**Audit of adequacy of magnetic resonance imaging of the shoulder**

**Descriptor:**

An audit to assess and optimize the imaging planes and coverage of shoulder MRI

**Background:**

MRI is the preferred method to evaluate internal derangement of the shoulder. Routine MRI examination of the shoulder typically includes images acquired in the axial, oblique axial and oblique sagittal planes. It is important to angle the oblique coronal axis such that the rotator cuff tendons can be visualized in continuity. This is best by aligning the localizer parallel to the supraspinatus central tendon. Adequate coverage is also necessary to ensure complete assessment of shoulder pathology.

The American College of Radiology (ACR) [1] and European Society of Musculoskeletal Radiology (ESSR) [2] have published separate guidelines on the image planes and coverage of shoulder MRI.

## The Cycle

**The standard:**

**Coverage**

- Axial: From above acromioclavicular joint to below axillary pouch

- Oblique coronal: From coracoid process and include entire humeral head

- Oblique sagittal: From lateral deltoid to scapular body

**Imaging planes**

- Oblique coronal: parallel to supraspinatus tendon

- Oblique sagittal: perpendicular to the supraspinatus tendon

**Target:**

Adequate coverage 100%

Correct imaging planes 100%

## Assess local practice

**Indicators:**

Percentage of examination with adequate coverage

Percentage of oblique coronal and sagittal planes orthogonal to the supraspinatus tendon

**Data items to be collected:**

1. Indications of shoulder MRI.

2. List of patients referred for shoulder MRI.

3. Date of MRI scan

4. For each shoulder MRI, document whether:

   - Coverage adequate

   - Oblique coronal plane parallel to the supraspinatus tendon

   - Oblique sagittal plane perpendicular to the supraspinatus tendon

**Suggested number:**

Aim for the total number of shoulder MRI over a 3 month period.

**Suggestions for change if target not met:**

1. Present findings at departmental meeting

2. Provide education to MR radiographers on anatomy of rotator cuff and localization of central tendon of supraspinatus on orthogonal planes

3. Handouts/poster displaying details of technique and adequate image parameters of MRI shoulder examination, highlighting importance of placing localizer orthogonal to central tendon of supraspinatus as well as utilising electronic resources including hyperlinks to reference websites and key images eg localisers on scanner computers in effort to save paper and be eco-friendly

**Resources:**

- Data can be collected and analysed using an Excel sheet

- PACS and RIS record access

- 5 hours for data collection and analysis

**References:**

1. ACR–SPR–SSR Practice Parameter for the Performance and Interpretation of Magnetic Resonance Imaging (MRI) of the Shoulder. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/mr-shldr.pdf?la=en>
2. European Society of Skeletal Radiology Sports Sub-committee. Guidelines for MR Imaging of Sports Injuries – Shoulder, 2016. <https://essr.org/content-essr/uploads/2016/10/ESSR-MRI-Protocols-Shoulder.pdf>
3. Michael BZ. MRI of the shoulder, 2nd edition. Lippincott Williams & Wilkins, 2003.

**Editor's comments:**

This technique based audit would be ideally carried out in conjunction with the MR radiographers looking at their department's practice. They are then well placed to address any areas of concern

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