HEALTH BASICS

Low back pain deciding about MRI

A guide to when an MRI may help assess low back pain and when it may not be needed.

WHAT IT IS
A choice about whether spinal imaging will guide care

WHERE IT COMES UP
Persistent pain or concern about a serious underlying condition

WHY IT MATTERS
Can identify findings that may change treatment

WHAT IT IS NOT
Not a diagnosis or treatment

WHO TO ASK
Primary care clinician or spine specialist

HOW IT IS CHECKED
Clinical assessment first, MRI when results could change care

Overview

Deciding whether to have magnetic resonance imaging, or MRI, is part of assessing some cases of low back pain. It is not a disease or a diagnosis.

An MRI uses a strong magnet and radio waves to create detailed pictures of the spine. It can show discs, nerves, bones, joints and nearby soft tissues. Unlike an X-ray or CT scan, it does not use ionizing radiation.

Many people with new low back pain do not need an MRI straight away. Most uncomplicated episodes can first be assessed through a conversation and physical examination. An early scan may show common changes that are not causing the pain and do not alter care.

MRI becomes more useful when the result could guide a specific decision. Examples include concern about pressure on important nerves, infection, cancer or certain fractures. It may also help when pain or nerve problems continue despite appropriate care and a procedure or operation is being considered.

How it works

During a lumbar spine MRI, you lie on a table that moves into the scanner. The machine takes images while you remain still. It makes loud tapping or knocking sounds, so you will usually receive ear protection.

The scan time is set by the images needed. Movement can blur them and may make part of the scan less useful.

Most low back MRI examinations do not require contrast. Contrast is a substance given into a vein to make certain tissues easier to distinguish. It may be considered when clinicians are looking for infection, a tumour, inflammation or changes after previous spine surgery.

Before the scan, staff check for metal or electronic devices in your body. Some implants are safe only under specific scanning conditions, while others may prevent or delay MRI. Give the imaging service accurate information about pacemakers, implanted pumps, aneurysm clips, metal fragments and previous operations.

Tell the service if you are or could be pregnant, have significant kidney disease, have previously reacted to MRI contrast or find enclosed spaces difficult. These details do not always rule out MRI, but they may change how the examination is planned.

Why it matters for your health

MRI is most helpful when it answers a focused clinical question. For example, it can show whether a disc is pressing on a nerve in a way that matches leg pain, weakness or examination findings.

However, MRI findings do not always explain pain. Disc bulges, worn spinal joints and other age-related changes are common in people without back pain. A scan result therefore needs to be compared with your history and physical examination.

Scanning too early can create uncertainty. An unrelated finding may lead to worry, further appointments or procedures without improving pain or function. On the other hand, delaying imaging when there are signs of a serious condition could delay the right assessment.

The practical question is not simply, "Can an MRI show something?" It is, "Would the likely result change what happens next?" If care would be the same regardless of the image, an immediate MRI may offer little benefit.

What can go wrong

Certain conditions linked with back pain need prompt assessment. They are uncommon, but

MRI may be part of checking for them.

Possible cauda equina syndrome is an emergency. This is severe pressure on the bundle of nerves at the bottom of the spinal canal. Seek emergency care for new loss of bladder or bowel control, inability to pass urine, numbness around the genitals or anus, or rapidly worsening weakness in both legs. Do not wait for a routine MRI appointment.

A severe or quickly worsening loss of leg strength also needs urgent assessment. Sudden weakness can have several causes, and a clinician needs to decide which tests are appropriate.

Other situations generally need urgent or prompt clinical advice rather than waiting for a routine review. These include:

These features do not prove that infection, cancer or a fracture is present. They mean an assessment should not be delayed.

MRI itself can also have limitations. Common age-related findings may be mistaken for the source of pain. Image quality may be reduced by movement or some metal implants. An enclosed scanner can be difficult for people with claustrophobia.

Contrast is not needed for most routine lumbar scans. When it is proposed, the imaging team considers its expected benefit and relevant factors such as kidney function, pregnancy and previous reactions.

- Back pain with fever or feeling seriously unwell, especially with reduced immunity, recent infection or injected drug use
- New back pain with a history of cancer, unexplained weight loss or other concerning changes
- Pain after major trauma
- New pain after a smaller injury in someone with fragile bones or long-term steroid use
- Pain that is severe, steadily worsening or not behaving like a usual episode

What you can do

There is no home test that can tell you whether you need an MRI. A clinical assessment comes first.

Before an appointment, make a brief record of:

Ask what question the MRI would answer and how each likely result would change your care. You can also ask whether examination findings suggest a nerve problem and whether waiting would be reasonable.

If an MRI is planned, tell the imaging service about implants, metal injuries, kidney disease, possible pregnancy and claustrophobia. Do not assume that an implant automatically makes MRI unsafe. Staff may need its name, model or implant card to check the scanning conditions.

For uncomplicated low back pain without concerning features, the immediate action may be no scan. Routine follow-up is reasonable if pain is not improving, keeps returning, limits usual activities or is accompanied by continuing leg pain or numbness. Seek earlier help if new weakness or other warning signs develop.

- When the pain began and whether an injury occurred
- Whether pain travels into a leg
- Any numbness, tingling or weakness
- Changes in walking, bladder or bowel control
- Fever, recent infection, cancer history or unexplained weight change
- Treatments tried and how they affected pain and daily activity
- Previous spine surgery, scans and implanted devices

Common questions

Is MRI better than an X-ray?

They answer different questions. MRI gives detailed views of discs, nerves and soft tissues. X-rays mainly show bone alignment and some fractures. The best test, if any, is the one suited to the clinical concern.

Can an MRI prove what is causing my pain?

Not always. A finding is more meaningful when its location matches your pain pattern and examination. Some people have substantial-looking changes without pain, while others have significant pain with only minor imaging findings.

Do I need MRI for sciatica?

Sciatica means pain caused by irritation of a nerve supplying the leg. An immediate MRI is not routinely needed when there are no emergency features. It may be considered if nerve problems persist or worsen and the result would guide a procedure, surgery or another change in care.

Does a normal MRI mean the pain is not real?

No. MRI cannot measure pain, and not every source of low back pain is clearly visible on a scan. A normal or minor result does not mean that the pain is imagined.

Will I need contrast?

Most MRI scans for uncomplicated low back pain are performed without contrast. Contrast may be useful for specific questions, including possible infection, tumour or changes after surgery.

What if I am claustrophobic?

Tell the imaging service before the appointment. Staff can explain the scanner, available support and whether a different scanner or another plan is suitable. If medicine is being considered to help you tolerate the scan, it must be arranged safely in advance.

Sources

- American College of Radiology. ACR Appropriateness Criteria: Low Back Pain . Revised 2021.
- National Institute for Health and Care Excellence. Low back pain and sciatica in over 16s: assessment and management . NICE guideline NG59, updated 2020.
- Chou R, Qaseem A, Owens DK, Shekelle P. Diagnostic imaging for low back pain: advice for high-value health care from the American College of Physicians . Annals of Internal Medicine . 2011;154(3):181-189.
- Brinjikji W, Luetmer PH, Comstock B, et al. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations . American Journal of Neuroradiology . 2015;36(4):811-816.
- Radiological Society of North America and American College of Radiology. MRI of the lumbar spine . RadiologyInfo.org.