

Standard MR imaging will include Sagittal T1 MPRAGE, axial T2 FLAIR, axial T2, post gadolinium sagittal 3D T1 (with reconstructions), and post gadolinium axial T1 images.

### 3 Tesla MRI protocol:

- Sagittal T1 MPRAGE (slice thickness 1.0mm skip 0, 25 cm FOV, mode 3D)  
TR=2100ms, TE=min, flip angle 7-15 degrees
- Axial T2 images (slice thickness 2mm skip 0, 20 cm FOV, mode 2D), flip angle:  
90°/160°, TR >2500 msec, TE=80-120 msec
- Axial T2 FLAIR images (slice thickness 4mm skip 0, 20 cm FOV, mode 2D) flip angle:  
90°/160°, TR>6000 msec, TE= 100-140 msec
- Post gadolinium sagittal T1 MPRAGE (slice thickness 0.9 mm skip 0, 22 cm FOV, mode 3D), TR=2100ms, TE=min, flip angle 7-15 degrees
- Post gadolinium axial T1 images (slice thickness 4mm skip 0, 20 cm FOV), TR=650 msec, TE=10 msec, flip angle 90 °

### 1.5Tesla MRI protocol:

- Sagittal T1 SPGR (slice thickness 1.5 mm skip 0 mm, 22 cm FOV, mode 3D), TR=2100, TE=min, flip angle 10°-15°
- Axial T2 images (slice thickness 4 mm skip 0 mm, 20 cm FOV, mode 2D), flip angle 90°/160°, TR>3500 msec, TE=100-120 msec
- Axial T2 FLAIR images (slice thickness 4 mm skip 0 mm, 20 cm FOV, mode 2D), flip angle 90°/160°, TR>6000 msec, TE=100-140 msec
- Post gadolinium sagittal 3D FSPGR images (slice thickness 1.5 mm no skip, 24 cm FOV, mode 3D), TR=2100 msec, TE=min
- Post gadolinium Axial T1 images (slice thickness 3 mm no skip, 20 cm FOV, mode 2D)

### Protocol for Spine

- Sagittal T1 images should be after gadolinium (slice thickness 3 mm skip 0).
- Axial T1 images are after gadolinium(slice thickness 3mm skip 0). Axial T2 images are optional