

	Clinical Protocol: MRI, Shoulder	
	ORIGINAL EFFECTIVE DATE: 11/30/2011	REVIEWED/REVISED DATE(S): 06/18/2019 08/13/2021 07/28/2022 11/15/2023 07/24/2025
PREPARED BY: Ashley Gonzalez, UM Project Coordinator; Konstantin Yengoyan, Supervisor, Clinical Operations		APPROVED BY: Dr. Shenoda Y.A Abd Elmaseh, Assistant Medical Director

PROTOCOL OVERVIEW

This Clinical Protocol advises on indications and guidelines for Shoulder MRI.

INDICATIONS

Shoulder MRI may be indicated for **1 or more** of the following:

- a. Anatomic guidance during contrast injection prior to MR arthrography
- b. Bone anatomy or structural defect evaluation needed, as indicated by **1 or more** of the following:
 - i. Bone abnormality on plain x-ray or CT scan
 - ii. Bone scan demonstrating well-localized increased uptake
 - iii. Loose body in joint space, suspected
 - iv. Osteochondral injury or osteochondritis dissecans, suspected
 - v. Osteonecrosis, suspected, as indicated by **1 or more** of the following:
 1. Focal radiolucency on plain x-ray
 2. Pain, stiffness, and swelling associated with localized tenderness to pressure
 3. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage
- c. Cancer or neoplasm evaluation or staging needed for **1 or more** of the following:
 - i. Bone neoplasm (benign or malignant), as indicated by **1 or more** of the following:
 1. Abnormal finding on plain x-ray or bone scan
 2. Chondrosarcoma and **1 or more** of the following:
 - a. Initial staging
 - b. Monitoring response after treatment completed
 - c. Post-treatment surveillance for local tumor recurrence; intervals include **1 or more** of the following:
 - i. Low-grade and intracompartmental: every 6 to 12 months for 2 years, then annually as clinically indicated
 - ii. High-grade (ie, grade II or III), clear cell, or extracompartmental: as clinically indicated^[A]
 3. Current diagnosis or history of cancer located elsewhere and **1 or more** of the following:
 - a. Plain x-ray or bone scan findings indeterminate
 - b. Unexplained localized bony signs and symptoms (eg, pain)
 4. Ewing sarcoma family of tumors and **1 or more** of the following:

- a. Initial staging
 - b. Monitoring response after treatment completed
 - c. Post-treatment surveillance for local tumor recurrence; intervals include **1 or more** of the following:
 - i. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
 - ii. Annually after 5 years
- 5. Osteosarcoma and **1 or more** of the following:
 - a. Initial staging
 - b. Monitoring response after chemotherapy or radiation therapy
 - c. Post-treatment surveillance for local tumor recurrence; intervals include **1 or more** of the following:
 - i. Every 3 months for 2 years
 - ii. Every 4 months for year 3
 - iii. Every 6 months for years 4 and 5
 - iv. Annually after 5 years
 - 6. Palpable bony abnormality, with normal findings on plain x-ray
- ii. Sarcoma, soft tissue, and **1 or more** of the following:
 - 1. Initial staging
 - 2. Local recurrence
 - 3. Post-treatment (eg, surgery, neoadjuvant therapy) surveillance: baseline and periodic imaging of primary site based on estimate of locoregional recurrence
- iii. Soft tissue mass, as indicated by **1 or more** of the following:
 - 1. Causing pain
 - 2. Concern for effect on adjacent anatomic structures
 - 3. Deep or large mass
 - 4. Mass that crosses anatomic boundaries
 - 5. Plain x-ray or other imaging study findings negative or indeterminate
 - 6. Preoperative planning for biopsy or surgical treatment
 - 7. Progressively enlarging
 - 8. Vascular lesion that is expanding or causing change in color of overlying skin
- d. Infection, known or suspected, as indicated by **1 or more** of the following:
 - i. Osteomyelitis, suspected, as indicated by **1 or more** of the following:
 - 1. Bone pain (localized) associated with chills or fever
 - 2. Cellulitis that responds poorly to antibiotics
 - 3. Focal lesion seen on bone scan
 - 4. Plain x-ray findings suspicious for osteomyelitis
 - 5. Sinus tract infection from ulcer, suspected
 - ii. Soft tissue or muscle abscess, when performed for planning of biopsy or surgical treatment
- e. Inflammatory myopathy, suspected, as indicated by **ALL** of the following
 - i. Appropriate imaging required to guide biopsy
 - ii. Unexplained symmetric proximal weakness
- f. Ligament, muscle, or tendon injury or tear, or other shoulder joint pathology, known or suspected, as indicated by **1 or more** of the following:

- i. Anterior or posterior shoulder instability (eg, Bankart or Hill-Sachs lesion)
- ii. Biceps tendon pathology, suspected, as indicated by **1 or more** of the following:
 - 1. Instability or weakness suggesting tendon tear, subluxation, or dislocation
 - 2. Pain that is unresponsive to NSAIDs and physical therapy
- iii. Deltoid pathology, suspected (eg, contracture, deltoid tear)
- iv. Glenoid labral tear, suspected (eg, SLAP lesion)
- v. Muscle pathology, known or suspected
- vi. Rotator cuff tear, suspected, as indicated by **1 or more** of the following:
 - 1. Acute onset of shoulder pain following shoulder trauma
 - 2. Recurrent rotator cuff tear, suspected, after operative repair, unless implanted metallic hardware would produce artifact
 - 3. Rotator cuff tear suggested by difference between active and passive range of motion
 - 4. Weakness with strength testing of rotator cuff on physical examination (eg, positive belly-off sign or belly-press test, positive external rotation lag, positive internal rotation lag)
- vii. Shoulder impingement, suspected, as indicated by **ALL** of the following:
 - 1. Clinical examination findings consistent with shoulder impingement (eg, positive Neer test, positive Hawkins test, painful arc)
 - 2. No response to 6 or more weeks of nonoperative treatment (eg, NSAIDs, corticosteroid injections, physical therapy)
- g. Pain localized to shoulder, as indicated by **1 or more** of the following:
 - i. Chronic shoulder pain of unclear etiology, as indicated by **ALL** of the following:
 - 1. Normal findings on plain x-ray
 - 2. Pain not improving after 6 or more weeks of nonoperative therapy (eg, rest, NSAIDs, physical therapy)
 - ii. Shoulder pain following trauma and **1 or more** of the following:
 - 1. Normal findings on plain x-ray, and history and physical examination are consistent with **1 or more** of the following:
 - a. Dislocation event or instability
 - b. Labral tear
 - c. Rotator cuff tear
 - 2. Plain x-ray demonstrates Bankart or Hill-Sachs lesion.
- h. Peripheral neuropathy, and imaging required to assist in diagnosis or treatment
- i. Postoperative assessment of shoulder, when results likely to affect further management
- j. Soft tissue mass, known or suspected, for diagnostic confirmation or characterization as solid or cystic
- k. Repeat evaluation of specific area or structure with same imaging modality, as indicated by **1 or more** of the following:
 - i. Change in clinical status (eg, worsening symptoms or new associated symptoms)
 - ii. Need for interval reassessment that may impact treatment plan
 - iii. Need for re-imaging either prior to or after performance of invasive procedure

FOOTNOTES

- More reliable signs of rotator cuff rupture on MRI include focal discontinuity, tendon retraction, and increased signal intensity within the tendon. Less reliable signs include fluid in subacromial bursa, obliteration of peribursal fat strip, and glenohumeral joint effusion.

- MRI may not differentiate rotator cuff tendonitis from a partial-thickness tear.
- Impingement syndrome is also called subacromial impingement, supraspinatus syndrome, chronic impingement syndrome, painful arc syndrome, and internal derangement of subacromial joint. Chronic strain of musculotendinous tissue causes swelling and scarring of tissue and subsequent thickening, all of which decrease the distance between the soft tissue and the overlying bone. Eventual tendon wear and fraying frequently may lead to rotator cuff tears. Impingement is classically divided into 3 stages: stage I involves acute inflammation of bursa or tendon; stage II involves degenerative changes of tendon with chronic inflammation and fibrosis; and stage III involves rupture of tendon and possible arthritic changes.
- Anterior subluxations or recurrent dislocations account for about 97% of shoulder instability. Subluxation is defined as partial separation of the humeral head from the glenoid, and dislocation is defined as complete separation of the humeral head from the glenoid. Secondary trauma to the rotator cuff or biceps tendon is not uncommon, particularly with athletes using overhead motions and elderly patients.
- Patients <20 years of age have a recurrence rate of anterior subluxation or dislocation >90%, and patients <30 years of age >50%. After 40 years of age, the redislocation rate drops precipitously to approximately 10%.

RECOMMENDED RECORDS

Please submit history and physical or progress notes that show the symptoms, exam findings, and any pertinent diagnostic tests that may have been done. (i.e. X-ray, ultrasound).

CITATION

MCG Care Guidelines 29th Edition, 3/04/2025 [MCG Releases 29th Edition of Care Guidelines with Updates for Observation Care and Cellular Therapy - MCG Health](#)

CLINICAL PROTOCOL REVISION HISTOR

Revised By:	Ashley Gonzalez, UM Project Coordinator; Konstantin Yengoyan, Supervisor, Clinical Operation	Date: 07/24/25	
Approved By:	Dr. Shenoda Y.A Abd Elmaseh, Assistant Medical Director	Date: 01/29/2026	Signature Shenoda Abd Elmaseh,
Revised By:		Date:	
Approved By:		Date:	Signature
Revised By:		Date:	
Approved By:		Date:	Signature
Revised By:		Date:	
Approved By:		Date:	Signature