

UMass Emergency Department MRI Protocols

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1. BRAIN: Hydrocephalus Fast

<i>Sequences</i>	Localizer ssFSE in axial, sagittal and coronal planes (15 to 25 sec each)
<i>When to order</i>	Rule out Hydrocephalus / Shunt Follow-up <ul style="list-style-type: none"> - Children - Young adults in need of repetitive imaging
<i>Limitations:</i>	Parenchyma evaluation is limited Actual shunt may not be well seen.

2. BRAIN: Stroke Fast

<i>Sequences:</i>	Localizer 15 direction DTI with traceons & average DC maps – 2 min 16 sec
<i>When to order:</i>	Rule out stroke
<i>Limitations:</i>	Pathology other than stroke is not well evaluated.

3. BRAIN: Hyperacute Stroke

<i>Sequences</i>	Localizer 15 direction DTI – 2 min 16 sec SWAN – 5 to 6 min FLAIR – 3 min
<i>When to order:</i>	Prior to intervention Hyperacute stroke evaluation, also to rule out hemorrhage
<i>Limitations:</i>	Doesn't evaluate for vessel occlusion <ul style="list-style-type: none"> - Presumably the patient already has a CTA. Doesn't evaluate penumbra. - CT or MRI Perfusion can be done for Penumbra

4. **SPINE: Cord Compression**

<i>Sequences:</i>	2 FOVs covering the entire spine STIR Sagittal – 4 to 5 min x 2 Axial T2 – 5 min x 2
<i>When to order:</i>	To rule out cord compression
<i>Limitations:</i>	There should be a low threshold for further dedicated imaging

5. MSK: Sacral Fracture

<i>Sequences:</i>	Localizer Oblique coronal T1 – 4 to 5 min Oblique coronal STIR – 5 min 45 sec Oblique axial fat-sat T2 - <i>Comments: Oblique to the plane of the sacrum</i>
<i>When to order:</i>	Evaluate radiographically occult sacral fracture.
<i>Advantages:</i>	More accurate than XR or CT (especially in osteopenic patients).
<i>Limitations:</i>	Small masses and fluid collections can be difficult to characterize.

6. MSK: Occult hip fracture

<i>Sequences:</i>	Localizer Coronal T1 Coronal STIR Axial fat-sat T2
<i>Indications:</i>	More accurate than XR or CT (especially in osteopenic patients).
<i>Advantages:</i>	Quick. More sensitive than XR or CT (especially in osteopenic patients). Can detect joint effusions and other gross musculoskeletal pathologies.
<i>Limitations:</i>	Intra-abdominal, pelvic pathologies are not well evaluated.

7. MSK: Osteomyelitis Foot

<i>Sequences</i>	Localizer Axial (short axis) T1 Coronal (long axis) T1 Axial (short axis) STIR Sagittal STIR - Long axis and short axis for forefoot. - Straight axial, coronal, sagittal for hindfoot/calcaneus.
<i>Indications:</i>	Early or radiographically occult osteomyelitis. Dedicated radiographs required prior to MRI.
<i>Advantages:</i>	Fast exam. More sensitive than XR or CT.
<i>Limitations:</i>	Small soft tissue lesions and fluid collections are not well characterized. Patient cooperation (i.e., pain/motion control) required.

8. Abdomen & Pelvis: Appendicitis Adults

<i>Sequences:</i>	Coronal bSSFP Triplane T2 SSFSE Triplane T2 SSFSE with Fat Sat Ax T1 LAVA with Fat Sat
<i>Indications:</i>	Appendicitis in <i>non-pregnant</i> adults
<i>Advantages:</i>	Quick No contrast No radiation Does not require monitoring
<i>Limitations:</i>	Appendicitis in pregnant adults is a monitored study with a different, dedicated protocol.

9. Abdomen & Pelvis: MRCP for Pancreatitis

<i>Sequences:</i>	Coronal T2 SSFSE/HASTE Axial T2 SSFSE/HASTE 3D MRCP resp-triggered
<i>Indications:</i>	To rule out CBD stone in cases of gallstone pancreatitis, as a decision node for ERCP To be organized with and ordered by GI or surgery
<i>Advantages:</i>	Quick Alleviates the need for ultrasound after diagnosis of pancreatitis
<i>Limitations:</i>	Does not assess pancreas parenchyma (usually a CT already available)