

Rapid Communication

Appropriate Use of Lumbar Spine X-Ray for Low Back Pain-An Investigation of Limited Clinical Value

Saadawy A*

Department of Radiology, West Suffolk Hospital, Addenbrookes Hospitals, UK

*Corresponding author: Ahmed Saadawy, Department of Radiology, West Suffolk Hospital, Addenbrookes Hospitals, UK

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Introduction

NICE has been advising for years against routine imaging for low back pain, unless the result is likely to change patient management. The recent GIRFT report further highlighted this as an area of concern and that we should be reducing 'low value imaging'.

In 2017-18, >400,000 lumbar X-rays were undertaken across England. Just over half of these from GP referrals.

Back pain is usually the result of conditions that cannot be diagnosed on XR (osteoporotic collapse an exception). MRI if physiotherapy did not help.

Referrals for lumbar spine x-ray from non-specialists are currently rejected in the absence of red flag symptoms and referral to physiotherapy is recommended.

Why Not Just Start With an XR?

431060 - 68 y/o Female

The delay between XR and appropriate investigation: (21st May – 13 July 2021)

XR:

- Good alignment of thoracic and lumbar spine. No fracture.
- Some degenerative changes but no evidence of aggressive disease.

MRI:

- Tumour replacement of the body of L1, T12 with canal narrowing.
- Another MRI done 7 days later showed progression compared to initial MRI.

M05 Acute Back Pain (≤6 Weeks) with Potentially Serious Features

Neurological (cauda equina syndrome)

- Sphincter and gait disturbance (Table 1-3)
- Saddle anaesthesia
- Severe or progressive motor loss

- Widespread neurological deficit

Other features include

- Previous malignancy
- Immunosuppression
- Steroid use
- Fever

Aim, Objectives & Standards

Aim

To assess the number of x-rays performed inappropriately for low back pain in the absence of red flag symptoms.

Standards

Lumbar spine X-rays performed from GP referral for back pain without red flag symptoms or concern for Fracture (Target = 0%)

Methodology

- Data collected via CRIS search with the help of Amanda Yeldham.
- Lumbar spine x-rays performed via a GP referral.
- January to June 2021 timescale.
- Referral forms evaluated for information present assessing for any red flag symptoms or other acceptable reasons for performing x-ray.
- Data collected into an excel sheet to allow further analysis.

NICE-Red Flags

Spinal fracture

Red flags include:

- Sudden onset of severe central spinal pain which is relieved by lying down.
- A history of major trauma (such as a road traffic collision or fall from a height),
- minor trauma, or even just strenuous lifting in people with osteoporosis or those who use corticosteroids.
- Structural deformity of the spine (such as a step from one vertebra to an adjacent vertebra) may be present.
- there may be point tenderness over a vertebral body.

Cancer

Red flags include:

- The person being 50 years of age or more.

Table 1: M04 Chronic lumbar back pain (>6 weeks) with no clinical or serological indicators of infection or neoplasia (i.e., no red flags).

Modality	Dose	Recommendation(Grade)	Comment
MRI	None	Indicated only in specific circumstances[c]	MRI is the preferred investigation for the diagnosis of most spinal diseases and is helpful in identifying those patients who may benefit when planning surgical Intervention or pain management.
XR	⊕	Indicated only in specific circumstances[c]	XR is only indicated if presentation suggests osteoporotic collapse in the elderly.
CT	⊕⊕	Indicated only in specific circumstances[c]	CT is used when MRI is contraindicated and when further assessment of spondylolysis is required.
NM(bone scan)	⊕⊕	Indicated only in specific circumstances[c]	NM is non-specific and has been largely superseded by MRI and CT in the Assessment of chronic back pain. It may show occult osteoid osteomas and spondylolysis.

Lumbar imaging for low back pain without suggestion of serious underlying conditions does not improve clinical outcomes.

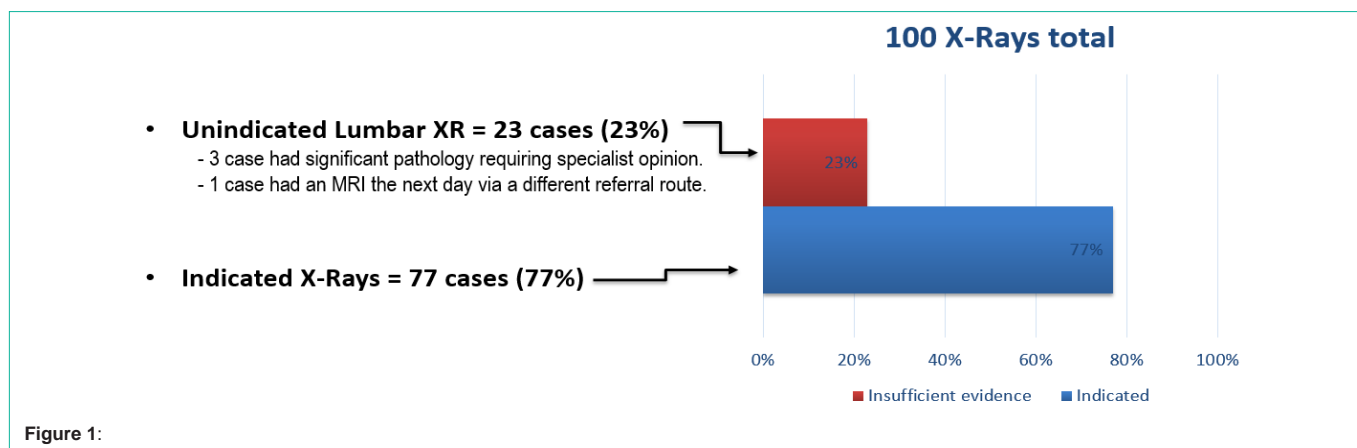
Table 2: M05 Acute back pain (≤6 weeks) with potentially serious features.

Modality	Dose	Recommendation	Comment
MRI	None	Indicated [B]	MRI is the imaging investigation of choice.it is indicated immediately in patients with acute neurological features and urgently in those with suspected malignancy or infection.
XR	⊕	Indicated only in specific circumstances[C]	Plain radiograph may be required preoperatively MRI is preferable as the first line investigation in patients with potentially serious features, since it has a stronger negative predictive value.
CT	⊕⊕	Indicated only in specific circumstances[C]	CT is an alternative to MRI(when not feasible) is useful to guide soft tissue/bone biopsy
NM(bone scan)	⊕⊕	Indicated only in specific circumstances	Bone scintigraphy, especially with SPECT, can help To identify metabolically active lesions. Specificity will be increased by comparison with XR or co.

Table 3: M06 Acute back pain (≤6 weeks) without potentially serious features.

Modality	Dose	Recommendation	Comment
MRI	None	Specialised investigation[B]	For patients with non-specific back pain(with no radicular Symptoms or red flags), MRI does not help clinical outcome. It should be reserved for patients referred for orthopedic Opinion. MRI is the preferred investigation(wider field of View visualising the conus, postoperative changes, etc.).
CT	⊕⊕	Specialised investigation[B]	CT only if fracture is suspected or MRI not feasible.
XR	⊕⊕	Indicated only in specific circumstances [C]	Acute back pain is usually the result of conditions that cannot be diagnosed on XR(osteoporotic collapse is an Exception). Normal XR may be falsely reassuring.

(Spinal malignancy, infection, fracture, cauda equina syndrome, ankylosing spondylitis or another inflammatory disorder).



- Gradual onset of symptoms.
- Severe unremitting pain that remains when the person is supine, aching night pain that prevents or disturbs sleep, pain aggravated by straining (for example, at stool, or when coughing or sneezing), and thoracic pain.
- Localised spinal tenderness.
- No symptomatic improvement after four to six weeks of conservative low back pain therapy.
- Unexplained weight loss.
- Past history of cancer-breast, lung, gastrointestinal, prostate, renal, and thyroid cancers are more likely to metastasize to

the spine.

Results

See Figure 1.

Limitations

Data collection

The reliance on a request that does not fulfil the criteria can be misleading when the patient has an underlying pathology that is not mentioned, however, would have been an indication for XR.

Data analysis

Implementing the red flags when reading requests can sometimes

be difficult when the clinical information is vague/the referrer is a poor communicator.

Action Required, Learning and Improvement

- Radiologists to support radiographers in rejecting referrals for lumbar spine x-rays and directing patients to appropriate pathways. Reminder to radiographers of red flag symptoms/signs.
- Review and amend departmental justification procedures, policies, rules and standards for lumbar radiography.

- Amending the referral form for GPs to be more readable and to contain easier to implement guidance and awareness of red flags.

- Re-audit aiming for 100% compliance with standards.

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