

Notes

- MRI is the preferred imaging modality for the following circumstances unless contraindicated or not tolerated by the patient (i.e., due to presence of ferrous metal in body, or severe anxiety) or unavailable.

I. Acute low back pain (onset within past 6 weeks) : MRI without contrast unless specified otherwise

*Not Appropriate: uncomplicated acute (< 6 weeks) low back pain with or without suspected radiculopathy (no red flags) does not warrant the use of MRI, X-ray, CT, myelography or CT xylography, NUC Tc-99m bone scan with SPECT. Nonspecific lumbar disc abnormalities are commonly found in asymptomatic patients.(Chou, Qaseem et al. 2007) (American College of Radiology 2008)

- Progressive (objective) neurological signs
 - Progressive motor weakness present
- Suspect Cauda Equina syndrome (either of the following)
 - Bilateral neurologic signs and symptoms
 - Acute bladder or bowel dysfunction
 - *ACR appropriateness recommendation ranks MRI without contrast highest (rating = 9). MRI with and without contrast (rating = 8) depends on clinical circumstances. Other methods: Myelography and postmyelography CT (rating = 6), CT with and without contrast (rating = 5)-may be indicated if MRI is confusing or contraindicated, x-ray, NUC Tc-99m bone scan with SPECT and x-ray myelography are rated < 5.
- Infection (any of the following) : **MRI with and without contrast**
 - Fever
 - Suspicion of systemic or spinal infection
 - Immunosuppression (e.g., chronic steroid use)
 - IV drug use
- History of cancer with new onset of LBP
 - *ACP recommends plain radiography for unexplained weight loss, MRI or plain radiography if multiple risk factors present. ACR Guidelines for suspicion of cancer, infection or immunosuppression rate MRI without and with contract highest (rating = 8). CT without contrast (rating = 6)-useful if MRI is contraindicated or unavailable. Other imaging methods: use of x-ray, NUC Tc-99m bone scan whole body with optional targeted SPECT, myelography and postmyelography CT (appropriateness rating < 6 for these).
- Low velocity trauma (e.g., fall from height or struck by object)
 - *ACP Guideline recommends: if vertebral compression fracture is suspected due to history of osteoporosis, use of steroids, or age ≥ 70 plain radiography should be completed prior to MRI.
 - Vertebral compression fracture present on plain radiography
 - Other fractures??
 - *For low velocity trauma, ACR Guidelines do not support use of NUC Tc-99m bone scan with SPECT, MRI with and without contrast, myelography and postmyelography CT, or x-ray myelography (appropriateness ratings < 5 for these)

II. Subacute Low back pain >6 weeks : MRI without contrast

At least 6 weeks medical/conservative treatment and either:

- Suspected radiculopathy with (all 3 present):
 - Leg pain is > than back pain
 - Pain present in nerve root distribution
 - Positive straight leg raising test < 45° OR positive crossed straight leg raising test

OR

- EMG/NCS demonstrates nerve root impingement

*ACP recommendation: consider EMG/NCS testing if symptoms > 1 month. For suspected radiculopathy, ACR Guidelines rate MRI without contrast as most appropriate. CT without contrast may be useful if MRI is not available or contraindicated. MRI with and without contrast may be indicated if noncontrast MRI is nondiagnostic or indeterminate. MRI is preferred over myelography and postmyelography CT, but may be indicated if MRI is nondiagnostic. In some circumstances (facet arthropathy, stress fracture and spondylolysis) NUC Tc-99m bone scan with SPECT may be useful. Least appropriate x-ray (appropriateness rating 2).

III. Chronic low back pain (> 3 months) with prior MRI of lumbar spine : MRI without contrast

- Objective worsening of neurological status by physical exam OR electrodiagnostic testing
- Patient is considered a candidate for spine surgery, (one of the following)
 - Progressive changes in objective neurological findings
 - At least 1 year since last lumbar MRI (without objective change in neurological signs)

* ACR Guidelines rate MRI without contrast as most appropriate. CT without contrast may be useful if MRI is not available or contraindicated. MRI with and without contrast may be indicated if noncontrast MRI is nondiagnostic or indeterminate. MRI is preferred over myelography and postmyelography CT, but may be indicated if MRI is nondiagnostic. In some circumstances (facet arthropathy, stress fracture and spondylolysis) NUC Tc-99m bone scan with SPECT may be useful. Least appropriate x-ray (appropriateness rating 2).

- Prior lumbar surgery (one of the following)
 - Objective and/or new or worsening neurological signs
 - Plain radiography OR clinical findings suggest new adverse effects of surgery

*Looking for epidural scarring

*ACR appropriateness rates MRI with and without contrast highest (rating =8), CT without contrast (rating=6) may be indicated in postfusion patients or when MRI is contraindicated or indeterminate. Other methods rated lower: MRI without contrast (rating=6) as contrast is often necessary, myelography and postmyelography CT (rating = 5, x-ray (rating = 5)-flex/extension may be useful, NUC Tc-99m bone scan with SPECT (rating=5)-helps detect and localize pseudoarthrosis, x-ray myelography (rating = 2).

IV. Indication not listed : provide clinical justification

References:

American College of Radiology (2008). ACR appropriateness criteria: low back pain. Available at:
http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonNeurologicImaging/LowbackPainDoc7.aspx

Chou, R., A. Qaseem, et al. (2007). "Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society." Ann Intern Med 147(7): 478-91.

Upper Extremity MRI Criteria

Wrist/Hand

Note: MRI is rarely indicated as a preferred diagnostic modality for any wrist condition except the following:

Carpal Tunnel Syndrome (CTS): no indication for routine use of MRI^{1,2}

- Clinical history and electrodiagnostic studies are considered the gold standard for the diagnosis of CTS
- See Work-related CTS Diagnosis and Treatment Guideline:
<http://www.lni.wa.gov/ClaimsIns/Files/OMD/CTSGuidelineFINAL.pdf>

Severe acute wrist trauma with normal radiographs, but fracture or ligament/cartilage tear suspected (*MRI with or without contrast*)¹

- Suspected fracture- e.g. evaluation of scaphoid fracture when degree of displacement is not well characterized or age of fracture is not known
- CT is indicated in general for occult fracture when plain radiographs are normal
- Suspected ligament/cartilage tear- e.g. triangular cartilage ligament tears, particularly when done in association with an arthrogram

Suspected soft tissue mass (*MRI with or without contrast*)¹

Normal radiographs, suspected avascular necrosis (Kienbock's disease)^{1,3,4}

Elbow

Note: MRI is rarely indicated as a preferred diagnostic modality for any elbow condition except the following (*MRI without contrast unless otherwise specified*):

- Severe acute elbow trauma with normal radiographs, but fracture or ligament tear suspected
- Suspected mass (*MRI with or without contrast*)
- Suspected avascular necrosis
- Evaluation of intra-articular loose bodies, heterotopic calcifications, or suspected cartilaginous defects

Shoulder^{1,3,4}

Acute pain (trauma) following shoulder trauma not responsive to conservative measures for 4 weeks and:

- Clinical signs and symptoms suspicious for rotator cuff tear/impingement, age ≥ 35 years
- Suspected instability/labral tear, age < 35 years
- Recurrent dislocation
- Suspected intra-articular loose bodies
- Suspected avascular necrosis

- Shoulder symptoms and physical assessment indicating the need for MRI after 4 weeks of treatment should include at least two of the following⁵:
 - Anterior or posterior shoulder instability
 - External rotation pain or weakness
 - Impingement signs
 - Loss of abduction
 - Persistent pain with activity
- MR or MR arthrogram may be performed for either of the first 2 criteria

Subacute/chronic shoulder pain

- Surgical planning and no MRI within 6 months
- Previous surgery and substantial increase in objective signs of impingement or instability/labral tear

¹ ACR Guideline(s)

² L&I Guideline

³ HealthLink

⁴ Bussieres

⁵ New Zealand Guideline

Cervical MRI Criteria

Acute cervical pain (onset within the past 6 weeks) (*MRI without contrast unless otherwise specified*)

Not appropriate: uncomplicated acute cervical pain (<6 weeks) with or without suspected radiculopathy (no red flags) does not warrant the use of MRI. Radicular symptoms alone, in the absence of objective neurological signs, do not normally indicate a need for an MRI within an early time period.

- Any new objective neurological signs
 - Clear cut signs (sensory loss, motor weakness, abnormal reflexes) in a radicular pattern
 - Evidence of neurologic signs or symptoms suggestive of spinal cord involvement (e.g. bilateral numbness, weakness, or reflex changes in arms)
- Progressive neurological deficit
- Evidence of spinal instability or spinal fracture on any other imaging test
- History of significant trauma, including cranial trauma, significant whiplash following high speed impact, or significant fall
- Patient inevaluable for 48 hours and suspected cervical trauma
- Suspicion or objective evidence of malignancy, infection, immunosuppression, or bone disc margin destruction on plain radiographs (*MRI with or without contrast*)

Subacute cervical pain (>6 weeks) and no prior MRI for the same episode of cervical pain

- Any neurological signs or symptoms
- Prior neck surgery and significant new neurological signs or symptoms
- Evidence of spinal instability or spinal fracture on any other imaging test
- Complex congenital anomaly or deformity of the spine
- Evidence of substantial spinal canal stenosis on other imaging tests¹

Chronic or recurrent cervical pain (>3 months) and prior MRI done for the same episode of cervical pain

- Significant objective worsening of neurological status by physical exam or electrodiagnostic testing
- Patient is considered a candidate for cervical spine surgery and either:
 - Progressive changes in objective neurological findings
 - At least one year since last cervical MRI (without objective change in neurological signs)
- Prior cervical spine surgery and either:
 - New or worsening significant objective neurological findings
 - Other imaging or clinical findings suggest new adverse effects of surgery

Other

Suspicion of cervical multiple sclerosis (MS) with objective evidence of neurological signs and symptoms in time and space or definite/probably MS with new onset neurological deficit referable to the cervical spinal cord

¹ Bussieres 2008

AIM Workgroup-Agency update

9/14/2009

- Review and adaptation of prioritized evidence-based guidelines; translate guidelines into UR review criteria and decision aids.
- Relied on best available evidence-based guidelines, supplemented by ACR guidelines. Validated by review of other available review criteria.
- A relatively few guidelines/review criteria will cover majority of MR utilization

AIM Workgroup-Agency update

-Progress on review criteria/decision aids-

- Low back MR-near final, AIM review completed, additional external review
- Cervical MR, U/E MR(shoulder, elbow, wrist/CTS)-first draft
- Brain MR/CT, L/E MR (hip,knee, ankle/foot), PET-to do
- No good evidence-based guidelines for some imaging, eg, MR abd/pelvis-these may be referred to State HTA program

AIM Workgroup-Agency update

-Agency coordination-

- HRSA (Medicaid) and DLI working hard to coordinate UR activities
- Goal is to implement advanced imaging UR together by late winter, 2010
- Plan evaluation of program within 1 year-may be thesis/dissertation topic



**Washington State
Health Care Authority**

Using Evidence For Better Health Policy

Better Information * Better Health * Reduced Variation

2009 WA Advanced Imaging Management Legislation

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2009 Legislation (2105)

Advance Imaging Management

- Appoint Workgroup (representation specified)
 - By July 1, 2009 identify:
 - evidence-based best practice guidelines or protocols
 - and decision support tools
 - applicable to advanced diagnostic imaging services
 - By Sept 2009 - to be implemented by state...health care programs...
 - By July 2010 - Explore feasibility of adoption by all payors
 - Legislation did NOT include any staff or funding resources
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AIM Work plan – Phase One

1. Members and Charter
 - Identify workgroup, scope, tasks, and “success”
2. Focus and Criteria
 - Review agency utilization for high impact
 - Identify criteria/tool for review of guidelines and tools
3. Decision Support Tool Demonstrations
 - Review currently available tools
4. Guideline Review
 - Review guidelines specific to AIM focus areas
5. Workgroup Recommendations

<http://www.hta.hca.wa.gov/aim.html>

2- AIM Priority Areas

	All Agency Paid	All Agency Unit	Avg Unit Cost
MRI Cervical	\$5,030,759	9,142	\$550
MRI Lumbar	\$11,920,418	19,194	\$621
MRI Upper Joint	\$7,974,280	13,084	\$609
MRI Lower Joint	\$8,165,721	14,070	\$580
MRI Brain	\$6,327,112	10,447	\$606
CT Brain	\$2,421,023	13,762	\$176
CT Abdomen/Pelvis	\$10,477,615	39,259	\$267
Cardiac Nuclear	\$3,316,845	17,264	\$192
PET Oncology	\$1,789,879	997	\$1,795
AI High Priority Total	\$57,423,652	137,219	\$600
All Agency All Radiology (Professional Bill	\$115,398,090	809,439	
All Agency Non-Xray Radiology (Professic	\$102,699,465	472,235	
Advanced Imaging High priority % of non-	56%	29%	

2 –Review Criteria: Guideline Elements

RIGOR OF DEVELOPMENT: Evidence

- Systematic literature search
- Study selection criteria clearly described
- Quality of individual studies and overall strength of the evidence assessed
- Explicit link between evidence & recommendations

(If any of the above are missing, rate as poor)

RIGOR OF DEVELOPMENT: Recommendations

- Methods for developing recommendations clearly described
- Benefits/side effects/risks considered
- External review

EDITORIAL INDEPENDENCE

- Independence from funding source
- Member conflict of interest identified

2- Review Criteria - Diagnostic Issues

- Questions for evidence/guideline to address
- Fryback and Thornbury (1991) Diagnostic framework:
 - Level 1 – technical feasibility
 - Level 2 addresses diagnostic accuracy, sensitivity, and specificity of the test;
 - Level 3 focuses on whether the information produces change in the physician's diagnostic thinking;
 - Level 4 concerns the effect on the patient management plan and
 - Level 5 measures the effect of the diagnostic information on patient outcomes.

3 – Decision Tools

- **Six organizations presented decision support tools that implement evidence based guidelines**
- **In general, there were two “program models”**
 - Clinical Decision Support and Benefits Management
 - Both program models use a computer program that requires relevant patient information and proceeds through a series of questions/criteria related to imaging method, disease and/or medical condition.
 - All indicate that they are evidence based and most cite ACR Appropriateness Criteria as a primary basis.
- **A primary distinction is the degree and method by which a payor’s reimbursement policy is enforced:**
 - Generally through voluntary education in the clinical decision support model
 - Generally through prior authorization (permission) in the benefits management model.

4 – Guidelines Review

- **National Guidelines Clearinghouse search conducted for each of eight high priority areas**
 - Search results, methods, inclusion and exclusion criteria available in full staff report
- **A total of 250 potentially relevant guidelines retrieved**
 - An average of 30 guidelines per priority area
- **Search results narrowed based on**
 - **Relevance:** search used “and” so not all results applied to both imaging modality and appropriate interest area
 - **Duplication:** Many of the same guideline developers recurred. Organizations use the same methodology and usually reference an organizational methods statement applicable to all of their guidelines, used to streamline and standardize their process.

4 – Guidelines Review

- **High quality, evidence based guidelines**
 - *describe search terms and inclusion criteria, maximize the number of relevant studies;*
 - *have explicit study quality ratings linked to evidentiary hierarchy (study design) and study implementation (limitations, directness of evidence)*
 - *clearly identify the link between the evidence ratings and recommendations.*
- **This initial review identifies the organizations using comprehensive, unbiased, and clearly defined evidence standards**
 - Note: a guideline developed with poor evidentiary rigor may still contain some individually reasonable or well supported recommendations
 - Note: guidelines developed with excellent evidentiary rigor may still contain recommendations that are not appropriate for individual purposes.
 - Additional criteria must be applied for context, scope, usability, and important outcomes

4 – Guidelines Review

- **A total of 32 guidelines were reviewed, with 23 guideline development organizations represented**
 - most developers were provider / specialty societies, some international public and other entities
- **Guidelines were rated on the rigor and transparency of evidence used to develop guidelines.**
- **For the three checklist questions on rigor of development, set on a scale of Good, Fair, Poor:**
 - 13 guidelines from 11 organizations rated at least two “Good” and one “Fair”
 - 5 guidelines had all “Good” ratings.
 - The 13 higher scoring guidelines are spread over six of the eight high impact areas.

4 – Guidelines Review

Guideline Developer	1.1 Rigor of Evidence	1.2 Rigor of Recommendation	1.3 Editorial Independence
American Academy of Occupational and Environmental Medicine - Low Back Disorder	<i>Poor</i>	<i>Good</i>	<i>Good</i>
American College of Radiology (ACR) - Low Back Pain	<i>Poor</i>	<i>Fair</i>	<i>Poor</i>
North American Spine Society (NASS) - Diagnosis and treatment of degenerative lumbar spinal stenosis	<i>Good</i>	<i>Good</i>	<i>Fair</i>
American College of Physicians and American Pain Society - Diagnosis and treatment of low back pain	<i>Good</i>	<i>Good</i>	<i>Good</i>

5 - AIM Recommendation

- Public purchasers shall implement a consistent program of mandatory utilization management using evidence based guidelines and prospective review, where possible, for the high cost/high variability advanced imaging studies.
- The program should result in a satisfactory business case (balancing access, quality, and cost) for the state and public purchasers.
- In addition, the program should stress minimizing the administrative burden on ordering providers.

5- AIM Recommendations - Summary

- *Recommendations on evidence based guidelines or protocols*
 - *Public purchasers will use a checklist approved by the workgroup to identify and select guidelines with periodic update reviews.*
- *Recommendations on the Program, including criteria for decision tool and utilization management*
 - *Include incentives (for example, programs such as 'gold card') and denials (with opportunity for peer interaction)*
 - *Include provider education component and provider performance reports*
 - *Minimize delays*
 - *Evaluate program's effects in 24 months initially*

Next Steps: Agency Activity

- State purchased health care programs are currently working together on implementation of a program of mandatory utilization management, including:
 - Selection of guideline(s) that meet the AIM workgroup criteria for use by agencies for at least each of the high priority areas; and
 - Review of current resources and planning for implementation either through new or existing resources, or contracting, with special emphasis on joint approaches.

Interim Staff Activity

- Support Agency Implementation
 - Coordinate agency guideline review meetings
 - Identify guidelines in the six high priority areas with high ranked guidelines
 - The initial sort identified 11 organizations and 72 guidelines in six high priority AIM areas that use comprehensive, unbiased, and clearly defined evidence standards.
 - Secondary criteria assist in assessing whether the context, scope, usability, and important outcomes are addressed such that the guideline would be applicable to the agency's task of identifying guidelines for use by state agency purchasers.
 - ACR guidelines were also gathered, to be used as a reference because they are broadly used and despite low evidentiary rigor scores, do contain some individually reasonable recommendations, and the guidelines have a comprehensive and user friendly approach that will aid provider education

Interim Staff Activity

- Support Agency Implementation
 - Comprehensive review using the checklist criteria
 - Guideline developers were reviewed on the next Agree checklist sections
 - Scope and purpose, Stakeholder Involvement, Clarity and Presentation, and Applicability.
 - The majority scored Fair to Good in all sections but most fell short in applicability.
 - The applicability section looks at potential organizational barriers, potential cost implications and whether or not the developer listed audit/review criteria.
 - Two guideline developers: NICE and SIGN had best scores
 - All guidelines and ranking provided to agencies

Interim Staff Activity

- Report published to Governor and Legislature and available online
 - Initial response positive
 - Guideline selection versus criteria
 - Will provide briefing in October to legislature
- Phase 2 – explore feasibility of application to all payers (by July 2010)
 - Draft work plan and meeting schedule
 - Initial survey of committee

Staff Update

AIM Workgroup
Questions or Comments