Friends Medical Service

Ultrasound Referral Guidelines

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Referrers should be aware of patient information provided on the Friends Medical Service website. Referrers must provide the patient with sufficient knowledge of their referral to assist in the appropriate and valid process of consent by imaging professionals prior to examinations. Referrers must also add to requests for imaging, any issues which may be relevant to the consent process such as lack of capacity.

Section 1 - Head, Neck and Body Ultrasound

Introduction

This document is intended to support referrers to Ultrasound (US) and ultrasound providers in the appropriate selection of patients whom ultrasound would be beneficial in terms of diagnosis and or disease management. This 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 referrer. Reference is made to the evidence based iRefer publication and should be used in conjunction with this http://irefer.org.uk/

Principles

This document is based on several principles:

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

This protocol is based on clinical experience supported by peer reviewed publications and established clinical guidelines and pathways. Individual cases may not always be easily categorised and there may be a requirement for specialist advice.

Patients with symptoms of cancer should be referred to secondary care as a 'red flag' or suspect cancer referral through the Red Flag Referral Office.

1.1 Head and Neck

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Cranial Facial (Soft Tissue)	New or chronic subcutaneous mass / lump with any of following criteria:- ● Rapidly growing mass / lump ● Deep or fixed ● >5cm ● Recurrence after previous excision ● Significant findings (including > 5cm, fixed, tender mass, overlying skin changes, etc.)	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	New subcutaneous mass / lump without above criteria Chronic mass increasing in size without above criteria	Urgent	Urgent
	Chronic mass	Routine	Routine
Salivary glands. Submandibular/ parotid / submental	Salivary mass / lump rapidly growing	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	Salivary mass / lump		Urgent
	Salivary obstruction	Routine	Routine
Parathyroid **All must have sestamibi test requested.	Primary Hyperparathyroidism - ****All must have sestamibi test requested.** ● Parathyroid adenoma ● Hypercalcaemia	Routine	Routine
	Hyperparathyroidism with acute Renal failure	Urgent	Urgent

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Thyroid	Thyroid nodules +/- FNA ● Rapidly growing palpable nodule	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	Thyroid nodules +/- FNA ● Palpable nodule		Urgent
	PET positive lesion	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office.	Red Flag
	Palpable nodule. Recurrence after previous excision	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	Goitre /swelling	Routine	Routine
	Hyperthyroidism / Thyrotoxicosis/ thyroid antibodies positive/ Hashimoto's thyroiditis autoimmune disorder - **No FNA as per ENT**	Routine	Routine
	Swallowing discomfort / dysphagia - **GI or ENT Referral advised**	Not indicated	Not indicated
	Abnormal thyroid function tests - **Endocrinology referral advised**	Not indicated	Not indicated

Thyroid biopsy	U4 or U5 nodule Repeat FNA for insufficiency	As advised by Radiology	Red Flag Red Flag
	U3 nodule Repeat FNA for insufficiency	As advised by Radiology	Urgent Urgent
	Thy 2 nodule, repeat at 1 year - **No follow up required as per ENT**	Not indicated	Not indicated

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Neck	Neck mass / lump of unknown origin	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	Rapidly growing palpable mass / lump		Red Flag
	Palpable mass / lump		Urgent
	Palpable mass / lump. Recurrence after previous excision	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office. Urgent	Red Flag
	PET positive lesion	Secondary Care Referral advised- If Cancer is the primary differential then GP's should refer the patient through the Red Flag Referral Office.	Red Flag

	Thyroglossal cyst + malignancy / infection suspected Thyroglossal cyst	Urgent Routine	Urgent Routine
	Swelling – no definite mass / lump	Routine	Routine
	Chronic mass / lump	Routine	Routine
	Swallowing discomfort / dysphagia - **GI or ENT Referral advised**	Not indicated	Not indicated
	Hoarseness - **ENT Referral advised**	Not indicated	Not indicated
	ENT follow-up – post surgery or after treatment	Planned	Planned
Neck biopsy		As advised by Radiology	As requested

1.2 Soft Tissue

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Soft tissue Superficial soft tissue lump	New or chronic subcutaneous lump with following criteria:- ● Rapidly growing mass / lump ● Deep or fixed ● >5cm ● Recurrence after previous excision ● Significant findings (including > 5cm, fixed, tender mass, overlying skin changes, etc.)	Urgent + Referral into a soft tissue sarcoma pathway through the Red Flag Referral Office	Red Flag.
	New subcutaneous mass / lump without above criteria Chronic subcutaneous mass increasing in size without above criteria	Urgent	Urgent
	Lipoma	Routine	Routine
	Foreign Body		

Head ***Neck*** ***Axilla*** ***Chest*** ***Abdomen*** ***Pelvis*** ***Back*** ***Small Parts*** ***Upper Limb*** ***Lower Limb***	• Acute problem • Chronic problem	Urgent Routine	Urgent Routine
Soft tissue Penis	All clinical history – Direct consultation with Radiologist	Secondary referral	Direct consultation with Radiologist

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1.3 Thorax

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Axilla Refer also to Soft Tissue protocol ****Breast involvement / history - Refer to Breast clinic.** Female patients – should be referred to the breast clinic.	New or chronic subcutaneous lump with following criteria:- ● Rapidly growing mass / lump ● Deep or fixed ● >5cm ● Recurrence after previous excision ● Significant findings (including > 5cm, fixed, tender mass, overlying skin changes, etc.) **Breast involvement / history breast lumps, redness / discharge etc.- Refer to Breast clinic**	Urgent + Referral into appropriate secondary care pathway (soft tissue sarcoma pathway / Breast clinic) through the Red Flag Referral Office.	Red Flag – Provided there is no Breast history, no breast lumps, redness/ discharge etc. **Breast involvement / history - Refer to Breast clinic.**
	New subcutaneous mass / lump without above criteria Chronic subcutaneous mass / lump increasing in size without above criteria	Urgent	Urgent
	Lipoma	Routine	Routine
Chest ****Not performed in radiology**	Pleural effusion suspected **Refer to Respiratory**	Not performed in radiology	Not performed in radiology
	Suspected pericarditis or pericardial effusion **Refer to Cardiology**	Not performed in radiology	Not performed in radiology
Breast **Male + Female** ****Not performed in radiology**	Breast cancer diagnosis **Refer to Breast clinic**	Not performed in radiology	Not performed in radiology
	Breast inflammation/lump/swelling/Gynecomastia **Refer to Breast clinic**	Not performed in radiology	Not performed in radiology

1.4 Abdomen

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Upper abdomen *(Continued on next page)*	Obstructive LFT's (must state obstructive pattern on request). ● Obstructive with pain ● Obstructive without pain ● Jaundice new onset painless Abnormal / deranged LFT's (non-obstructive pattern)	 Urgent Urgent + Refer through Red Flag pathway Urgent + Refer through Red Flag pathway Routine	 Urgent Red Flag Red Flag Routine
	Liver – Query metastatic disease	Urgent + Refer through Red Flag pathway	Red Flag
	Liver follow up.HCC surveillance scans. 6monthly focused Liver scan recommended	Planned	Planned
	Patients with a diagnosis of primary sclerosing cholangitis(PSC) Annual abdominal ultrasound is recommended.	Planned	Planned
	Liver follow up. Ca bowel post op. Query metastases	Not indicated	Not indicated
	Occult neoplasm / Recent unexplained weight loss **CT first line of investigation** **Ultrasound indicated where CT negative / indeterminate / non-contrast**	Urgent + Refer through Red Flag pathway	Red Flag
	Mass in abdomen	Urgent + Refer through Red Flag pathway	Red Flag
	Hepatosplenomegaly / Splenic abnormality / enlargement.	Urgent	Urgent
	Increased Amylase Levels / Hyperamylasemia – suspected gallbladder related pancreatitis. Assess GB or stones in ducts (US Biliary Tree only) **Pancreatitis/pancreatic mass (discuss with radiologist as should have CT and US)**	Urgent	Urgent
	Pancreatic cyst follow-up - As advised on previous imaging	Planned	Planned
	Aortic aneurysm - palpable pulsatile mass (1st presentation request only Scan abdomen)	Urgent	Urgent

	Follow-up	Planned	Planned
	RUQ / Epigastric pain / Fatty liver / Gallstones / RUQ / Epigastric pain / Flank pain	Routine	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Upper abdomen (Continued)	Bloating and wind with no other clinical indications	Not indicated	Not indicated
	Loss of appetite with no other clinical	Not indicated	Not indicated
	Pyrexia / fever of unknown origin	Not indicated	Not indicated
	Fatty liver follow-up	Not indicated	Not indicated
	GB POLYPS **Under 50 with no other risk factors for Gallbladder malignancy** (Primary sclerosing cholangitis, Indian ethnicity, Sessile polyp(wall >4mm)) **Polyp less than 6mm**:- Follow-up scan at 1,3 and 5years. **Polyp 6-9mm**:- Follow-up scan at 6months then annually for 5 years. **Polyp 10mm or greater**:- cholecystectomy should be considered. If not suitable for or refuses surgery:-Follow-up scan at 6months then annually for 5 years. **Over 50 OR with other risk factors for Gallbladder malignancy** (Primary sclerosing cholangitis, Indian ethnicity, Sessile polyp(wall >4mm)) **Polyp less than 6mm**:- Follow-up scan at 6months then annually for 5 years. **Polyp 6mm or greater**:- cholecystectomy should be considered. If not suitable for or refuses surgery:-Follow-up scan at 6months then annually for 5 years. During Follow-up if polyp:-	Planned Not indicated Planned Not indicated	Planned Not indicated Planned Not indicated

	• Increases by 2mm or more:- cholecystectomy should be considered. • Reaches 10mm:- cholecystectomy should be considered. • Disappears :- discontinue follow-up As per Joint guidelines between the European Society of Gastrointestinal and Abdominal Radiology (ESGAR), European Association for Endoscopic Surgery and other Interventional Techniques (EAES), International Society of Digestive Surgery – European Federation (EFISDS) and European Society of Gastrointestinal Endoscopy (ESGE)	Planned	Planned

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
	Anaemia with no other clinical indications.(potential association with renal tumours)	Not indicated	Routine
	Adrenal Gland- all indications	Not indicated (CT/MRI required)	Not indicated (CT/MRI required)
	Nodes - **CT is investigation of choice**	Not indicated	Not indicated
	Follow up of liver abscess	Planned	Planned
	Ascites.	Urgent	Urgent
	Ascites-marked for tapping	Inpatient Referral only	Inpatient Referral only
	Upper abdominal + RIF/LIF pain.	Routine	Routine
	Pulmonary embolus, looking for a source of their embolus Recommended line of investigation - CXR and CT abdomen/pelvis (depending on age).	Not indicated	Not indicated CXR and CT abdomen / pelvis (depending on age)

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Renal tracts / Urinary Tracts	Haematuria-macroscopic / frank / visible Cystoscopy and CT urography often more appropriate	**Under 50** Urgent	**Under 50** Urgent

		50+ NO APPROVAL &Red Flag Urology referral advised	**50+** NO APPROVAL &Red Flag Urology referral advised
	Haematuria-microscopic	Routine	Routine
	Acute / chronic renal failure / injury (non-traumatic), rising urea, creatinine ? Obstruction	Urgent	Urgent
	Pelvic / Bladder mass - **Refer to Urology**	Urgent + Refer to Urology	Urgent
	Acute Renal colic - ED referral advised	Not indicated - CT KUB required ED referral advised	Not indicated -Please consider CT KUB as first line investigation
	Ongoing flank pain-non acute ?Renal calculi	Routine	Routine
	Follow-up on calculi - As advised on previous imaging	Routine	Routine
	Dysuria	Routine	Routine
	Acute Urinary retention	Urgent	Urgent
	LUTS / recurrent UTI's / Nocturia (nocturnal polyuria) / frequency or retention / incomplete bladder emptying / Prostate enlargement	Routine	Routine
	Increased Blood Pressure - to assess kidneys ● >50 yrs refer for CTAngiogram ● <50 yrs refer for MRAngiogram **Ultrasound no longer indicated.**	Not indicated	Not indicated
	Pyelonephritis not responding to treatment	Urgent	Urgent Please consider CT as first line of investigation

	Varicocele detected. Renal Tract >40 years of age presenting with a newly symptomatic varicocele, scan renal tract on affected side.	Routine	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Doppler Renal	Uncontrolled hypertension (^ BP) ● not responding to medication ● new onset <35 years of age ● reduced renal function following ACE inhibitors **Doppler US is less accurate than MRA or CTA and should only be used when both are contraindicated or unavailable.** Ultrasound no longer indicated. " >50 yrs refer for CTAngiogram " <50 yrs refer for MRAngiogram Please discuss with radiologist if contraindicated	Not indicated	Not indicated Discuss with Radiologist if CTA/MRA is contraindicated.
Anterior Abdominal wall	Post-surgical collection	Urgent	Urgent
	Endometriosis of the abdominal wall - pain / swelling at C-section scar.	Urgent	Urgent
	Hernia	Routine	Routine
	Pain at site of post-surgical hernia repair.	Routine	Routine
Bowel	● Suspected acute appendicitis (AA) ● Diverticulitis ● Inflammatory bowel disease (IBD)	Not currently performed in FMS radiology	Not currently performed in FMS radiology

1.5 Pelvis

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Testes	Testicular mass / lump	Urgent + Red Flag Urology referral advised.	Red Flag
	Haematospermia	Not indicated for single episode. If recurrent please consider Urology opinion for prostate evaluation.	Not indicated for single episode. If recurrent please consider Urology opinion for prostate evaluation.
	Traumatic injury	Emergency Secondary Care Referral advised	Emergency Inpatient referral
	Post-surgery collection / haematoma Spermatic Cord Hematoma	Urgent + Refer to Urology	Urgent
	Testicular swelling Orchitis / Epididymitis/ Epididymo-orchitis	Urgent	Urgent
	Azoospermia (Fertility)	Routine	Routine
	Testicular pain	Routine	Routine
	Epididymal cyst	Routine	Routine
	Hydrocele ● Primary presentation ● Recurrent post-surgery **Follow up on hydrocele is not indicated**	Routine	Routine
	Varicocele +/- Renal Tract	Routine	Routine

	>40 years of age presenting with a newly symptomatic varicocele, scan renal tract on affected side.		

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Testes (continued)	Varicocele follow-up	Planned	Planned
	Varicocele for embolization	Routine	Routine
	Microlithiasis follow-up Patients with **NO OTHER** risk factors for testicular cancer no further imaging or biochemical follow-up is necessary. Patients **WITH** risk factors for testicular cancer, referral to a urologist for	Not indicated Planned As advised by Urology	Not indicated Planned
	Testicular cancer surveillance	Planned As advised	Planned As advised
	Follow-up advised on previous radiology report	Planned As advised	Planned As advised
Penis	All clinical history – Direct consultation with Radiologist	Secondary referral only	Direct consultation with Radiologist
Groin	Rapidly growing mass / lump	Urgent + Refer through Red Flag pathway	Red Flag
	**Lymphadenopathy **	Revisit with team	Revisit with team
	Hernia / groin pain	Routine	Routine
Groin biopsy	Groin node tissue diagnosis – may be better with lymph node excision.	Secondary referral only	Direct consultation with Radiologist

Anus	Incontinence , Sphincter tear	No service currently	No service currently
Prostate	TRUS biopsies	Urology Referral only	As Requested

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Female Pelvis *(Continued on next page)* Transvaginal scan (examination of choice where suitable) / Transabdominal scan	Abnormal vaginal discharge / Signs/symptoms of pelvic infection **Not indicated - Gynaecology referral advised.**	Not indicated - Gynaecology referral advised	Urgent
	Palpable Pelvic mass	Secondary referral only Refer through Red Flag Gynaecology pathway	Red Flag
	Bloating/pelvic pain with raised ca125 Bloating / pelvic pain with no other clinical indications	Urgent Routine	Urgent Routine
	Postmenopausal bleeding	Urgent	Urgent
	Unexplained weight loss + relevant gynaecological clinical indications	Urgent	Urgent
	Irregular / intermenstrual bleeding	Urgent	Urgent
	Menorrhagia Amenorrhea Oligomenorrhea Dysmenorrhea	Routine	Routine
	Polycystic ovaries **No follow-up required**	Routine	Routine
	Simple Ovarian cyst Reproductive age: 2.5-5.0cms – no follow-up required. Postmenopausal: •Simple cysts less than 1cm do not need follow-up •Simple cysts more than 1cm but less than 5cm All females: Cyst>5cms	As per gynae reporting guidelines No follow-up required. No follow-up required. Rescan 4-6 months Not indicated Gynae referral	As per gynae reporting guidelines No follow-up required. No follow-up required. Rescan 4-6 months Not indicated Gynae referral
	Complex Ovarian cysts		

	Haemorhagic cyst Endometrioma Simple cyst with septae Solid / cystic complex cyst	Rescan 3 months Rescan 3 months Rescan 6 weeks Red Flag Gynaecology referral	Rescan 3 months Rescan 3 months Rescan 6 weeks Red Flag Gynaecology referral

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Female Pelvis (continued) Transvaginal scan (examination of choice where suitable) / Transabdominal scan	Fibroid	Routine	Routine
	Family history of uterine or ovarian Cancer with no other clinical indicators	Routine	Routine
	Infertility- primary or secondary	Routine	Routine
	Follow-up of abnormality - As advised on previous imaging	Planned	Planned
	Precocious Puberty, delayed menses or vaginal bleeding in a pre-pubertal child.	Urgent	Urgent
	ICUD localisation	Routine	Routine
	Pelvic organ prolapse - Gynaecology referral Advised	Not Indicated	Not Indicated

Section 2 - Vascular Ultrasound

2.1 Arterial Ultrasound

The indications for peripheral arterial ultrasound examination include but are not limited to the following:

1. Detection of stenosis or occlusions in segments of the peripheral arteries in symptomatic patients with suspected arterial occlusive disease. These patients could present with recognized clinical indicators, such as claudication, rest pain, ischemic tissue loss, an aneurysm, and arterial embolization.
2. Monitoring of sites of previous surgical interventions, including sites of previous bypass surgery with either synthetic or autologous vein grafts.
3. Monitoring of sites of various percutaneous interventions, including angioplasty, thrombolysis / thrombectomy, atherectomy, and stent placements.
4. Follow-up for progression of previously identified disease, such as documented stenosis in an artery that has not undergone intervention, aneurysms, atherosclerosis, or other occlusive diseases.
5. Evaluation of suspected vascular and perivascular abnormalities, including such entities as masses, aneurysms, pseudoaneurysms, arterial dissections, vascular injuries, arteriovenous fistulas, thromboses, emboli, and vascular malformations.
6. Mapping of arteries before surgical interventions.
7. Clarifying or confirming the presence of significant arterial abnormalities identified by other imaging modalities.
8. Evaluation of arterial integrity in the setting of trauma.
9. Evaluation of patients suspected of thoracic outlet syndrome, such as those with positional numbness, pain tingling, or a cold hand.
10. The Allen test to establish patency of the palmar arch.
11. Temporal artery evaluation to rule out temporal arteritis and/or localize temporal arterial biopsy.

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Carotid artery	TIA	Secondary Care Referral advised	Urgent
	Left / Right sided symptoms	Secondary Care Referral advised	Urgent
	Pre-op workup CABG surgery / MVR Patency of the carotid arteries is essential to provide the brain with adequate blood supply during by-pass surgery.	Secondary Care Referral advised	Urgent
	Visual impairment	Secondary Care Referral advised	Routine
Aorta	Aortic aneurysm – palpable pulsatile mass (1st presentation request only Scan abdomen) Aortic aneurysm surveillance.	Urgent Planned	Urgent Planned
Renal Doppler	• >50 yrs refer for CTAngiogram • <50 yrs refer for MRAngiogram **Ultrasound no longer indicated.**	Routine	Routine
Peripheral Arterial Doppler.	Intermittent claudication - **Refer to Vascular Clinic** CT / MRI Angiography performed in radiology	Not performed in radiology	Not performed in radiology
	Absent ankle or foot pulses - **Refer to Vascular Clinic** CT / MRI Angiography performed in radiology	Not performed in radiology	Not performed in radiology
	Discolouration and/or leg ulceration - **Refer to Vascular Clinic** CT / MRI Angiography performed in radiology	Not performed in radiology	Not performed in radiology
	Diabetic neuropathy - **Refer to Vascular Clinic** CT / MRI Angiography performed in radiology	Not performed in radiology	Not performed in radiology

	Peripheral Pseudo-aneurysm (only)	Secondary Care Referral advised	Urgent

2.2 Venous Ultrasound

The indications for peripheral venous ultrasound examinations include but are not limited to.

1. Evaluation of possible venous thromboembolic disease or venous obstruction in symptomatic or high-risk asymptomatic individuals.
2. Serial evaluation may be necessary in some high-risk individuals (e.g. based on history, pre-test probability, and /or D-dimer test) whose initial examination is negative for deep venous thrombosis.
3. Assessment of venous insufficiency, reflux, and varicosities.
4. Post-procedural assessment of venous ablation or other interventions.
5. Assessment of dialysis access.
6. Venous mapping before surgical procedures.
7. Evaluation of veins before venous access.
8. Follow-up for patients with known venous thrombosis at or near the anticipated end of anticoagulation to determine if residual venous thrombosis is present.
9. Follow-up of patients with known calf (distal) deep venous thrombosis who are not being treated but are being monitored for progression.

Follow-up of patients with known venous thrombosis on therapy and who undergo a clinical change and where a change in the response will alter treatment

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Peripheral Venous Doppler ultrasound	Deep Vein Thrombosis (DVT) Lower Extremity ● pain ● redness of the skin ● warmth of the skin ● swelling of the area AND Pre-test probability Wells score of 2 points or more and / or D-dimer score of >0.5	ED referral only	Urgent
	Follow-up of patients with a Wells 'Likely' score, D-dimer score >0.5 and Negative proximal DVT who are being monitored as there is a risk of calf (distal) deep venous thrombosis progression to proximal veins.	Secondary referral only	Planned
	Pregnant patients with ?PE:- In women with suspected PE who **also have symptoms** and signs of DVT, compression duplex ultrasound should be performed. If compression ultrasonography confirms the presence of DVT, no further investigation is necessary and treatment for VTE should continue. [New 2015] In women with suspected PE **without symptoms** and signs of DVT, a ventilation/perfusion (V/Q) lung scan or a computerised tomography pulmonary angiogram (CTPA) should be performed. [New 2015]	Secondary referral only Not Indicated	Urgent Not indicated
	Follow-up for patients with known deep venous thrombosis **Only if will alter management - Surgery ordered**	Secondary referral only	Only if will alter management – Surgery ordered
	Follow-up of patients with known calf (distal) deep venous thrombosis who are not being treated but are being monitored for progression	Secondary referral only	Only if will alter management – Surgery ordered
	Possible venous thromboembolic disease / venous obstruction - PIC Upper Extremity (as per DVT lower extremity protocol)	Secondary referral only	Only if will alter management – Surgery ordered
	Pulmonary embolus, looking for a source of their embolus- **Recommended line of investigation - CXR and CT abdomen/pelvis (depending on age).**	Not indicated	Not indicated CXR and CT abdomen / pelvis (depending on age)
	Postoperative surgery / Previous Ca / Pregnancy	Secondary referral only	Urgent

	+/ – Pre-test probability Wells score of 2 points or more and / or D-dimer score of >0.5		

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Peripheral Venous Doppler ultrasound	Assessment of venous insufficiency, reflux, and varicosities - **Refer to Vascular Clinic** .	Not performed in radiology	Not performed in radiology
	Post-procedural assessment of venous ablation or other interventions. **Refer to Vascular Clinic**	Not performed in radiology	Not performed in radiology
	Assessment of dialysis access. - **Refer to Dialysis Clinic**	Not performed in radiology	Not performed in radiology

Section 3 - Paediatric Ultrasound

3.1 Paediatric Head, Neck and Spine

<table>
<tr><th>Examination</th><th>Clinical problem for which investigation is indicated</th><th>Primary Care</th><th>Secondary Care</th></tr>
<tr>
<td>Ultrasound Paediatric Brain

NB: In the assessment of older children please indicate if the anterior fontanelle is small to allow allocation of the appointment before the fontanelle closes.</td>
<td>
Preterm infants
All babies < 33 weeks (≤ 32^{+6} weeks) gestation should have routine cranial ultrasound examination. The number and frequency of scans depends on the gestation and clinical condition of the baby.
<table>
<tr><th>Gestation</th><th>Day1</th><th>Day 3</th><th>Day 7-10</th><th>Day 28</th><th>Term(40 weeks)</th></tr>
<tr><td>< 30 weeks</td><td>Clinical discretion</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>30-32 weeks</td><td>Clinical discretion</td><td></td><td>✓</td><td></td><td>✓</td></tr>
</table>
Additional scans may be required to monitor progression of haemorrhage or other abnormality or if there is a clinical deterioration e.g. pulmonary haemorrhage, episode of profound hypotension or acidosis, pneumothorax, unexpected drop in PCV, NEC or sudden unexplained clinical deterioration.
Term infants with neonatal encephalopathy
Cranial ultrasound Day 1- 3

Suspected congenital infection/ dysmorphic features
Cranial ultrasound Day 1- 7
MRI more useful in the assessment of a suspected structural brain abnormality
</td>
<td>If advised by Neonatal Consultant</td>
<td>As requested by neonatal team</td>
</tr>
</table>

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Ultrasound Paediatric Brain NB: In the assessment of older children please indicate if the anterior fontanelle is small to allow allocation of the appointment before the fontanelle closes.	IUGR (intra-uterine growth restriction) - Low birth weight 1500g	If advised by Paediatric Consultant	Routine
	Acute Hydrocephalus ● Increasing head circumference crossing centiles ● Suspicion of raised ICP	Secondary referral only	Urgent consultation with Radiologist
	Chronic Hydrocephalus ● Increasing head circumference crossing centiles. ● No suspicion of raised ICP. ● Ventricular size assessment.	Routine	Routine
	Microcephaly	Routine	Routine
	Neurological abnormalities ● Seizures ● Suspected structural brain abnormality (whilst awaiting MRI)	Refer to Paediatric Consultant	Direct consultation with Radiologist
	Follow up for ● Ventricular size ● Ventriculomegaly ● Prominence of lateral and third ventricles ● Haemorrhage.	If advised by Paediatric Consultant	Urgent
	IUGR (intra-uterine growth restriction) - Low birth weight 1500g	If advised by Paediatric Consultant	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Ultrasound Neck- Paediatric	Lymphadenopathy ● rapidly enlarging nodes ● persistent nodes suspicious of malignancy or atypical infection (e.g Cat scratch disease, atypical mycobacterium etc) Suspected infected branchial or thyroglossal cyst Suspected abscess	Urgent	Urgent
	Soft tissue lumps Neck mass – ● Suspected lymph node ● Suspected thyroglossal or branchial cyst	Routine	Routine
	Confirmation of suspected torticollis	Refer to Paediatrician	Next available paediatric ultrasound list

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Salivary glands- Paediatric	Salivary glands – query stone/ abscess	Secondary care referral only	Direct consultation with Radiologist
Spine- Paediatric	• Hyperpigmented patches • Deviation of gluteal fold • Dermal sinus • Atypical dimples(deep>5mmdiam., >25mmfrom anal verge • Base not clearly visualised • Vascular lesion e.g. haemangioma/telangiectasia • Skin appendages or polypoid lesions, eg skin tags, tail like appendages • Scar like lesions • Subcutaneous mass, cystic lesion or lipoma • Hairy patch	Following assessment by paediatric team. Ultrasound must be performed before 12 weeks old as after this the posterior elements have ossified and the spinal cord cannot be accurately assessed.	Consultant Paediatrician referral **ONLY** Ultrasound must be performed before 12 weeks old as after this the posterior elements have ossified and the spinal cord cannot be accurately assessed.

3.2 Paediatric Abdomen

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Abdomen- Paediatric *(Continued on next page)*	Prolonged jaundice	Secondary care referral only	Urgent
	Antenatal diagnosis of liver abnormality	If advised by Paediatric Consultant	Urgent
	Suspected sepsis Suspected intra-abdominal or pelvic collection or abscess Raised inflammatory markers eg WCC, CRP	Secondary care referral only. Paediatric Referral Advised	Direct consultation with Radiologist .-Paeds referral only, ED/Ward
	Unexplained weight loss	Secondary care referral only Red Flag Paediatric Referral Advised	Red Flag
	Suspected abdominal mass- Organomegaly / Hepatomegaly / Splenomegaly Increased abdominal girth (Not Faecal loading)	Red Flag Paediatric Referral Advised	Red Flag
	Organomegaly / Hepatomegaly / Splenomegaly-Follow-up -	Planned -As advised on previous imaging	Planned-As advised on previous imaging

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Abdomen- Paediatric	Intussusception	Secondary Care Referral only. Urgent ED referral advised	Follow FMS protocol
	Pyloric stenosis	Secondary Care Referral only Urgent ED referral advised	Direct consultation with Radiologist
	Central / chronic abdominal pain / Flank pain / Gallstones / polyps / Abnormal LFT's / Nausea, vomiting, dyspepsia / Fever/night sweats /	Routine	Routine
	Ambiguous genitalia (Adrenal) Signs of precocious puberty	Secondary Care Referral only	Routine
	Abdominal wall defects-?epigastric/umbilical hernia	Routine	Routine
	Beckwith-Wiedemann syndrome USS as part of screening for Wilm's tumour & hepatoblastoma as per RBHSC	Planned If advised by Paediatric Consultant -3monthly abdomen until age 8 as per RBHSC	Planned-3monthly abdomen until age 8, as per RBHSC

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Renals- Paediatric	Atypical UTI - Seriously ill with UTI - Poor urine flow - Non-responsive to first 48hours treatment - Non infection - Septicaemia - Abdominal/bladder mass - Raised creatine Recurrent - 2 or more 'upper tract'(pyelonephritis) UTIs - 1'upper tract'(pyelonephritis) and 1 'lower tract' (cystitis) UTI - 3 or more' lower tract' (cystitis) UTI **Children all ages** Atypical **Babies 0-6months** Recurrent **All Children 6m+** E Coli Urinary Tract Infection / Dysuria / Nocturia (nocturnal polyuria) / frequency	Secondary Care Referral only Refer to Paediatric Consultant Routine-Within 6 weeks if possible	Inpatient –During acute phase Routine-Within 6 weeks if possible
	New Urinary Tract Infection / Dysuria / Nocturia (nocturnal polyuria) / frequency	Routine	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Renals- Paediatric	?Renal calculi- Acute - Follow-up	Urgent Routine	Urgent Routine
	Haematuria ● Frank ● Microscopic	Secondary Care Referral only Red Flag referral to Paediatrics	Red Flag Urgent
	Non-specific Pain in Rt. / Lt. flank.	Routine	Routine
	Varicocele detected. - scan renal tracts – ?Renal tumour.	Urgent	Urgent
	Hypospadias (hooded foreskin) +/- chordee. ? Renal anomaly	Routine	Routine
	Genetic syndrome with ? renal association	Routine	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Antenatal Renal follow-up	Follow up of babies with antenatal 20 week hydronephrosis >1.0cm. **Not performed before infant is 3 days old.** Post-delivery scan to be done minimum 3days-maximum10 days (allowing for weekends/discharge etc.)	Secondary Care Referral only	Urgent /Planned
	Follow up of babies with antenatal 20 week hydronephrosis <1.0cm **Not performed before infant is 3 days old**. Minimum 2weeks- Maximum 4weeks	Secondary Care Referral only	Urgent / Planned

3.3 Paediatric Pelvis

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Testes- Paediatric	Retractile / Undescended testes Hypospadias (hooded foreskin) +/- chordee.	Routine	Routine
	Varicocele	Routine	Routine
	Testicular mass / lump	Red Flag + Red Flag Referral to Paediatrics	Red Flag
	Trauma ● Testicular rupture ● Testicular Fracture ● Testicular Dislocation ● Testicular Torsion ● Intratesticular Hematoma ● Penetrating Injury ● Intratesticular Pseudoaneurysm ● Extratesticular Injuries	Emergency ED /Paeds referral advised	Emergency Inpatient referral only Direct consultation with Radiologist
	Post-surgery collection / haematoma Spermatic Cord Hematoma	Secondary care referral only	Urgent
	Testicular swelling Orchitis / Epididymitis/ Epididymo-orchitis	Urgent	Urgent
	Hydrocele ● Primary presentation ● Recurrent post-surgery	Routine	Routine
	Testicular pain	Routine	Routine
	Epididymal cyst	Routine	Routine
	Radiologist advised follow-up	Planned	Planned

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Hips- Paediatric	Hips for effusion	Secondary Care Referral only	DHH referral - Urgent CAH referral - Direct consultation with Radiologist
	Hip dislocation / Unstable hip Clicking hips, asymmetrical thigh skin crease, asymmetrical leg length.	**This examination is not performed in FMS radiology- Please refer to Regional Paediatric Orthopaedic Centre**	**This examination is not performed in FMS radiology- Please refer to Regional Paediatric Orthopaedic Centre**

3.4 Paediatric Vascular

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Vascular- Paediatric	Congenital vascular malformations (arteriovenous malformations or fistula)	Secondary care referral only	Direct consultation with Radiologist
	Dialysis fistula	Secondary care referral only	Direct consultation with Radiologist

Section 4 - Musculoskeletal Ultrasound

Introduction
Much musculoskeletal pathology is diagnosed successfully by good clinical examination. Incidental pathology is common and may not be the current cause of symptoms – clinical correlation is always required.
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.**
Most musculoskeletal problems are best managed by specialist referral, since the significance of ultrasound findings in problems, such as suspected rotator cuff tears, is best assessed in the context of a specialist clinical examination.

Principles

- 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 referrer include:**
    - **Knee, foot, ankle pain. ? cause**
    - **Knee injury. ? ACL tear**
    - **Chest pain. ? cause**
    - **Back pain. ? Nerve pain. ? thigh or leg**

4.1 Upper Limb

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Shoulder **Shoulder x-ray may be required as first line of investigation,	Traumatic rotator cuff injury **Referrer to request shoulder x-ray, as first line of investigation, to exclude other possible underlying causes: the position of the shoulder joint, any bone abnormalities (including bone tumors) and soft tissue	Urgent	Urgent

prior to requesting ultrasound. Please refer to comments. Shoulder x-ray to exclude other possible underlying causes: the position of the shoulder joint, any bone abnormalities (including bone tumors) and soft tissue disorders (calcifications in the rotator cuff muscles).	**disorders (calcifications in the rotator cuff muscles), prior to requesting ultrasound:-** ● If no shoulder x-ray post injury. ● >70 years of age - Rotator cuff tear may be detectable on shoulder x-ray –if evident then ultrasound is not required.		
	Dislocation (>60 years)	Urgent	Urgent
	Rotator cuff tear **Referrer to request shoulder x-ray, as first line of investigation, to exclude other possible underlying causes: the position of the shoulder joint, any bone abnormalities (including bone tumors) and soft tissue disorders (calcifications in the rotator cuff muscles), prior to requesting ultrasound:-** ● If no shoulder x-ray within the last 12 months and no history of trauma. ● >70 years of age -Rotator cuff tear may be detectable on shoulder x-ray – if evident then ultrasound is not required.	Routine	Routine
	Post op cuff failure	Routine	Routine
	Septic arthritis – requires aspiration	Inpatient referral only- Secondary care referral advised	Urgent Inpatient referral only
	Shoulder pain not responding to conservative therapy ● Tendonitis ● Impingement ● Bursitis **Conservative therapy should be considered first.**	Routine	Routine
	Synovitis/erosions	Routine + Rheumatology referral advised.	Routine
	LHB (long head biceps) dislocation / rupture	Routine	Routine

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Elbow	Distal biceps tendon tear ● within one week ● >one week	Urgent Routine	Urgent Routine
	Ulnar nerve neuropathy/subluxation (to exclude mass and/or confirm subluxation)	Routine	Routine
	Median/radial nerve compression (to exclude external compression)	Routine	Routine
	Inflammatory disorders ● acute / chronic bursitis ● arthritis	Routine	Routine
Wrist, Hand, Finger, Thumb *(Continued on next page)*	Effusion	Routine	Routine
	Septic arthritis	Inpatient Referral only Secondary care referral advised	Inpatient/ED
	Pulley / sagittal band injury / ruptures	Urgent	Urgent
	Thumb / finger collateral ligament injuries Ulnar collateral ligament of thumb	Urgent	Urgent
	Median nerve compression - to exclude mass	Routine	Routine
	Ulnar nerve compression - to exclude mass	Routine	Routine
	Neuroma	Routine	Routine

	Tenosynovitis / Synovitis / Erosion - **Rheumatology referral advised**.	Routine	Routine
	Tenosynovitis / Synovitis / Erosion **Rheumatology changing patient medication	Urgent	Urgent

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Wrist, Hand, Finger, Thumb (continued)	Ganglion cyst / synovial cyst	Routine	Routine
	Bone erosion - **Rheumatology referral advised.**	Not indicated.	Not indicated
	Triangular fibrocartilage complex (TFCC) calcification - **Seen on x-ray.**	Not indicated	Not indicated
	TFCC - **MRI advised.**	Not indicated	Not indicated
	Carpal Tunnel Syndrome - **Not diagnosable by ultrasound.**	Not indicated	Not indicated
	Median nerve compression **Nerve conduction study (NCS) first line of investigation where mass is not suspected.**	Not indicated	Not indicated
	Ulnar nerve compression **Nerve conduction study (NCS) first line of investigation where mass is not suspected.**	Not indicated	Not indicated

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Hip	Infection **Aspiration may be done under fluoroscopic guidance.	Inpatient / Rheumatology / Orthopaedics referral only Secondary care referral advised.	Urgent (Inpatient / Rheumatology / Orthopaedics only)
	Effusion/synovitis	Paediatric Inpatient / ED / Adult Rheumatology only. Secondary care referral advised.	Urgent (Paediatric Inpatient / ED / Adult Rheumatology Only)
	Greater Trochanter Pain Syndrome- **Treated on clinical grounds.**	Not indicated	Not indicated
	Adductor tear- **MRI advised.**	Not indicated	Not indicated
Upper leg	Medial head hamstring tear / Severe hamstring pain **Ultrasound is not indicated** - **MRI advised.**	Not indicated	MRI advised.
	Lump on muscle - Refer to Soft tissue Protocol	Refer to Soft tissue Protocol	Refer to Soft tissue Protocol
Knee **Knee x-ray may be required prior to requesting ultrasound. Refer to comments. Knee X-ray to exclude other possible causes: Soft-tissue changes / Bone quality / Alignment / Joint	Anterior knee pain ● Suprapatellar / infrapatellar / pre-patellar bursitis ● Patellar tendinopathy / tear / calcification ● Quadriceps tendinopathy / tear / calcification	Routine	Routine
	Posterior knee pain ● Bakers cyst (Popliteal cyst) ● Popliteal fossa mass **Adult** – if no Knee x-ray within one year - Referrer to request knee x-ray prior to ultrasound request (to exclude other possible causes: Soft-tissue changes / Bone quality / Alignment / Joint spaces / Early arthritis signs / Trauma/fracture).	Adult - Routine	Adult - Routine

spaces / Early arthritis signs / Trauma/fracture.	**Paediatric** –no x-ray required, often requested as urgent	Paediatric - Urgent	Paediatric - Urgent
	Cartilage pathology **Ultrasound is not indicated** - **MRI advised.**	Not indicated	Not indicated

4.2 Lower Limb

Examination	**Clinical problem for which investigation is indicated**	**Primary Care**	**Secondary Care**
Ankle / Foot	Tendon tear	Urgent	Urgent
	Posterior tibial tendinopathy	Routine	Routine
	Peroneal tendon tenosynovitis/subluxation	Routine	Routine
	Retro calcaneal/pre Achilles bursitis	Routine	Routine
Achilles tendon	Achilles tendon Tendinopathy/tears/calcification ● tear within 1 week - ED / Orthopaedics referrals only, **must be scanned within 1 week** ● Swelling ● Tendinopathy	ED / Orthopaedics referrals only. Routine Routine	Urgent - ED / Orthopaedics referrals only. Routine Routine
Foot / Forefoot	Plantar fasciitis/fibroma	Routine + Rheumatology referral advised.	Routine
	Synovitis	Routine	Routine
	Ganglion cyst	Routine	Routine
	Intermetatarsal bursitis	Routine	Routine

	Morton's neuroma / Intermetatarsal neuroma Please note, a Morton's neuroma only occur in the 2nd and 3rd web spaces.	Routine	Routine

4.3 Guided injections

Examination	Clinical problem for which investigation is indicated	Primary Care	Secondary Care
Guided injections ***No GP access***	Carpal tunnel syndrome (wrist)	No GP access - Secondary care referral advised	Routine
	Median nerve compression (wrist)	No GP access - Secondary care referral advised	Routine
	Ulnar nerve compression (wrist)	No GP access - Secondary care referral advised	Routine
	De Quervains tenosynovitis (wrist)	No GP access - Secondary care referral advised	Routine
	Guyon's canal (wrist)	No GP access - Secondary care referral advised	Routine
	Ulnar neuropathy (elbow)	No GP access - Secondary care referral advised	Routine
	Calcific tendinopathy (shoulder)	No GP access - Secondary care referral advised	Routine
	Barbotage treatment for calcific tendinosis (shoulder)	No GP access - Secondary care referral advised	Routine
	Sub acromial bursitis/tendinopathy/impingement (shoulder)	No GP access - Secondary care referral advised	Routine
	Greater trochanteric bursitis (hip)	No GP access - Secondary care referral advised	Routine

	Plantar fascia (foot)	No GP access - Secondary care referral advised	Routine
	Morton's neuroma steroid injection (foot)	No GP access - Secondary care referral advised	Routine
	Trigger Point Injection - Pain Clinic	No GP access - Secondary care referral advised	Planned
	Effusion aspiration as required	Inpatient / ED referral only	Planned - Inpatient/ED

Associated UK Clinical Guidelines

http://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.
https://www.nice.org.uk/guidance/ng12

Northern Ireland Referral Guidance for Suspected Cancer – Red Flag Criteria Issue date: December 2012
http://cancerni.net/files/file/Northern%20Ireland%20Referral%20Guidance%20for%20Suspected%20Cancer%20_Dec12(2).pdf

Hyperthyroidism GP Pathway - ICP South
http://primarycare.hscni.net/download/DocLibrary/ICP/southern-icp/pathways/icp-south-gp-thyrotoxicosis-gp-pathway.pdf
http://cks.nice.org.uk/hyperthyroidism#!diagnosissub

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http://onlinelibrary.wiley.com/doi/10.1111/cen.12515/pdf

Management of thyroid cancer. British Thyroid Association Guidelines.
http://www.british-thyroid-association.org/Guidelines/

Carotids
https://www.bmus.org/static/uploads/resources/Recommendations_for_reporting_Carotid_Investigations.pdf

Vascular
For information on this aspect of ultrasound practice, please see the website of the Society for Vascular Technology of Great Britain and Ireland (SVT):
http://www.svtgbi.org.uk/

2014—AIUM PRACTICE PARAMETER—Peripheral Arterial Ultrasound
http://www.aium.org/resources/guidelines/peripheralarterial.pdf
2015—AIUM PRACTICE PARAMETER—Peripheral Venous Ultrasound
http://www.aium.org/resources/guidelines/peripheralvenous.pdf

The SVT have published protocols for the various procedures that fall within their scope of practice:
http://www.svtgbi.org.uk/professional-issues/
(SVT member log in required)
National recommendations for carotid ultrasound examinations can additionally be found via:
http://www.ncbi.nlm.nih.gov/pubmed/19046904

Northern Ireland Public Health Agency screening programmes
http://www.publichealth.hscni.net/directorate-public-health/service-development-and-screening/screening
Abdominal aortic aneurysm (AAA) screening
http://www.publichealth.hscni.net/directorate-public-health/service-development-and-screening/abdominal-aortic-aneurysm-aaa-screening
U02 Acute and chronic kidney injury (renal failure)
U13 Suspected functioning adrenal medullary tumour
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Soulez G, Pasowicz M, Benea G, Grazioli L, Niedmann JP, Konopka M, et al. Renal artery stenosis evaluation: diagnostic performance of gadobenate dimeglumine-enhanced MR angiography--comparison with DSA. Radiology 2008; 247: 273-285. [I]

NHS Neonatal and Infant Physical Examination (NIPE) screening programme
This national screening programme is responsible for issuing guidance and standards regarding the physical examination of the newborn in England. There is no equivalent screening programme in the devolved countries.
Guidance on when ultrasound examinations of the neonatal hip should be performed can be found at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/524424/NIPE_Programme_Standards_2016_to_2017.pdf

The overall 'Standards' document for the NIPE programme can be found at:
https://www.gov.uk/government/publications/newborn-and-infant-physical-examination-screening-standards
Ovarian masses
NICE (2011) guidelines state, 'If serum CA125 is 35 IU/ml or greater, arrange an ultrasound scan of the abdomen and pelvis 'https://www.nice.org.uk/guidance/cg122

International Ovarian Tissue Analysis (IOTA). Simple rules
IOTA group ultrasound 'rules' can be used to classify masses as benign (B-rules) or malignant (M-rules). See RCOG Green-top Guideline No. 62:
https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg62/

Ovarian cancer; the recognition and initial management is covered by NICE guideline CG122, April 2011:
https://www.nice.org.uk/guidance/cg122/resources/ovarian-cancer-recognition-and-initial-management-35109446543557
Liver Biopsy
http://nice.org.uk/guidance/mtg27

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