American College of Radiology ACR Appropriateness Criteria[®]

Imaging After Shoulder Arthroplasty

Variant 1: Routine follow-up of the asymptomatic patient with a primary shoulder arthroplasty.

| | Appropri | ateness | | | | | | | | F | 'inal ' | Tabu | latio | ns | | |
|---|-------------------|----------------|---------------------|-------------------|------------------|-----------|--------|----|---|---|---------|------|-------|----|---|----|
| Procedure | Categ | ory | SOE | Adults RRL | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Radiography shoulder | Usua approp | | Limited | 參 <0.1 mSv | | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10 |
| | | | References | | Study | v Quality | | | | | | | | | | |
| | | | 10 (24618199) | | | 4 | | | | | | | | | | |
| | | | 13 (22309766) | | | 4 | | | | | | | | | | |
| | | | 14 (22930212) | | | 3 | | | | | | | | | | |
| | | | 18 (23473606) | | | 2 | | | | | | | | | | |
| | | | 16 (30473242) | | | 4 | | | | | | | | | | |
| | | | 15 (28131693) | | | 4 | | | | | | | | | | |
| | | | 17 (28111179) | | | 3 | | | | | | | | | | |
| CT shoulder with IV contrast | Usually approp | | Expert Consensus | ≎≎≎≎ 1-10 mSv | | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT shoulder without IV contrast | Usually approp | | Expert Consensus | ତେତେ 1-10 mSv | | 1 | 1 | 10 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| CT shoulder without and with IV contrast | Usually approp | y not riate | Expert Consensus | ତ୍ତତତ 1-10 mSv | | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI shoulder without IV contrast | Usually approp | | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI shoulder without and with IV contrast | Usuall approp | | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Bone scan shoulder | Usually r appropria | Expert Consensus | ତତତ 1-10 mSv | | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|------------------------|---------------------|------------------------------|----------------------------|---------|---|----|---|---|---|---|---|---|---|---|
| US shoulder | Usually r appropria | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fluoride PET/CT skull base to mid-thigh | Usually r appropria | Expert Consensus | ଝ ଝଝଝ 10-3 mSv | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-phase bone scan with SPECT or SPECT/CT shoulder | Usually r appropria | Limited | ତତତ 1-10 mSv | ֎֎֎֎ 3- 10 mSv [ped] | 1 | 1 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study | Quality | | | | | | | | | | |
| | | 12 (26652693) | | | 4 | | | | | | | | | | |

Variant 2: Symptomatic patient with a primary shoulder arthroplasty. Initial imaging.

| | Appropri | iateness | COL | | | D.(| | | | F | Final | Tabu | latio | ns | | |
|---------------------------------|------------------|--------------------------------|---------------|-------------------|----------|-----------|--------|----|---|---|-------|------|-------|----|---|----|
| Procedure | Categ | gory | SOE | Adults RRL | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Radiography shoulder | Usua approp | | Limited | ଡ <0.1 mSv | , | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| | | | References | | Study | v Quality | | | | | | | | | | |
| | | | 10 (24618199) | | | 4 | | | | | | | | | | |
| | | | 13 (22309766) | | | 4 | | | | | | | | | | |
| | | | 24 (30241984) | | | 4 | | | | - | | | | | _ | |
| CT shoulder with IV contrast | Usuall approp | y not oriate | Limited | ତେତେ 1-10 mSv | | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | References | | Study | Quality | | | | | | | | | | |
| | | | 23 (20036583) | | | 4 | | _ | _ | _ | | _ | | | | |
| CT shoulder without IV contrast | Usuall approp | y not oriate | Limited | ତେତେ 1-10 mSv | | 1 | 1 | 12 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | • | | References | | Study | Quality | | | | | | | | | | |
| | | References 23 (20036583) | | | | 4 | | | | | | | | | | |

| CT shoulder without and with IV contrast | Usuall approp | | Limited | ତେତେ 1-1(mSv |) | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|------------------|----------------|--------------------------|-------------------|------------------|-----------------|---|----|---|---|---|---|---|---|---|---|
| | | | References 23 (20036583) | | Stu | dy Quality 4 | | · | | • | | | | | | |
| MRI shoulder without IV contrast | Usuall approp | | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI shoulder without and with IV contrast | Usuall approp | | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bone scan shoulder | Usuall approp | y not riate | Limited | ତ୍ତେତ 1-1(mSv |) | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | References | | Stu | dy Quality | | | | | | | | | | |
| | | | 21 (19038601) | | | 4 | | | | | | | | | | |
| | | | 22 (536788) | | | 4 | | | | | | | | | | |
| US shoulder | Usuall approp | | Limited | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 12 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | | References | | Stu | dy Quality | | | | | | | | | | |
| | | | 25 (1515896) | | | 4 | | | | | - | | | | | |
| Fluoride PET/CT skull base to mid-thigh | Usuall approp | y not riate | Expert Consensus | ତତତତ 10-∹ mSv | 30 | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-phase bone scan with SPECT or SPECT/CT shoulder | Usuall approp | | Limited | ତତତ 1-1(mSv |) | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | References | | Stu | dy Quality | | | | | | | | | | |
| | | | 34 (19605662) | | | 4 | | | | | | | | | | |

Variant 3: Symptomatic patient with a primary shoulder arthroplasty, infection not excluded. Additional imaging following radiographs.

| | Appropriateness | COF | | | | | | | F | 'inal ' | Tabu | latio | ns | - | |
|----------------------------------|------------------------|---------|------------|----------|--------|--------|---|---|---|---------|------|-------|----|---|----|
| Procedure | Category | SOE | Adults RRL | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Image-guided aspiration shoulder | Usually appropriate | Limited | Varies | Varies | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |

| | Appropriatenes | 5 | | | | | Final Tabulations 1 2 3 4 5 6 7 8 9 | | | | | | | | |
|--|---|----------------|-------------------|------------------|-----------|--------|---------------------------------------|---|---|---|---|---|---|---|---|
| Procedure | Category | SOE | Adults RRL | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | References | | Study | / Quality | | | | | | | | | | |
| | | 35 (24293800) | | | 4 | | | | | | | | | | |
| | | 34 (19605662) | | | 4 | | | | | | | | | | |
| | | 36 (31563506) | | | 3 | | | | | _ | | | | | |
| MRI shoulder without and with IV contrast | May be appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 6 | 6 | 1 | 0 | 0 | 1 | 5 | 3 | 2 | 0 | 2 |
| | | References | | Study | / Quality | | | | | | | | | | |
| | | 37 (21862766) | | | 3 | | | | | | | | | | |
| | | 39 (12195247) | | | 3 | | | | | | | | | | |
| | | 28 (19884021) | | | 4 | | | | | | | | | | |
| | | 38 (25264437) | | | 4 | | | | | | | | - | | |
| MRI shoulder without IV contrast | May be appropriate (Disagreement) | Expert Opinion | O 0 mSv | O 0 mSv [ped] | 5 | 5 | 5 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 1 |
| | | References | | Study | / Quality | | | | | | | | | | |
| | | 37 (21862766) | | | 3 | | | | | | | | | | |
| | | 39 (12195247) | | | 3 | | | | | | | | | | |
| | | 28 (19884021) | | | 4 | | | | | | | | | | |
| | | 38 (25264437) | | | 4 | | | | | | _ | | | | |
| 3-phase bone scan and WBC scan and sulfur colloid scan shoulder | May be appropriate | Limited | ତତତତ 10-3(mSv | o | 5 | 5 | 2 | 0 | 0 | 4 | 7 | 0 | 1 | 0 | 0 |
| | | References | | Study | / Quality | | | | | | | | | | |
| | | 21 (19038601) | | | 4 | | | | | | | | | | |
| | | 11 (16702459) | | | 4 | | | | | | | | | | |
| | | 22 (536788) | | | 4 | | | | | | | | | | |
| | | 30 (30193652) | | | 4 | | | | | | | | | | |

| US shoulder | May be appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 5 | 5 | 0 | 0 | 1 | 1 | 8 | 2 | 2 | 0 | 0 |
|--|---|----------------|------------------------------|------------------|---------|---|---|---|---|---|---|---|---|---|---|
| | | References | | Study | Quality | | | | | | | | | | |
| | | 41 (12646465) | | | 4 | | | | | | | | | | |
| | | 40 (12720010) | | | 4 | | | | | | | | | | |
| | | 42 (23971477) | | | 4 | | | | | | | | | | |
| WBC scan and sulfur colloid scan shoulder | May be appropriate (Disagreement) | Expert Opinion | ֎֎֎֎ 10-30 mSv | | 5 | 5 | 2 | 0 | 0 | 0 | 8 | 3 | 1 | 0 | 0 |
| | | References | | Study | Quality | | | | | | | | | | |
| | | 41 (12646465) | | | 4 | | | | | | | | | | |
| | | 40 (12720010) | | | 4 | | | | | | | | | | |
| | | 42 (23971477) | | | 4 | | | | | | | | | | |
| 3-phase bone scan and WBC scan and sulfur colloid scan with SPECT or SPECT/CT shoulder | May be appropriate | Limited | ֎֎֎֎ 10-30 mSv | | 5 | 5 | 0 | 0 | 1 | 0 | 7 | 3 | 1 | 1 | 0 |
| | | References | | Study | Quality | | | | | | | | | | |
| | | 21 (19038601) | | | 4 | | | | | | | | | | |
| | | 11 (16702459) | | | 4 | | | | | | | | | | |
| | | 22 (536788) | | | 4 | | | | | | | | | | |
| | | 30 (30193652) | | | 4 | | | | | | | | | | |
| | | 33 (32657859) | | | 4 | | | | | | | | | | |
| | | 31 (33289359) | | | 2 | | | | | | | | | | |
| | | 32 (33361187) | | | 3 | | | | | | | | | | · |
| CT shoulder with IV contrast | Usually not appropriate | Limited | ତତତ 1-10 mSv | | 3 | 3 | 7 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 |
| | | References | | Study | Quality | | • | | | | | | | | |
| | | 3 (17015609) | | | 4 | | | | | | | | | | |
| Bone scan shoulder | Usually not appropriate | Limited | ଡେଡ େ 1-10 mSv | | 3 | 3 | 6 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study | Quality | | | | | | | | | | |
| | | 21 (19038601) | | | 4 | | | | | | | | | | |

| | | 22 (536788) | | | 4 | | | | | | | | | | |
|---|-------------------------------|---------------------|---------------------|-----------------------------|-----------|---|----|---|---|---|---|---|---|---|---|
| | | 30 (30193652) | | | 4 | | | | | | | | | | |
| 3-phase bone scan with SPECT or SPECT/CT shoulder | Usually approp | Limited | ତତତ 1-10 mSv | ତେତେତ 3- 10 mSv [ped] | 3 | 3 | 4 | 1 | 5 | 3 | 1 | 0 | 0 | 0 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 21 (19038601) | | | 4 | | | | | | | | | | |
| | | 22 (536788) | | | 4 | | | | | | | | | | |
| | | 30 (30193652) | | | 4 | | | | | | | | | | |
| | | 20 (-3194396) | | | 3 | | | | | | | | | | |
| CT shoulder without IV contrast | Usually approp | Limited | ଡଡଡ 1-10 mSv | | 1 | 1 | 8 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 3 (17015609) | | | 4 | | | | | | | | | | |
| CT shoulder without and with IV contrast | Usuall ₂ approp | Limited | ଡଡଡ 1-10 mSv | | 1 | 1 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 3 (17015609) | | | 4 | | | | | | | | | | |
| Fluoride PET/CT skull base to mid-thigh | Usuall ₂ approp | Expert Consensus | ବ୍ୟବ୍ୟ 10-30 mSv | | 1 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Variant 4: Symptomatic patient with a primary shoulder arthroplasty, infection excluded. Suspected loosening. Additional imaging following radiographs.

| | Appropri | iateness | COF | | | D (1 | N7 11 | | | F | inal | Tabu | latio | ns | | |
|---------------------------------|----------------|----------|---------------|------------------|----------|-------------|--------|---|---|---|------|------|-------|----|---|---|
| Procedure | Categ | | SOE | Adults RRL | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CT shoulder without IV contrast | Usua approp | | Strong | ≎≎≎≎ 1-10 mSv | | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 3 |
| | · | | References | | Study | v Quality | | | | | | | | | | |
| | | | 50 (23479714) | | | 4 | | | | | | | | | | |
| | | | 10 (24618199) | | | 4 | | | | | | | | | | |
| | | | 47 (24286563) | | | 3 | | | | | | | | | | |

| | | r | | | | | | | | | | | | | | | |
|---|---------------------------|--------------|----------------|-----------------|---|-----------------------------|---------|---|---|---|---|---|---|---|---|---|---|
| | | | 55 (23412251) | | | | 4 | | | | | | | | | | |
| | | | 53 (20551186) | | | | 1 | | | | | | | | | | |
| | | | 57 (26234665) | | | | 3 | | | | | | | | | | |
| | | | 54 (28561262) | | | | 4 | | | | | | | | | | |
| | | | 49 (29426742) | | | | 4 | | | | | | | | | | |
| | | | 51 (28796543) | | | | 2 | | | | | | | | | | |
| | | | 52 (27186794) | | | | 2 | | | | | | | | | | |
| | | | 56 (25922110) | | | | 2 | | | | | | | | | | |
| | | | 48 (32364883) | | | | 4 | | | | | | | | | | |
| MRI shoulder without IV contrast | Usua approp | | Limited | O 0 mSv | , | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 7 | 3 |
| | | | References | | | Study | Quality | | | | | | | | | | |
| | | | 37 (21862766) | | | | 3 | | | | | | | | | | |
| | | | 39 (12195247) | | | | 3 | | | | | | | | | | |
| | | | 58 (16829248) | | | | 4 | | | | | | | | | | |
| | | | 38 (25264437) | | | | 4 | | | | | | | | | | |
| US shoulder | May approp (Disagre | oriate | Expert Opinion | O 0 mSv | , | O 0 mSv [ped] | 5 | 5 | 5 | 0 | 1 | 1 | 4 | 3 | 0 | 0 | 0 |
| | | | References | | | Study | Quality | | | | | | | | • | | |
| | | | 10 (24618199) | | | * | 4 | | | | | | | | | | |
| 3-phase bone scan with SPECT or SPECT/CT shoulder | May approp | be priate | Limited | ଷଷଷ 1-1(mSv | 0 | ≎≎≎≎≎ 3- 10 mSv [ped] | 5 | 5 | 0 | 0 | 5 | 1 | 7 | 1 | 0 | 0 | 0 |
| | | | References | | | Study | Quality | | | | | | | | | | |
| | | | 21 (19038601) | | | | 4 | | | | | | | | | | |
| | | | 22 (536788) | | | | 4 | | | | | | | | | | |
| | | | 30 (30193652) | | | | 4 | | | | | | | | | | |
| | | | 20 (-3194396) | | | | 3 | | | | | | | | | | |
| Bone scan shoulder | Usuall approp | | Limited | ତତତ 1-1(mSv | 0 | | 3 | 3 | 3 | 1 | 5 | 1 | 2 | 2 | 0 | 0 | 0 |
| | | | References | | | Study | Quality | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| | | 21 (19038601) | | 4 | | | | | | | | | | |
|--|-------------------------|---------------|-----------------|---------------|---|----|---|---|---|---|---|---|---|---|
| | | 30 (30193652) | | 4 | | | | | | | | | | |
| CT shoulder with IV contrast | Usually not appropriate | Strong | ତ®ତ 1-10 mSv | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | |
| | | 50 (23479714) | | 4 | | | | | | | | | | |
| | | 10 (24618199) | | 4 | | | | | | | | | | |
| | | 47 (24286563) | | 3 | | | | | | | | | | |
| | | 55 (23412251) | | 4 | | _ | | | | | | | | |
| | | 53 (20551186) | | 1 | | _ | | | | | | | | |
| | | 57 (26234665) | | 3 | | _ | | | | | | | | |
| | | 54 (28561262) | | 4 | | _ | | | | | | | | |
| | | 49 (29426742) | | 4 | | _ | | | | | | | | |
| | | 51 (28796543) | | 2 | | _ | | | | | | | | |
| | | 52 (27186794) | | 2 | | _ | | | | | | | | |
| | | 56 (25922110) | | 2 | | | | | | | | | | |
| | | 48 (32364883) | | 4 | | | | 1 | 1 | 1 | | | 1 | |
| CT shoulder without and with IV contrast | Usually not appropriate | Strong | ତତତ 1-10 mSv | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | |
| | | 50 (23479714) | | 4 | | | | | | | | | | |
| | | 10 (24618199) | | 4 | | | | | | | | | | |
| | | 47 (24286563) | | 3 | | | | | | | | | | |
| | | 55 (23412251) | | 4 | | _ | | | | | | | | |
| | | 53 (20551186) | | 1 | | | | | | | | | | |
| | | 57 (26234665) | | 3 | | _ | | | | | | | | |
| | | 54 (28561262) | | 4 | | _ | | | | | | | | |
| | | 49 (29426742) | | 4 | | 1 | | | | | | | | |
| | | 51 (28796543) | | 2 | | _ | | | | | | | | |
| | | 52 (27186794) | | 2 | | 4 | | | | | | | | |
| | | 56 (25922110) | | 2 | | | | | | | | | | |

| | | 48 (32364883) | | | 4 | | | | | | | | |
|---|------------------|---------------------|-------------------------------|------------------|---------|---|----|---|---|---|-----|------|---|
| MRI shoulder without and with IV contrast | Usuall approp | Limited | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 12 | 0 | 0 | 0 | 2 0 | 0 | 0 |
| | | References | | Study | Quality | | | | | | | | |
| | | 37 (21862766) | | | 3 | | | | | | | | |
| | | 39 (12195247) | | | 3 | | | | | | | | |
| | | 58 (16829248) | | | 4 | | | | | | | | |
| | | 38 (25264437) | | | 4 | | | | | | | | |
| Fluoride PET/CT skull base to mid-thigh | Usuall approp | Expert Consensus | ଡ େଡେଡ 10-3 mSv | 0 | 1 | 1 | 14 | 0 | 0 | 0 | 0 0 | 0 | 0 |

Variant 5: Symptomatic patient with a primary shoulder arthroplasty, infection excluded. Suspected rotator cuff tear or other soft tissue abnormality. Additional imaging following radiographs.

| Procedure | Appropriateness | COL | | | | Final Tabulations | | | | | | | | | | | |
|----------------------------------|------------------------|---------------|------------|------------------|---------------|-------------------|---|---|---|---|---|---|---|---|----|--|--|
| | Category | SOE | Adults RRI | Peds RRL | Rating | Median | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | |
| MRI shoulder without IV contrast | Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4 | 7 | | |
| | | References | | Study | Study Quality | | | | | | | | | | | | |
| | | 37 (21862766) | | | 3 | | | | | | | | | | | | |
| | | 10 (24618199) | | | 4 | | | | | | | | | | | | |
| | | 39 (12195247) | | | 3 | | | | | | | | | | | | |
| | | 58 (16829248) | | | 4 | | | | | | | | | | | | |
| | | 63 (16979047) | | 3 | | | | | | | | | | | | | |
| | | 38 (25264437) | | | 4 | | | | | | | | | | | | |
| US shoulder | Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 10 | | |
| | | References | | Study | Quality | | | | | | | | | | | | |
| | | 41 (12646465) | | | 4 | | | | | | | | | | | | |
| | | 63 (16979047) | | | 3 | | | | | | | | | | | | |

| | | 64 (29396098) | | 4 | | | | | | | | | | | |
|---|-------------------------|---|-------------------------|------------------|-----------|---|----|---|---|---|---|---|---|---|-------------|
| CT arthrography shoulder | Usually appropriate | Limited | ଷଷଷଷ 10-30 mSv | | 7 | 7 | 1 | 0 | 0 | 0 | 4 | 2 | 4 | 3 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 10 (24618199) | | | | | | | | | | | | | |
| | | 59 (3715028) | | | | | | | | | | | | | |
| | | 61 (15829828) | | 3 | | | | | | | | | | | |
| | | 60 (8020238) | | 4 | | | | | | | - | | 1 | | |
| CT shoulder with IV contrast | Usually not appropriate | Limited | ତେତେ 1-10 mSv | | 1 | 1 | 12 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 62 (30268356) | | | 3 | | | | | | | | | | |
| CT shoulder without IV contrast | Usually not appropriate | Limited | ଷ®ଷ 1-10 mSv | | 1 | 1 | 9 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | References | ences Study Quality | | | | | | | | | | | | |
| | | 62 (30268356) | | 3 | | | | _ | | | | | | | |
| CT shoulder without and with IV contrast | Usually not appropriate | Limited | ଡେଡେ 1-10 mSv | | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 62 (30268356) | | 3 | | | | - | | | | | - | | |
| MRI shoulder without and with IV contrast | Usually not appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 11 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| | | References | | Study | y Quality | | | | | | | | | | |
| | | 37 (21862766) 3 10 (24618199) 4 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | 39 (12195247) | | | 3 | | | | | | | | | | |
| | | 58 (16829248) | 58 (16829248) 4 | | | | | | | | | | | | |
| | | 63 (16979047) | | 3 | | | | | | | | | | | |
| | | 38 (25264437) | | 4 | | | | | | | | | | | |

| Bone scan shoulder | Usually not appropriate | Expert Consensus | ଡେଡେ 1-10 mSv | | 1 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
|---|-------------------------|---------------------|--------------------|----------------------------|---|---|----|---|---|---|---|---|---|---|---|
| Fluoride PET/CT skull base to mid-thigh | Usually not appropriate | Expert Consensus | ତତତତ 10-30 mSv | | 1 | 1 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-phase bone scan with SPECT or SPECT/CT shoulder | Usually not appropriate | Expert Consensus | ଝିଝିଝି 1-10 mSv | ✿֎֎֎ 3- 10 mSv [ped] | 1 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

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.