**UPPER EXTREMITY**

**MARK TIPS:**
- Ensure extent of interest is as isocenter as possible
- SHIM all Fat sat scans!!
- Only use 4ch wrist on RP1 if additional coverage needed

If Contrast needed: Multihance 1mmol/kg Max 20 mL
Low eGFR inpatient Dose: No Change

**SHOULDER RCT/Labral tear/Instability/Dislocation**

**Externally rotate arm (anterocubital fossa straight up)**

Adults: Rigid coil if available. *(1*8 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 P/ cl fat (Metal: Ax P/ nofat)
7. **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 TIPS:**

1. 3 Pl loc
2. Ax T1 (approx. 32 slices) 3/1.5
   - GRx on Cor loc Axial to humerus
   - Proximal ¼ of humerus thru biceps tendon at radial tuberosity through patholgy
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

**ELBOW UCL or RCL tear/Epicondylitis**

1. 3 Pl loc
2. Ax PD (approx. 32 slices) 3/1.5 GRx on Cor loc
   - Axial to humerus
   - Proximal ¼ of humerus thru biceps tendon at radial tuberosity through patholgy
3. Ax T2 cl fat
4. Sag T2 cl fat (approx. 16 slices) 3/1.5
   - GRx on Ax at distal humerus
5. Cor T1 (approx. 24 slices) 3/0.5
   - GRx on Ax at distal humerus
6. Cor PD cl fat

Synovitis Give contrast

Add: 7. -c Ax T1 FAT 8. -c Sag T1 FAT

**OSTEOMYELITIS/TUMOR/ABSCESS**

**ELBOW: 8ch/16ch KNEE or 16 channel Flex coil**

MARKER at point of max pain or marks above and below area of pain
1. 3 Pl loc
2. Ax T1 & Ax T2 cl fat 3/1.5 GRx on Cor loc Ax to humerus
3. Ax T2 cl fat
4. Sag T2 cl fat (approx. 16 slices) 3/1.5
   - GRx on Ax at distal humerus
5. Cor T1 (approx. 24 slices) 3/0.5
   - GRx on Ax at distal humerus
6. Cor PD cl fat

Synovitis Give contrast

Add: 7. -c Ax T1 FAT 8. -c Sag T1 FAT

**HUMERUS OR FOREARM: 16ch Flex, Long Bone, Cardiac**

**MARKER at point of max pain or marks above and below area of pain**
1. 3 Pl loc
2. Ax T1 & Ax T2 cl fat 3/1.5 GRx on Cor loc Ax to humerus
3. Ax T2 cl fat
4. Sag T2 cl fat (approx. 16 slices) 3/1.5
   - GRx on Ax at distal humerus
5. Cor T1 (approx. 24 slices) 3/0.5
   - GRx on Ax at distal humerus
6. Cor PD cl fat

Synovitis Give contrast

Add: 7. -c Ax T1 FAT 8. -c Sag T1 FAT

**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 cl fat
8. -c Coronal T1 cl fat

**3T ONLY 8ch Cardiac**

**Small or 8ch knee coil**

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

**MARK TIPS FOR Wrist/Hand/Finger/ Elbow Synovitis/Erosions cover MCP joints and fingers**

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

FOR TUMOR—PRE AX T1 cl fat
7. +C AxT1cl fat 8. +C Cor T1cl fat

**WRIST & HAND—Synovitis & Erosions**

**MARK TIPS: Pre planning**

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

FOR TUMOR—PRE AX T1 cl fat
7. +C AxT1cl fat 8. +C Cor T1cl fat

**WRIST**

**PAIN/FX/Osteo/Tumor/Abcess**

**MARK TIPS FOR Wrist/Hand/Finger Synovitis/Erosions cover MCP joints and fingers**

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

FOR TUMOR—PRE AX T1 cl fat
7. +C AxT1cl fat 8. +C Cor T1cl fat

**MARK PAIN ARM OVERHEAD**

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<th><strong>CSC:</strong></th>
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<th>16 Ch Flex</th>
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<th>8Ch Flex</th>
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<td>GRx on Cor loc Axial to humerus</td>
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<td>Sag T1 (16 slices) 3/1</td>
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**MARK PAIN ARM OVERHEAD / HAND PRONE**

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**MARK TIPS FOR WRIST/FINGER/ELBOW**

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

FOR TUMOR—PRE AX T1 cl fat
7. +C AxT1cl fat 8. +C Cor T1cl fat

**OCTOMYELITIS/TUMOR/ABSCESS**

**SHOULDER: 8Ch Cardiac, 16ch Flex only use 30 small coil if protocol specifies**

Large FOV: Use dedicated shoulder coil if looking a mass in joint

Increase FOV as needed

Large FOV. Use dedicated shoulder coil if looking a mass in joint
SHOULDER SET UP:

Cor Image:

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:**
To set up Coronal sequence of Wrist, the plane should be perpendicular to the styloid processes.

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

- Cover Pathology and area of pain
- Finger pain
- Hand Pain

Cor Thumb:
- Cover all side to side, run thin sequence if specific MC or MCP is in question

SAG Thumb:

**Back to Protocol**