|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Clinical Indications for musculoskeletal ultrasound  Referral |  | |  |  | |
| Guidelines based on *European Society of Musculoskeletal Radiology Consensus 2017*  Sconfienza LM, Albano D, Allen G et al. Clinical indications for musculoskeletal ultrasound updated in 2017 by European Society of Musculoskeletal Radiology (ESSR) consensus. Eur Radiol. 2018 Dec;28(12):5338-5351. doi: 10.1007/s00330-018-5474-3. Epub 2018 Jun 6. PMID: 29876703. |

# Exclusion Criteria

For Referrals that fall under the following criteria cannot be undertaken:

* Any patient with suspected cancer. These should be referred through the two week wait referral pathway in the hospital.
* Under 18s
* Any ultrasound guided interventional procedures
* Suspected pathology of intimate areas (Including male/female genitalia, breast or endocavity)
* Investigations of the eyes or mouth
* Superﬁcial masses/lumps in the neck, axilla or groin
* Open or infected wounds

It is also worth considering/alerting patients to the conditions where ultrasound imaging can be less effective:

* High body mass index/obesity
* Scanning over areas where superficial scar formation is present
* Scanning where a prosthesis or significant metal implants are present
* Intolerance to pressure over the area being scanned
* Pathology/structures 7cm or greater in depth from the skin surface

# Key

For each joint/region, there is a detailed list of the most common presenting clinical conditions. Each condition has been reviewed by a group of 21 musculoskeletal imaging experts from the European Society of Musculoskeletal Radiology and a consensus reached, based on their experience and evidence based medicine, as to the appropriateness for the use of musculoskeletal ultrasound to diagnose/assess these conditions.

The four levels of appropriateness are

1. **Not Indicated for Ultrasound**: Ultrasound is considered to hold **no** diagnostic value in diagnosing this condition and **does not justify an ultrasound scan**.
2. **Only if other imaging techniques are not appropriate:** Other imaging techniques (MRI, CT etc.) are preferred over ultrasound in diagnosing this condition with ultrasound typically having a poor success rate. However, if all other modalities are contraindicated (i.e. MRI is often incompatible with pacemakers), **it may be justified to undertake an ultrasound examination *following a discussion with the sonographer.***
3. **Equivalent at diagnosing as other imaging modalities:** Ultrasound is considered to be comparable to other imaging modalities and therefore may provide useful diagnostic information regarding this condition. However, other modalities may also provide significant information. **Therefore, this does justify an ultrasound scan**
4. **Ultrasound is the first choice:** Ultrasound is considered to be the primary choice for examining this condition with other modalities/techniques rarely providing more information. **Therefore, this does justify an ultrasound scan**

Therefore, referrals to Inner-vision Musculoskeletal Ultrasound Imaging **must meet level 2 or above** to justify booking an ultrasound scan without consultation with the sonographer.

Any referrals at level 1 require discussion with the sonographer

Referrals at level 0 are not justified for an ultrasound scan and a recommendation to consult their GP should be made. Occasionally, a level 0 pathology may be identified incidentally or in the correct circumstances but the occurrence is too low to justify an ultrasound scan.

\*\*This is not an exhaustive list of common clinical conditions, please contact the sonographer if uncertain or have any questions\*\*

# Shoulder

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clinical Indication | 0- Not Indicated for Ultrasound | 1 - Only if other imaging techniques are not appropriate | 2 - Equivalent at diagnosing as other imaging modalities | 3 - Ultrasound is the first choice |
| Tendons/Soft tissue |  |  |  |  |
| Bursitis (Impingement) |  |  |  | ✓ |
| Full thickness cuff tear |  |  |  | ✓ |
| Partial thickness cuff tear |  |  | ✓ |  |
| Rotator cuff muscle atrophy (Muscle Wastage) |  | ✓ |  |  |
| Postoperative cuff failure |  |  | ✓ |  |
| Calcific tendonitis/tendinopathy |  |  |  | ✓ |
| Long head biceps tendon: rupture/tear |  |  |  | ✓ |
| Long head biceps tendon: dislocation |  |  |  | ✓ |
| Long head biceps tendon: tendinopathy |  |  | ✓ |  |
| Adhesive capsulitis – (frozen shoulder) |  | ✓ |  |  |
| Pectoralis/deltoid tears |  |  | ✓ |  |
| Septic arthritis |  |  |  | ✓ |
| Bones |  |  |  |  |
| Loose bodies |  | ✓ |  |  |
| Acromion-clavicular joint osteoarthritis |  |  | ✓ |  |
| Acromion-clavicular joint trauma/instability |  |  | ✓ |  |
| Sterno-clavicular joint disease |  |  | ✓ |  |
| Occult tuberosity fracture |  |  | ✓ |  |
| Gleno-humeral joint: traumatic instability | ✓ |  |  |  |
| Gleno-humeral joint: dynamic instability | ✓ |  |  |  |
| Nerves |  |  |  |  |
| Suprascapular nerve entrapment |  |  | ✓ |  |
| Quadrilateral space syndrome |  | ✓ |  |  |
| Parsonage-Turner syndrome | ✓ |  |  |  |
| Thoracic outlet syndrome |  | ✓ |  |  |

# Elbow

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clinical Indication | 0- Not Indicated for Ultrasound | 1 - Only if other imaging techniques are not appropriate | 2 - Equivalent at diagnosing as other imaging modalities | 3 - Ultrasound is the first choice |
| Tendons/Soft tissue |  |  |  |  |
| Olecranon bursitis (Students elbow) |  |  |  | ✓ |
| Lateral collateral ligament assessment |  |  | ✓ |  |
| Lateral epicondylitis (Tennis elbow) |  |  |  | ✓ |
| Medial epicondylitis (Golfers elbow) |  |  |  | ✓ |
| Medial collateral ligament assessment |  |  | ✓ |  |
| Biceps tendon insertion assessment |  |  | ✓ |  |
| Bicipitoradial bursitis |  |  | ✓ |  |
| Synovitis |  |  |  | ✓ |
| Septic arthritis/effusion |  |  |  | ✓ |
| Triceps tendon injury |  |  |  | ✓ |
| Snapping triceps injury |  |  |  | ✓ |
| Bones |  |  |  |  |
| Loose bodies |  | ✓ |  |  |
| Lateral condyle fractures |  | ✓ |  |  |
| Radial head subluxation/fracture |  | ✓ |  |  |
| Screening trauma |  |  | ✓ |  |
| Supracondylar elbow fracture; postoperative positioning | ✓ |  |  |  |
| Osteochondral injury |  | ✓ |  |  |
| Nerves |  |  |  |  |
| Radial nerve compression |  |  | ✓ |  |
| Median nerve entrapment, pronator syndrome |  |  | ✓ |  |
| Ulnar nerve neuropathy (Nerve pain/numbness/tingling) |  |  | ✓ |  |
| Ulnar nerve subluxation |  |  | ✓ |  |

# Wrist/Hand

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clinical Indication | 0- Not Indicated for Ultrasound | 1 - Only if other imaging techniques are not appropriate | 2 - Equivalent at diagnosing as other imaging modalities | 3 - Ultrasound is the first choice |
| Tendons/Soft tissue |  |  |  |  |
| Tenosynovitis/rupture |  |  |  | ✓ |
| Mass/lesion/lump |  |  |  | ✓ |
| Joint synovitis |  |  |  | ✓ |
| Pulley/sagittal band/central slip injury-ruptures |  |  |  | ✓ |
| Central slip injury |  |  |  | ✓ |
| Finger collateral ligament injury except gamekeeper’s thumb and Stener lesion |  |  | ✓ |  |
| Gamekeeper’s thumb and Stener lesion |  |  |  | ✓ |
| Trigger finger |  |  |  | ✓ |
| Ganglion (Bible bump) |  |  |  | ✓ |
| Rugby/jersey finger |  |  |  | ✓ |
| Flexor carpi ulnaris/flexor carpi radialis tendinopathy (AKI – Tendonitis) |  |  |  | ✓ |
| Extensor carpi ulnaris/estensor carpi radialis tendinopathy (AKI – Tendonitis) |  |  |  | ✓ |
| Foreign body (Splinter in hand or similar) |  |  |  | ✓ |
| De Quervain disease (texting thumb/gamers thumb/washerwomans sprain) |  |  |  | ✓ |
| Intersection syndrome |  |  | ✓ |  |
| Bones |  |  |  |  |
| Hamate assessment | ✓ |  |  |  |
| Pisiform triquetral osteoarthritis |  |  | ✓ |  |
| Capitate assessment | ✓ |  |  |  |
| Volar plate avulsion (X-ray negative) |  |  |  | ✓ |
| Finger fracture |  |  | ✓ |  |
| Triangular fibrocartilage complex lesions | ✓ |  |  |  |
| Abutment syndromes | ✓ |  |  |  |
| Hammer hand |  |  |  | ✓ |
| Kienbock’s disease | ✓ |  |  |  |
| Scaphoid assessment |  | ✓ |  |  |
| Trapezium assessment |  | ✓ |  |  |
| Scapho-trapezio trapezoidal osteoarthritis |  |  | ✓ |  |
| Scapho-lunate ligament |  | ✓ |  |  |
| Nerves |  |  |  |  |
| Carpal tunnel syndrome |  |  |  | ✓ |
| Guyons canal |  |  |  | ✓ |
| Wartenberg syndrome |  |  |  | ✓ |
| Muscle |  | ✓ |  |  |

# Knee

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clinical Indication | 0- Not Indicated for Ultrasound | 1 - Only if other imaging techniques are not appropriate | 2 - Equivalent at diagnosing as other imaging modalities | 3 - Ultrasound is the first choice |
| Tendons/Soft tissue |  |  |  |  |
| Patellar tendinopathy/tear |  |  |  | ✓ |
| Quadriceps tendinosis/tear (AKI – Tendonitis) |  |  |  | ✓ |
| Pes anserinus tendinobursitis |  |  |  | ✓ |
| Semitendinosus tendon assessment |  |  |  | ✓ |
| Semimembranosus tendon assessment |  |  |  | ✓ |
| Medial collateral ligament assessment |  |  | ✓ |  |
| Iliotibial band friction |  |  | ✓ |  |
| Posterolateral corner (biceps femoris tendon, lateral collateral ligament, popliteus tendon) | ✓ |  |  |  |
| Gastrocnemius origins and insertions |  |  | ✓ |  |
| Baker’s cyst |  |  |  | ✓ |
| Periarticular bursitis – (Housemaids knee – Clergymans knee- |  |  |  | ✓ |
| Extra-articular ganglion |  |  |  | ✓ |
| Intra-articular ganglion |  | ✓ |  |  |
| Osgood-Schlatter, Sinding-Larsen |  |  |  | ✓ |
| Synovitis, effusion |  |  |  | ✓ |
| Retinacula pathology |  |  | ✓ |  |
| Hoffa’s fat pad syndrome |  | ✓ |  |  |
| Plica syndrome | ✓ |  |  |  |
| Anterior cruciate ligament tears | ✓ |  |  |  |
| Posterior cruciate ligament tears | ✓ |  |  |  |
| Meniscal tears | ✓ |  |  |  |
| Meniscal cysts |  |  | ✓ |  |
| Synovial tumours | ✓ |  |  |  |
| Bones |  |  |  |  |
| Septic arthritis \* |  |  |  | ✓ |
| Osteochondritis dissecans | ✓ |  |  |  |
| Knee arthroplasty infection |  |  | ✓ |  |
| Loose bodies |  | ✓ |  |  |
| Knee fractures | ✓ |  |  |  |
| Nerves |  |  |  | ✓ |
| Osteoarthritis | ✓ |  |  |  |

\*Likely to require aspirate and culture to confirm (GP/consultant would need to provide an onward referral if suspected)

# Ankle/Foot

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clinical Indication | 0- Not Indicated for Ultrasound | 1 - Only if other imaging techniques are not appropriate | 2 - Equivalent at diagnosing as other imaging modalities | 3 - Ultrasound is the first choice |
| Tendons/Soft tissue |  |  |  |  |
| Tendinopathy (AKI – Tendonitis) |  |  |  | ✓ |
| Tears |  |  |  | ✓ |
| Tendon Sheath effusions (swelling) |  |  |  | ✓ |
| Peroneal dislocation |  |  |  | ✓ |
| Calcific tendinitis |  |  |  | ✓ |
| Retrocalcaneal bursitis |  |  |  | ✓ |
| Haglund disease – Calcaneal spur/bony spur |  |  | ✓ |  |
| Postoperative tendon tear |  |  |  | ✓ |
| Anterior talo-fibular ligament assessment |  |  |  | ✓ |
| Posterior talo-fibular ligament assessment | ✓ |  |  |  |
| Calcaneo-fibular ligament assessment |  |  |  | ✓ |
| Deltoid ligament assessment |  |  | ✓ |  |
| Spring ligament assessment |  |  | ✓ |  |
| Joint effusions (Swelling) |  |  |  | ✓ |
| Intra-articular disease | ✓ |  |  |  |
| Cartilage lesions |  | ✓ |  |  |
| Synovitis |  |  |  | ✓ |
| Plantar fasciitis (Policemans heel) |  |  |  | ✓ |
| Retinacula injury |  |  |  | ✓ |
| Ganglion cysts |  |  |  | ✓ |
| Plantar plate |  |  | ✓ |  |
| Ankle joint instability |  |  | ✓ |  |
| Bones |  |  |  |  |
| Distal tibia | ✓ |  |  |  |
| Loose bodies |  |  | ✓ |  |
| Talus assessment | ✓ |  |  |  |
| Bony avulsion (bone “pulled”/”Chipped” off) |  |  | ✓ |  |
| Coalitions | ✓ |  |  |  |
| Nerves |  |  |  |  |
| Entrapment |  |  |  | ✓ |
| Morton neuroma - Bursal-neuroma complex |  |  |  | ✓ |
| Intermetatarsal bursitis (Ball of foot) |  |  |  | ✓ |