American College of Radiology
ACR Appropriateness Criteria®

Chronic Shoulder Pain

Variant 1: Chronic shoulder pain. Initial imaging.

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**US shoulder**

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**MR arthrography shoulder**

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### Variant 3: Chronic shoulder pain. Radiographs demonstrate calcific tendinopathy or calcific bursitis. Next imaging study.

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| Bone scan shoulder | Usually not appropriate | Expert Consensus | 1-10 mSv | 1 1 15 0 0 1 0 0 0 0 0 0
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| FDG-PET/CT skull base to mid-thigh | Usually not appropriate | Expert Consensus | ☢☢☢ 10-30 mSv | ☢☢☢ 3-10 mSv [ped] | 1 1 15 1 1 0 0 0 0 0 0 0
| Radiography shoulder additional views | Usually not appropriate | Limited | ☢ <0.1 mSv | 1 1 8 1 5 1 0 0 0 0 0 0
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**Variant 4: Chronic shoulder pain. Suspect labral pathology or shoulder instability. Initial radiographs normal or inconclusive. Next imaging study.**

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**US shoulder**

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CT shoulder with IV contrast

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<td>Usually not appropriate</td>
<td>10-30 mSv</td>
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Image-guided anesthetic +/- corticosteroid injection shoulder or surrounding structures

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**Variant 5:** Chronic shoulder pain. Suspect adhesive capsulitis. Initial radiographs normal or inconclusive. Next imaging study.
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**Variant 6:** Chronic shoulder pain. Suspect biceps tendon abnormality. Initial radiographs normal or inconclusive. Next imaging study.

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References | Study Quality

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<td>102 (32170356)</td>
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### MRI shoulder without IV contrast

| Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 5 |
|---------------------|--------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|---|
| References          | Study Quality |
| 125 (9609174)       | 2       |
| 128 (28528385)      | 2       |
| 127 (28983764)      | 2       |
| 126 (31346668)      | 2       |
| 130 (24891814)      | 3       |
| 129 (12591665)      | 3       |
| 131 (15111894)      | 2       |
| 137 (30937471)      | 2       |
| 136 (30271779)      | 2       |
| 135 (27885850)      | 2       |
| 134 (29573932)      | 2       |
| 133 (30639523)      | 2       |
| 132 (31153372)      | 2       |

### Image-guided anesthetic +/- corticosteroid injection shoulder or surrounding structures

| Usually appropriate | Strong | Varies | Varies | 8 | 8 | 0 | 0 | 1 | 0 | 2 | 2 | 3 | 2 | 7 |
|---------------------|--------|--------|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| References          | Study Quality |
| 22 (27468666)       | 4       |
| 124 (31187487)      | 3       |
| 123 (31712838)      | 1       |
| 122 (31351537)      | 4       |
| 121 (27582534)      | 2       |

### US shoulder

<p>| Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 1 | 4 | 3 | 1 | 3 | 5 |
|---------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|---|
| References          | Study Quality |
| 138 (31054148)      | 4       |
| 139 (31545834)      | 3       |</p>
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<th>Rating</th>
<th>Median</th>
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**Variant 7:** Chronic shoulder pain. Initial radiographs demonstrate osteoarthritis. Next imaging study.
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**Variant 8:** Chronic shoulder pain. History of prior rotator cuff repair. Suspect rotator cuff disorders or subacromial subdeltoid bursitis. Initial radiographs normal or inconclusive. Next imaging study.

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<td>MRI shoulder without IV contrast</td>
<td>Usually appropriate</td>
<td>Strong</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
<td>9</td>
<td>9</td>
<td>0 0 0 0 0 0 0 5 2 10</td>
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**References**

<table>
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<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
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<tr>
<td>MRI shoulder without IV contrast</td>
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<td>Strong</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
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<td>Radiation Dose (mSv)</td>
<td>References</td>
<td>Study Quality</td>
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<td><strong>CT arthrography shoulder</strong></td>
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<td>154 (31563430)</td>
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<td><strong>US shoulder</strong></td>
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<td>73 (29549380)</td>
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<td><strong>Image-guided anesthetic +/- corticosteroid injection shoulder or surrounding structures</strong></td>
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<td>Varies</td>
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<tr>
<td><strong>CT shoulder without and with IV contrast</strong></td>
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<tr>
<td><strong>MRI shoulder without and with IV contrast</strong></td>
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<td>⚠️ 0 mSv</td>
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<td><strong>FDG-PET/CT skull base to mid-thigh</strong></td>
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<td><strong>Radiography shoulder additional views</strong></td>
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Appendix Key
A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

**Appropriateness Category:** The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

**SOE:** Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality:** The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

**RRL:** Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

**Rating:** The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Median:** The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Final tabulations:** A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at [www.acr.org/ac](http://www.acr.org/ac).