**MSK TIPS:**

- Ensure extremity of interest is as isocenter as possible
- SHIM all Fat sat scans!!
- Only use 4Ch wrist if additional coverage needed

If Contrast needed: Multihance .1mmol/kg Max 20 mL

Low eGFR inpatient Dose: No Change

**SHOULD RCT/Labral tear/Instability/Dislocation**

**Externally rotate arm (anecutubellassis straight up)**

Adults: Rigid coil if available. (1st 8Ch Rigid, then try HD rigid) Only use medium flex if patient is too large for rigid coil or if 8Ch or HD Shoulder not available. Sm flex for Peds

**NO LARGE FLEX**

1. 3 Pl loc
2. Obl Cor T2 cl fat (Metal: STIR)
3. Obl Sag T2 cl fat (Metal: STIR)
4. Obl Sag T1
5. Double Obl Sag T2 cl fat (Metal: STIR)
   - GRx on Obl Cor Perpendicular to RC Tendon 1-2 cm medial to insertion
6. Obl Ax PD cl fat (Metal: Ax PD nofat)
   - GRx on Obl Sag 30 deg from horizontal

**Synovitis: Give contrast & Omit**

- Double oblique Sag T2
- Add: 6. +C Str Ax T1 fat 7. +C Obl Cor T1 fat

**ELBOW OCD/ LOOSE BODY/DISTAL BICEPS & TRICEPS TEAR**

**MARK PAIN / ARM OVER HEAD**

| 1. 3 Pl loc | **Images** |
| 2. Ax T1 (approx. 32 slices) 3/1.5 |
| GRx on Cor Axial to humerus |
| Proximal 1/4 of humerus thru biceps tendon at radial tuberosity through pathology |
| 3. Ax T2 cl fat |
| 4. Sag T1 (approx. 16 slices) 3/1 |
| GRx on Ax at distal humerus (see pic) |
| Center FOV on Joint |
| 5. Sag T2 cl fat |
| 6. Cor PD cl fat (approx. 24 slices) |
| GRx on Ax at distal humerus (see pic) |
| Center FOV on Joint |

**CSC:**

4Ch/ 8Ch knee 16 Ch Flex

**RPk:**

8Ch knee 16 Ch Flex

**PT:**

prone/swimmers arm over head, hand supine, thumb up

**3T ONLY**

**8Ch Cardiac or 8Ch knee coil**

**NEUROGRAM 3T ONLY (MONITORED)**

| 1. 3 Pl loc |
| 2. Ax T1 3/0.5 (humerus/forearm joint to joint) |
| 3/0.2 (elbow-wrist-through joint) |
| 3. Ax T2 cl fat |
| 4. Cor T1 3/1 (humerus/forearm) skin to skin |
| 2/0.2 (wrist/elbow) skin to skin |
| 5. Cor T2 cl fat |
| 6. Sag IDEAL 3/1 (humerus/forearm) skin to skin |
| 2/0.2 (wrist/elbow) skin to skin |
| 7. +C Axial T1 dk fat |
| 8. +C Coronal T1 dk fat |

**3T ONLY**

- 8Ch Cardiac
- 8Ch knee coil

**unless otherwise specified, angles are identical to routine angles for each protocol.**

**WRIST**

<table>
<thead>
<tr>
<th>Pain/FX/Osteo/Tumor/Abscess</th>
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<tbody>
<tr>
<td><strong>MARK PAIN ARM OVER HEAD</strong></td>
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<tr>
<td><strong>Images</strong></td>
</tr>
<tr>
<td>1. 3 Pl loc</td>
</tr>
<tr>
<td>2. Ax T1 –Distal 1/4 of Forearm thru mid metacarp</td>
</tr>
<tr>
<td>3. Ax T2 cl fat (Metal: Ax T2 nofat)</td>
</tr>
<tr>
<td>4. Cor T1 Skin to Skin Center FOV on Carpals</td>
</tr>
<tr>
<td>5. Cor T2 cl fat (Metal: Cor STIR)</td>
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<tr>
<td>6. Sag T2 cl fat Skin to Skin. Center FOV on Carpals (Metal: Sag STIR)</td>
</tr>
<tr>
<td><strong>PAIN:</strong></td>
</tr>
<tr>
<td>7. Oblq Ax PD dk fat Scapholunate ligament</td>
</tr>
<tr>
<td>8. Oblq Ax PD dk fat Lunotriquetral ligament (Metal: Ax PD nofat)</td>
</tr>
<tr>
<td><strong>FX:</strong></td>
</tr>
<tr>
<td>7. Oblq Sag T1 Long axis of scaphoid</td>
</tr>
<tr>
<td>TUMOR: PRE AX T1 dk fat</td>
</tr>
<tr>
<td>Osteo/Tumor/Abscess: Give contrast</td>
</tr>
<tr>
<td>7. +C Ax T1dk fat 8. +C Cor T1dk fat</td>
</tr>
</tbody>
</table>

**WRIST & HAND – Synovitis & Erosions**

**MARK PAIN ARM OVER HEAD / HAND PRONE**

*Include Wrist through MCP Joints

**If protocoled Hand/Finger Synovitis-Erosions covr MCP joints and fingers**

1. 3 Pl loc
2. Ax T1 3/1 12-16 FOV (as small as possible)
3. Ax T2 cl fat
4. Cor T1 2/0.2 12-16 FOV (as small as possible)
5. Cor STIR
6. Sag T2 cl fat 3/1 12-16 FOV (small as possible)

FOR TUMOR—PRE AX T1 dk fat
7. +C Ax T1dk fat 8. +C Cor T1dk fat

**HAND - FINGER - THUMB**

**MARK PAIN ARM OVER HEAD / HAND PRONE**

**Images**

1. 3 Pl loc
2. Ax T1
3. Ax T2 dk fat
4. Sag T1-For Finger or Thumb 2/0.2 OBL to ROI
5. Sag T2 dk fat
6. Cor T1-For Finger or Thumb 2/0.2 OBL to ROI
7. Cor FSTIR

FOR TUMOR—PRE AX T1 dk fat
8. +C Ax T1dk fat 9. +C Cor T1dk fat

**OSTEOYELITIS/TUMOR/ABSCESS**

**ELBOW:**

8Ch knee or 16 channel Flex coil

**MARKER at point of max pain or markers above and below area of pain**

1. 3 Pl loc
2. -3. Ax T1 & Ax T2 dk fat 3/1.5 GRx on Cor loc Ax to humerus
4. Sag T1 & Sag T2 dk fat 3/1.5 GRx on Ax Sag to dist humerus
5. -7. Cor T1 & Cor T2 dk fat 3/1.5 GRx on Ax Cor to dist humerus

FOR TUMOR—PRE AX T1 dk fat
8. +C Ax T1 dk fat 9. +C Sag T1 dk fat 10. +C Sag T1 dk fat

**SHOULDER:**

8Ch Cardiac, 16Ch Flex only use 30 small coil if protocol specifies

Large FOV. Use dedicated shoulder coil if looking in joint increase FOV as needed

**MARKER at point of max pain or markers above and below area of pain**

1. 3 Pl loc
2. -3. Straight Ax T1 & Ax T2 dk fat 3/1.5 Perpendicular to joint
4. Sag T1 & Sag T2 dk fat 3/1.5 Parallel to joint through ROI

FOR TUMOR—PRE AX T1 dk fat
8. +C Ax T1 dk fat 9. +C Cor T1 dk fat 10. +C Sag T1 dk fat

**HUMERUS OR FOREARM:**

16Ch Flex, Long Bone, Cardiac

**MARKER at point of max pain or markers above and below area of pain**

**Try to get one slice down center of bone**

**Images**

1. 3 Pl loc
2. -3. Sag T1 & Sag STIR Humerus-4/2 Forearm-3/1.5
4. Ax T1 & Ax T2 dk fat (upr and lwr) Humerus/Forearm-5/2.5
6. -7. Sag T2 dk fat 3/1.5 Cor FSTIR

FOR TUMOR—PRE AX T1 dk fat (upr and lwr)
8. +C Sag T1 dk fat 9. +C Ax T1 dk fat (upr and lwr)
10. +C Cor T1 dk fat
SHOULDER SET UP:

Cor Image:

**Back to Protocol**
Humerus Set up

Please keep in mind anatomical position when you scan patients. For humerus protocols you can use the biceps muscle and epicondyles as landmarks. Scan perpendicular or parallel to them for your sagittal or coronal planes.

Keep in mind to have one slice down the center of the humerus

ELBOW SET UP:

SAGITTAL

CORONAL
WRIST SET UP:

NOTE: Scaphoid is on the Thumb Side.

Scapholunate ligament
Parallel to proximal surface of lunate & scaphoid

Lunotriquetral ligament
Parallel to proximal surface of triquetrum & lunate

**Back to Protocol**
Hand/Finger/Thumb set up:

Cover Pathology and area of pain

finger pain

Hand Pain

Cover All Side to side, run thin sequence if specific MC or MCP is in question

Cor Thumb:

Cor Thumb: Parallel to Sesamoid Bones

SAG Thumb:

**Back to Protocol**