

WorkCover SA

Imaging guidelines

October 2011



Why work is important for health

There is compelling evidence that work plays a vital role in our physical and mental health. A workplace injury can have a significant impact on an injured worker, their family, colleagues and friends. Long-term worklessness is one of the greatest risks known to public health. Generally speaking, the sooner an injured worker returns to work, the better the outcome. With a positive approach and the right support, injured workers can recover and return to normal life. Helping improve South Australia's return to work rates is everyone's responsibility and we all have a role to play.

Your role in the recovery process

Health providers have a vital role to play in helping injured workers remain at or return to work. Treating patients with compensable injuries is quite different from non-compensable injuries as there are wider factors to consider. Assisting an injured worker to remain at work can reduce the financial and emotional impact on the worker, their family and the employer. It can also be an important factor in helping them to recover faster and return to their normal tasks sooner. You can help by focusing on what your patient can do rather than what they can't. To help make a difference, ensure that you:

- screen for risk early
- adopt a 'whole person' approach
- make enough time for clinical management
- contact the patient's workplace where appropriate
- when recovery is not progressing as expected, a team approach can help.

For more information, check our health provider information at www.workcover.com

What is imaging?

Imaging is the technique and process used to create images of the human body (or parts and function thereof) for clinical purposes (medical procedures seeking to reveal, diagnose or examine disease) or medical science (including the study of normal anatomy and physiology).

When imaging is required?

Imaging is frequently used in workers compensation injuries. When decisions are being made about ordering of imaging consider when:

- there is a clear clinical need
- the clinical diagnosis is unclear and management may be influenced by the results of the imaging
- clinical red flags are present so that significant pathology needs to be excluded or when treatment has failed and the reasons are unclear. (In this situation, blood tests for inflammatory markers are frequently also required.)
- information is required to enable pre-operative planning to occur.

When a decision is being made that imaging is required, the dose of radiation should be considered.

Table 1 compares the dose of radiation required for some common imaging against the time required to receive the same amount of radiation from normal background radiation (BERT – Background Equivalent Radiation Time). It should be noted that these figures are indicative only and will be influenced by factors including the particular equipment being utilised.

Requesting appropriate imaging requires an understanding of the underlying pathology. Plain x-ray is generally the first imaging although exceptions include some forms of tendonopathy when ultrasound is often more appropriate and in pregnancy where radiation is contra-indicated.

Table 1

Diagnostic procedure	Background Equivalent Radiation Time (BERT)
Chest x-ray	2.5 days
Skull x-ray	8.5 days
Lumbar spine series	160 days
CT scan head	9 months
CT scan chest	2.5 years

Further information may be obtained from Orchard JW, Read JW, Anderson IF, MJA Practice Essentials – Sports Medicine. MJA 2005 183 9 482 – 486

Imaging guidelines – lumbar spin

Clinical condition	Investigation	When
When red flags are present	Plain x-ray	On presentation. Other radiology will depend on the particular individual circumstances.
When bony injury or tumour is suspected	Plain x-ray	On presentation.
When improvement is not occurring, or continuing, in lumbar pain with or without radiation after 6 or more weeks of standard treatment	Plain x-ray	After 6 or more weeks.
With radicular pain if improvement has not occurred, positive neurological signs exist, and surgery is contemplated	Plain x-ray	May be requested after 2-4 weeks.
	CT Scan	In obese patients, a CT will generally not provide adequate information and a MRI should be undertaken.
	MRI	With radicular pain not responding to conservative treatment, particularly for overweight patients. MRI should be ordered by, or after consultation with, a specialist. When MRI is contra-indicated, CT myelography may be undertaken, but only by an operating specialist.
For patients with disabling low back pain without radicular leg pain present for at least 6 months when surgery is contemplated	MRI Scan	When surgery is contemplated. A MRI in this case is only to be ordered by the surgeon contemplating surgery.

(see over for notes)

Imaging guidelines – cervical spine

Clinical condition	Investigation	When
When bony injury or tumour is suspected	Plain x-ray	On presentation.
When improvement is not occurring, or continuing, in cervical pain with or without radiation after 6 or more weeks of standard treatment	Plain x-ray	After 6 or more weeks.
With radicular pain if improvement has not occurred, positive neurological signs exist, and surgery is contemplated	Plain x-ray	After 2-4 weeks.
	MRI	When surgery is contemplated for patients not responding to conservative treatment. This should be ordered by, or after consultation with, the operating specialist, generally after at least 2 weeks. When MRI is contra-indicated, CT myelography may be undertaken but only by an operating specialist.
For patients with disabling cervical pain without radicular arm pain present for at least 6 months when surgery is contemplated	MRI	When surgery is contemplated. A MRI in this case is only to be ordered by the surgeon contemplating surgery.

Imaging guidelines – Lumbar and cervical spine notes:

1. If spinal cord injury is clinically evident after trauma (eg, fall, motor vehicle accident) the patient needs to be stabilised and transferred to an appropriate facility. If progressive neurological signs develop, urgent referral should occur. If cauda equina syndrome develops, immediate referral must occur because emergency surgery may be needed.
2. Disc bulging is very common and should be regarded as a normal variant.
3. Discography is a controversial investigation which is only to be ordered by a surgeon who is contemplating surgery.
4. Repeat investigations are generally not helpful. They should be ordered after another injury, or when recurrence occurs and recovery is delayed, or when surgery has not relieved the symptoms.
5. In workers compensation bone scans are generally of little help. They may occasionally be helpful in pain in the lumbar area when an inflammatory cause is suspected.
6. Where there is unequivocal evidence of nerve root pathology, the only investigation which will generally be required is MRI. This should be ordered by or after consultation with a specialist. CT is generally not as helpful in the cervical spine as in the lumbar spine, due to the size of the cervical discs and the paucity of epidural fat. MRI is the preferred investigation.
7. Whenever investigations are done, before they can be regraded as helping to elucidate the cause of a problem, there must be concordance between the history, symptoms, signs and the abnormality that is detected by radiology, particularly by CT and MRI scanning. The importance of this is demonstrated by a study with lumbar CT scans which found evidence of a herniated disc in 20 per cent of people with no history of back pain or sciatica. A further study in asymptomatic adults using myelograms found 24 per cent with evidence of a herniated disc.
8. If the treating practitioner is uncertain about the timing or appropriateness of radiological investigation, this should be discussed with a radiologist before the investigation is requested.

Imaging guidelines – knee

Clinical condition	Investigation	When
When bony injury or tumour is suspected	Plain x-ray	On presentation.
Soft tissue mass particularly Bakers cyst	Plain x-ray Ultrasound	On presentation. Note: rupture of Bakers cyst causes acute calf pain and often is initially diagnosed as a DVT with the Bakers cyst only becoming evident on ultrasound.
Internal knee pathology meniscal, cruciate or collateral ligament injury, articular cartilage damage	Plain x-ray MRI	On presentation if severe. If mild symptoms such as with a small tear of a meniscus, conservative treatment may be trialed initially.
Anterior knee (patello femoral) pain Anterior knee (patellar tendinopathy) pain Anterior knee (patellar cartilage lesions) pain Anterior knee (patellar maltracking) pain	Plain x-ray Ultrasound MRI CT in different degrees of flexion	A trail of conservative treatment should occur for all anterior knee pain. If satisfactory response does not occur, then plain x-ray should be undertaken after 4-6 weeks with further investigations dependent on the presumptive diagnosis.
Suspected osteoarthritis	Plain x-ray to include weight bearing views. The weight bearing view needs to be an intercondylar projection with a posteroanterior view, with the person standing, knees slightly flexed and the the x-ray beam angled parallel to the tibial plateau. Both knees can be assessed with the one exposure.	4 to 6 weeks after presentation if there has not been a response to treatment.
Note: In patients with significant knee pain, primary hip pathology with referral of pain to the knee should be considered as a cause.		

Imaging guidelines – shoulder

Clinical condition	Investigation	When
Suspected bony injury or tumour	Plain x-ray	On presentation.
With clinical frozen shoulder (to exclude other pathology)	Plain x-ray MRI arthrography	1-2 weeks after presentation.
With clinical diagnosis of rotator cuff tendonitis not responding to treatment	Plain x-ray, then ultrasound	At least 4-6 weeks after presentation.
Suspected tears of labrum	Plain x-ray, then CT arthrogram or MRI arthrography if plain x-ray does not elucidate cause.	If resolution is not occurring after at least 6 weeks treatment.
Full thickness rotator cuff tear or SLAP tear – clinically obvious or suspected	Plain x-ray and ultrasound, then MRI or CT arthrography.	On presentation: Note if this diagnosis is only suspected, a short course of treatment should be initiated to see if improvement will occur before this investigation is done.
Suspected osteoarthritis	Plain x-ray	At least 4-6 weeks after presentation if not responding to treatment. Further investigations include arthrography and MRI but generally are only undertaken when surgery is being considered
	Bone scan	This may be useful to help elucidate osteoarthritis in the acromioclavicular joints when there has been no response to treatment and plain x-ray is normal.
Impingement	Plain x-ray. Ultrasound if plain x-ray does not elucidate cause.	At least 6 weeks after injury when shoulder has not responded to at least 4-6 weeks of standard treatment.
Recurrent instability	Plain x-ray	To be undertaken when surgery is being considered.
	CT arthrogram MRI arthrogram	To determine degree of capsular damage. Only to be undertaken when surgery is being considered.
Complex unusual presentations	Plain x-ray	In those situations without red flags suggesting significant underlying pathology, this should be delayed until at least 4-6 weeks after injury and then only undertaken in those patients not responding to treatment.
	Other modalities depending on whether soft tissue or bony pathology is suspected.	After normal plain x-ray. To be ordered by specialist.

(see over for notes)

Imaging guidelines – Shoulder notes:

1. Apart from fractures, repeat investigations are only needed if there has been a recurrence of symptoms after a period of substantial resolution, or may on occasions be required by an operating surgeon after surgery.
2. If the treating practitioner is uncertain about the timing or appropriateness of radiological investigation, this should be discussed with a radiologist before the investigation is requested.

Imaging guidelines – wrist

Clinical condition	Investigation	When
When bony injury or tumour is suspected	Plain x-ray	On presentation.
When scaphoid injury is possible	Plain x-ray Bone Scan MRI	On presentation. If negative, it should be repeated after 10-14 days. MRI or bone scan are indicated in those where clinical concern remains despite negative plain x-rays. MRI also enables evaluation of soft tissues.
Chronic wrist pain	Plain x-ray MRI CT or MR arthrography	May detect unexpected fracture. MRI enables good visualisation of bony and soft tissues including triangular fibro-cartilage and scapho-lunate ligament. If there is a high suspicion of ligament or cartilage injury, then MR arthrography is preferred.
Tendonitis, tenosynovitis, ganglion (includes de Quervains sternosing tenovaginitis)	Plain x-ray Ultrasonography or MRI If needed can be combined with CT or MR arthrography.	Only needed if confirmation of the clinical diagnosis is needed.
Carpal tunnel syndrome	Plain x-ray Ultrasound	When confirmation of clinical diagnosis is required. Is an alternative to nerve conduction tests.

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