the postmenstrual phase may be helpful in cases of doubt and endometrial views may contribute to diagnosis in cases of estrogen-secreting tumours of the ovary.</p>	<p>✓</p> <p>(9)</p>
Follow-up of benign cysts Post Menopausal Women	<p>Asymptomatic, simple, unilateral, unilocular ovarian cysts, less than 5 cm in diameter, have a low risk of malignancy. In the presence of normal serum CA125 levels, these cysts can be managed conservatively, with a repeat evaluation in 4. 6 months. It is reasonable to discharge these women from follow-up after 1 year if the cyst remains unchanged or reduces in size, with normal CA125, taking into consideration a woman's wishes and surgical fitness.</p> <p>If a woman is symptomatic, further</p>	<p>✓</p> <p>(10)</p>

	surgical evaluation is necessary	
Post-Menopausal Bleeding (PMB)	Should include information about the LMP (i.e. be post rather than peri-menopausal) and relevant HRT status. Local pathways which include direct referrals into gynaecology under a 2WW are most appropriate. Scan with view to progress to hysteroscopy is recommended pathway	✓
Vaginal discharge (unexplained) either at first presentation or with thrombocytosis or with haematuria, in women 55 and over	NICE Guidance Suspected endometrial cancer Consider a direct access ultrasound scan	✓
Blood glucose levels high with visible haematuria in women 55 and over	Suspected endometrial cancer Consider a direct access ultrasound scan	✓
PCOS	Only useful in secondary care if investigating infertility diagnosis of PCOS should be based on: <ol style="list-style-type: none"> 1. Irregular menses. 2. Clinical symptoms and signs of hyperandrogenism such as acne, hirsutism. 3. Biochemical evidence of hyperandrogenism with a raised free androgen index (the testosterone is often at the upper limit of normal) 4. Biochemical exclusion of other confounding conditions 	X

Referral guidelines for Musculoskeletal Ultrasound

Introduction.

Many musculoskeletal pathologies are diagnosed successfully by good clinical examination. Incidental pathology is common and may not be the current cause of symptoms . clinical correlation is always required.

As equipment and training improve, more structures and pathologies are identified using ultrasound so this list may vary between Radiology departments as there may be individual radiologist/sonographers locally with a special interest in a specific field which will increase their scope of practice.

Joints . may see pathology arising from joints on ultrasound but we cannot exclude intra articular pathology and MRI is a more complete examination if symptoms warrant imaging and clinical examination suggests joint pathology. Equally, if there is ligament damage on the external surface of a joint, concurrent damage to internal structures cannot be excluded.

Joint OA or fracture . whilst this can often be visualised with ultrasound it is usually an incidental finding of synovitis or a stress fracture - X ray is still the first line imaging modality

Important Notes:

- There should be definite / clear clinical diagnosis / question on the request.
- US is good diagnostic modality if a specific question is to be answered.
- For example, requests that should be returned to the referrer include:
 - Knee, foot, ankle pain ? cause
 - Knee injury ? ACL tear
 - Chest pain ? cause
 - Back pain ? nerve pain ? thigh or leg

Clinical details	Comments	Justified
Soft tissues - general		
Tenosynovitis/rupture		✓
Tendinopathy . specific tendon should be mentioned		✓
Tendon sheath effusions - specific tendon should be mentioned	Cannot differentiate between infected and non-infected effusion . US guided aspiration may be required	✓
Calcific tendinopathy - specific tendon should be mentioned		✓

Foreign body		✓
Joints		
Synovitis/erosions	May need to be directed to a rheumatology pathway (depending on local practice)	✓
Effusion		✓
Septic arthritis	To confirm/exclude effusion and guide aspiration if required	✓
Loose bodies		X
Labral pathology		X
Cartilage pathology		X
Intra articular pathology		X
In addition in individual areas:		
Wrist/Hand		
Bone erosions	May need to be directed to a rheumatology pathway (depending on local practice)	✓
Pulley/sagittal band injury/ruptures		✓
Thumb/finger collateral ligament injuries		✓
TFCC tear	MRI superior	X
TFCC calcification	Seen on x ray	X
Median nerve	Indicated to look for carpal tunnel mass only. May detect neuritis however cannot diagnose CTS on ultrasound	✓
Ulnar nerve compression	To exclude mass causing compression of ulnar nerve	✓
Elbow		
Distal biceps tendon tear	Small insertional tears may be difficult to exclude	✓

Ulnar nerve neuropathy/subluxation	To exclude mass at ulnar canal /medial epicondyle and can confirm subluxation	✓
Median/Radial nerve compression	To exclude external compression (difficult to assess for focal neuritis)	✓
Shoulder		
Site and size of RC tears		✓
Post op cuff failure		✓
LHB dislocation/rupture		✓
Adhesive capsulitis/Frozen shoulder	Clinical diagnosis (ultrasound examination is unremarkable) Ultrasound may be required to exclude other pathologies	?
Acromioclavicular OA/instability Sternoclavicular joint disease		X
Occult greater tuberosity fracture	May be used to confirm origin of mass ie osteoarthritic joint if clinical concern	X
Glenohumeral joint instability	Cannot exclude fracture on US	X
Labral pathology	MRI MRI	X
Ankle/foot		
Erosive arthropathy	May need to be directed to a rheumatology pathway (depending on local practice)	✓
Peroneal tendon tenosynovitis/subluxation		✓
Posterior tibial tendonopathy		✓
Achilles tendon tendinopathy/tears/calcification	Clinical examination for tendonopathy generally accurate ,US may be required to exclude underlying tear.	✓

Retrocalcaneal/pre Achilles bursitis		✓
Anterior talofibular ligament Calcaneofibular ligament Posterior talofibular ligament Deltoid ligament	Anterior/mid lateral ligaments can be seen ,difficult to exclude pathology in medial ligaments however patients with potential ankle instability may need referral to a specific orthopaedic pathway for assessment +/- MRI	X
Plantar fasciitis/fibroma		✓
Morton's neuroma		✓
Hip		
Effusion/synovitis		✓
Adductor tear		✓
Trochanteric pain	Can be used to guide diagnostic/therapeutic injections but often nil seen on initial diagnostic scan. Cannot definitively excluded trochanteric bursitis/trochanteric pain syndrome	Not Routinely required should be a clinical diagnosis
Knee		
Suprapatellar/infrapatellar/pre patellar bursitis		✓
Patellar tendinopathy/tear/calcification		✓
Quadriceps tendinopathy/tear/calcification		✓
Osteochondritis		X
Baker's cyst		✓

REFERENCES:

- 1 Map of Medicine, <http://www.mapofmedicine.com/> June 2012
 - 2 A Guide to Justification for clinical radiologists, ref no: BFCR (00) 5, RCR , August 2000
 - 3 iRefer Guidelines: Making the best use of clinical radiology, Version 8.0.1
 - 4 Sattar N et al, Non-alcoholic Fatty liver Disease; BMJ;349:doi:10.1136/bmj. 2014
 - 5 Fraser A. Interpretation of liver enzyme tests . a rapid guide. NZFP; 34, 3: 2007
 - 6 NICE NG12, Suspected Cancer: Recognition and Referral, June 2015
<http://www.nice.org.uk/guidance/ng12>
 - 7 NICE Guideline Suspected Cancer: Recognition & Referral June 2015
https://www.baus.org.uk/_userfiles/pages/files/Publications/BAUS%20Cancer%20Guidelines%20Summary.pdf
 - 8 Management of thyroid cancer. British Thyroid Association Guidelines.
<http://onlinelibrary.wiley.com/doi/10-1111/cen.12515/pdf>
 - 9 RCOG Green-top Guideline No. 62, Management of Suspected Ovarian Masses in Premenopausal Women, Royal College of Obstetricians and Gynaecologists, November 2011
 - 10 RCOG Green-top Guideline No. 34, The Management of Ovarian Cysts in Postmenopausal Women, Royal College of Obstetricians and Gynaecologists, July 2016
 - 11 Clinical indications for musculoskeletal ultrasound, Kaluser A, Tagliafico A, Allen G Eur Radiol (2012) 22:1140-1148
 - 12 Practical Musculoskeletal Ultrasound, Eugene McNally Second edition Churchill Livingstone 2014
 - 13 Ultrasound of the shoulder, Allen G, Wilson D European Journal of Ultrasound 2001 14:1 3-9
- Management of thyroid cancer. British Thyroid Association Guidelines.
<http://onlinelibrary.wiley.com/doi/10-1111/cen.12515/pdf>