

RACGP

**EVIDENCE-BASED
PRIMARY CARE HANDBOOK**

for

GENERAL PRACTITIONERS

on

ACUTE LOW BACK PAIN

Funded by the Department of Health and Ageing

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FORWARD

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In order to be succinct, references and esoteric academic issues, have been deliberately omitted, but are available from the RACGP on request (? on accompanying CD.)

Dr Victor Wilk, consultant to RACGP, 2002.

SUMMARY OF KEY POINTS

The main features of the recent medical evidence regarding the management of acute low back pain are:

- ❑ Diagnostic triage is important in excluding red flags
- ❑ few cases are caused by serious disorders,
- ❑ most cases are due to mechanical dysfunction and are self-limiting
- ❑ radicular pain (sciatica) is a different condition to low back pain and requires different management
- ❑ investigations including X-ray and CT scans are not warranted in the absence of red flag indicators
- ❑ adequate pain relief is important initially for patient comfort and well being, and to allow activation
- ❑ rest for more than 2 days is counter-productive
- ❑ early resumption of normal activities, including work, is preferable to rest
- ❑ fear about the pain is a major determinant of disability, and possible chronicity
- ❑ patients' beliefs and attitudes warrant as much attention early in the history as do anatomical and pathological aspects of their condition.

INTRODUCTION

This booklet outlines how management priorities for patients presenting with acute low back pain can be established efficiently and effectively in accordance with current medical evidence. An easily followed, one page algorithm illustrates the process. (See attachment – coloured laminated sheet).

The triage process commences with the taking of a medical history and physical examination. Further investigatory steps may follow if considered necessary. Management is structured around the patient's four cardinal presenting problems ("I hurt", "I can't move", "I can't work", and "I am scared") which include both biological and psychological aspects.

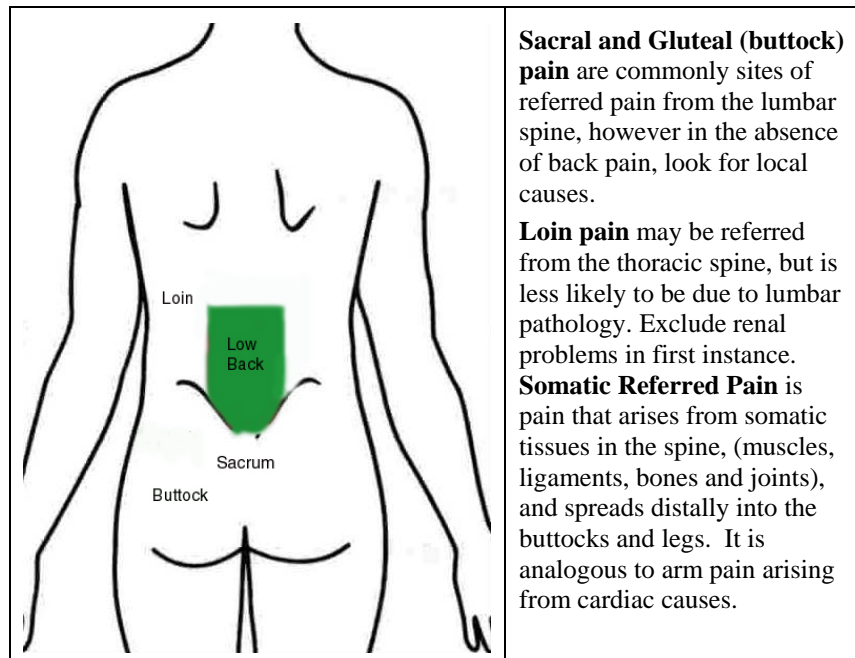
Follow-up is critical, for not only does it reflect care and concern by the doctor, it allows for reinforcement of previous advice, and allows vigilance for the emergence of any serious disorder that previously might not have been recognisable.

MEDICAL HISTORY

Despite technological advances, a patient's history remains the most valuable evidence available to the primary care practitioner. The history assists diagnosis and is important for medicolegal reasons.

Location of pain

Firstly, clarify whether or not the patient has back pain by establishing the location of the pain. Then systematically establish the features of the pain. On the diagram below the area of low back pain is shaded in red



Duration of pain

- ❑ Acute pain = less than (?6) 8 weeks, subacute = 8-12 weeks, chronic = > 12 weeks. Management changes over time.

- ❑ Episodes of limited duration may imply less disability but not necessarily lesser pathology.

Extent of spread

- ❑ The extent of spread of pain is important in determining whether or not there is a referred component. Somatic referred pain is pain that is felt at a site distant from the source, not due to actual nerve irritation or pinching. While there is no absolute rule as to whether pain in the lower limb is somatic referred pain or radicular pain, the following table may be useful to differentiate pain. Note that radicular and somatic pain may co-exist.

Somatic referred pain	Radicular pain
Due to spread of pain from deep spinal tissues	Due to chemical or mechanical irritation of nerves
Back pain worse than leg pain, which may be bilateral	Unilateral leg pain worse than back pain
Pain concentrates proximally in buttock and thigh, but may spread below knee	Pain concentrates distally, running into the lower limb, usually extending below the knee
Deep, dull aching, expanding - pressure like quality	Sharp, shooting, electric quality, often deep and superficial
Vague location, varies over time, ill defined distribution	Pain runs along defined narrow band in dermatome distribution
Poorly defined paraesthesia may be present.	Numbness and paraesthesia in dermatomal distribution
Normal reflexes (if abnormal – further assessment is needed)	Reflexes may be reduced or absent

Table 1: Differences between Somatic Referred and Radicular Pain

Quality of pain

- ❑ The quality of the pain will often assist in distinguishing between radicular and somatic referred pain.

Pain severity

- ❑ It is important to assess the severity of back pain in order to advise therapy and to monitor progress. However, severity of pain does not correlate with severity of pathology.

Frequency

- ❑ Repetitiveness of attacks is usually related to aggravating factors, but is not helpful in diagnosing causation

Mode of onset

- ❑ No particular cause of low back pain has a characteristic mode of onset. A sudden onset of unremitting pain, without any precipitating factor, should be regarded, in the first instance, as a cue to a serious underlying disorder (red flag).

Precipitating/Aggravating/Relieving factors

- ❑ Identifying activities that aggravate or relieve the patients' pain carries little diagnostic value. However, pain unrelieved by rest, or pain at night, should be regarded as cues for a possible serious underlying disorder.

Associated Features

- ❑ More than any other aspect, associated features provide clues to serious underlying conditions. (See tables 2 & 3, pp 10).

Functional Status

- ❑ Assess impact of pain on ability to work, play sport and maintain normal daily activities

Psychosocial History and Yellow Flags

- ❑ Certain psycho-social factors can be associated with a poor low back pain prognosis and are termed the **Yellow Flags**
- ❑ There is good agreement that the following factors are important and consistently predict poorer outcomes:
 - a belief that back pain is harmful and potentially severely disabling
 - tendency to lowered mood and withdrawal from social activity
 - an expectation that passive treatments rather than active participation will help

- fear avoidance behaviour – avoiding activities for fear of damaging the back
- past history of chronic pain

Work history

- ❑ Poor prognostic factors regarding return to work include; past history of back pain, distance travelled to work, low job satisfaction and conflict with employer / supervisor
- ❑ Take a clinical, disability and occupational history, concentrating on the impact of symptoms on activity and work, and any obstacles to recovery and return to work.
- ❑ Suggested questions to the worker with low back pain (to be phrased in your own style):
 - Have you had time off work in the past with back pain?
 - What do you understand is the cause of your back pain?
 - What are you expecting will help you?
 - How is your employer responding to your back pain? Your co-workers? Your family?
 - What are you doing to cope with your back pain?
 - Do you think you will return to work? When?

Red Flag Conditions

- Red flag conditions are serious underlying disorders that may present as back pain. Although rare, they should not be overlooked.
- Do not presume that, in all cases, low back pain is "mechanical" in origin.
- Nevertheless, it should be remembered that research has shown that:
 - red flags are typically suspected on the basis of the history (mainly) and physical examination, not on the basis of investigation.
 - even with special investigations, certain conditions will be missed simply because they are in their early stages.
 - Some conditions will follow their natural course despite attempts at treatment

Item on checklist	Considerations
<i>Trauma</i>	<input type="checkbox"/> Major trauma may implicate fracture(s) <input type="checkbox"/> Major or minor trauma associated with osteoporosis/use of corticosteroids is grounds to suspect a fracture.
<i>Night Sweats</i> <i>Recent surgery</i> <i>Catheterisation</i> <i>Venepuncture</i> <i>Illicit drug use</i>	<input type="checkbox"/> Consider osteomyelitis, discitis, epidural abscess, and other infections.
<i>Occupational exposure</i> <i>(Overseas) travel</i> <i>Hobby exposure</i>	<input type="checkbox"/> May offer a clue to exotic infections, such as hydatid disease.
<i>Sporting exposure</i>	<input type="checkbox"/> Pars fractures are common in sports people <input type="checkbox"/> Identify individuals who have a stressed pars that has not yet fractured so that appropriate management can be undertaken.
<i>Weight loss</i> <i>History of cancer</i> <i>Night pain</i>	<input type="checkbox"/> Important cues of neoplastic disorders presenting with spinal pain.
<i>Morning Stiffness</i>	<input type="checkbox"/> Spondyloarthropathy, other rheumatic disease

Table 2: Features of Medical History that may indicate a Red Flag Condition.

SYSTEM	HISTORY FEATURE
<i>Cardiovascular</i>	<ul style="list-style-type: none"> ❑ A history of vascular disease, or the presence of cardiovascular risk factors, warrants consideration of aortic aneurysm.
<i>Respiratory</i>	<ul style="list-style-type: none"> ❑ A history of persistent cough may warrant consideration of lung cancer as a possible source of spinal metastases.
<i>Urinary</i>	<ul style="list-style-type: none"> ❑ Urinary features, or a history of urinary tract infection may warrant an assessment of the renal tract as a source of referred pain to the spine. ❑ Urinary retention or poor stream warrants consideration of prostatic cancer. ❑ acute onset urinary retention / incontinence - consider cauda equina syndrome
<i>Reproductive</i>	<ul style="list-style-type: none"> ❑ Back pain associated with menstruation, or abnormal uterine bleeding raises the possibility of the need for gynaecological assessment.
<i>Haemopoietic</i>	<ul style="list-style-type: none"> ❑ Myeloma must be considered in the elderly.
<i>Endocrine</i>	<ul style="list-style-type: none"> ❑ Hyperparathyroidism and Paget's disease should be recalled as possible occult causes of spinal pain, however there are few cues on history alone. ❑ Risk factors for osteoporosis may suggest pathological fracture.
<i>Musculoskeletal</i>	<ul style="list-style-type: none"> ❑ Musculoskeletal pain elsewhere - consider systemic rheumatic diseases and seronegative spondylarthropathies.
<i>Neurological</i>	<ul style="list-style-type: none"> ❑ Neurological symptoms should be assessed and investigated in their own right.
<i>Dermatological</i>	<ul style="list-style-type: none"> ❑ Cutaneous infections may be a source of spinal infection. ❑ Psoriatic and similar rashes can alert to the possibility of seronegative spondylarthropathies.
<i>Gastrointestinal</i>	<ul style="list-style-type: none"> ❑ Diarrhoea can be a presenting symptom of seronegative spondylarthropathies.

Table 3: Systems Review to exclude Red Flag Conditions

EXAMINATION

A valid, anatomico-pathological diagnosis cannot be made by physical examination alone. Nevertheless, recording the physical findings is important in confirming the site of pain and ensuring neurological deficit is not missed.

- ❑ Although physical examination cannot yield a specific anatomical diagnosis (eg; L4/5 disc pain), it is useful in excluding pathology and allows the clinician to assess gross function.
- ❑ No particular movement pattern is indicative of a specific pathology. However, assessing range of motion is useful in monitoring progress.
- ❑ Undertaking physical examination provides an excellent opportunity for assessing distress and fear of movement.
- ❑ Finding the site of tenderness also is not specific for diagnostic purposes, but may be therapeutic in validating the patient's pain and distress.
- ❑ Inter-observer agreement has been demonstrated only for gross abnormalities such as asymmetries, exaggerated lordosis and gross restriction of movement.
- ❑ Research has shown inter-observer agreement among physicians is poor regarding intersegmental palpation or palpation of trigger points.
- ❑ The absence of clinical signs is alerting. In a patient with low back pain who is not tender in the lumbar spine and is able to move freely, consider sources of pain outside the lumbar spine such as aortic aneurysm, other abdominal disease or pelvic disease.
- ❑ A neurological examination should be performed in the presence of symptoms of pain, paraesthesia, numbness or weakness in the lower limbs.
- ❑ Waddell's non organic signs (functional signs) are indicative of psychological distress and abnormal illness behavior. They are not indicative of malingering. These include:
 - Widespread 'non-anatomical' tenderness and / or superficial tenderness
 - back pain on axial loading and simulated rotation
 - Straight Leg Raise improves with distraction

- non-dermatomal sensory changes
- jerky, give way weakness on testing of motor power
- overt pain behaviour – crying out, exaggerated responses

Table 4: Physical Examination for Acute Low Back Pain.

	PHYSICAL SIGN	CONSIDERATION
LOOK	Curvatures Lordosis List Skin lesions or scars	Scoliosis in the young should be monitored and referred if progressive. Numbness
FEEL	Tenderness Spinous Muscle Iliac crest Gluteal	If no tenderness over spine consider other pathology. Tenderness over the medial iliac crest is present in 50% of patients presenting with back pain.
MOVE	Active Flexion Extension Rotation Side-bending Range limited by Pain? Stiffness? [Intersegmental] * Straight leg raise Crossed SLR Neurological assessment	Record ranges of motion for future comparison Movements full (think of other causes) Segmental motion assessment has questionable reliability and validity The most reliable sign for radicular pain. Abnormal findings warrant consideration of red flags
SAY	What is normal What is good	Reassurance given during the examination can be therapeutic

INVESTIGATION OF LOW BACK PAIN

Plain X-ray films and CT scans have virtually no place in the initial investigation of mechanical low back pain.

- ❑ There is **no evidence** that plain films or CT scans of the lumbar spine can diagnose causes of mechanical low back pain.
- ❑ The use of plain X-Rays or CT scans 'just in case they reveal something that could not be seen or suspected on the basis of history or physical examination' is totally unjustified.

Specifically,

- ❑ Spondylosis, disc degeneration, facet degeneration or osteoarthritis are common conditions in the asymptomatic population. Thus, positive findings of these conditions on X-ray or CT scan do not assist in diagnosing the cause of pain.
- ❑ the reliability of being able to detect spondylosis, disc degeneration, facet degeneration or osteoarthritis on X-Rays is poor.
- ❑ The role of X-Rays in the primary investigation of low back pain is restricted to possible investigation for red-flag conditions and, even then, that role is **limited**.
- ❑ In the following circumstances plain X-Rays should be considered:
 1. History of cancer
 2. Significant trauma
 3. Minor trauma in patients
 - taking corticosteroids
 - known to have osteoporosis
 - over the age of 50 years
 4. [Age over 70 years](#)
 5. Temperature > 37.8°C
 6. Risk factors for infection / body penetration
 7. Weight loss
 8. No improvement over 1 month / [6 weeks?](#)
 9. Neurological deficit

- ❑ For sports people, a bone scan is a more appropriate investigation than a plain film, for the detection of incipient stress fractures of the pars interarticularis.

The following table represents the most appropriate investigations where serious disorders are considered likely:

CONDITION		INVESTIGATIONS
TUMOURS		
PRIMARY	myeloma	IEPG, imaging, biopsy
(rare: 0.04% of all tumours)	other tumours of bone cartilage, muscle etc	imaging, biopsy
SECONDARY	prostate Breast Lung Thyroid Kidney GIT Melanoma	prostate specific antigen bone scan acid phosphatase alkaline phosphatase serum calcium
INFECTION	osteomyelitis, discitis, epidural abscess	FBC, ESR, CRP
METABOLIC BONE DISEASE	Paget's disease Hyperparathyroidism	serum calcium alkaline phosphatase acid phosphatase bone scan
VISCERAL DISEASE	aortic aneurysm retroperitoneal disease pelvic disease	abdominal exam, US abdominal exam, US pelvic exam, PR
RADICULOPATHY (is this a serious disorder?)	disc prolapse	CT or MRI scan
CAUDA EQUINA	intra spinal pathology	urgent surgical referral

Table 5. Appropriate investigations for the cardinal Red Flag conditions

INVESTIGATION OF RADICULAR PAIN AND RADICULOPATHY

DEFINITIONS

- ❑ Radicular pain, commonly known as sciatica, is typically an electric type of pain related to irritation of a nerve root or peripheral nerve. The term radicular pain does not imply reduced nerve function and should be distinguished from radiculopathy.
- ❑ Radiculopathy literally means sick nerve and is defined as impaired function of a peripheral nerve, usually accompanied by radicular pain.

RECOMMENDATIONS

- ❑ Restraint is suggested in the ordering of CT imaging of the lower back due to the large amount of radiation exposure from CT scans. A typical CT scan series of the lumbar spine is equivalent to 20-30 years of usual background radiation and may increase risk of developing cancer long term.
- ❑ No imaging is generally required for radicular pain (sciatica) unless there is:
 - no improvement with conservative treatment over 6 – 12 weeks and surgery is being contemplated
 - presence of motor weakness not improving over 6 weeks
 - recurrent or persistent back pain and radiculopathy following spine surgery
- ❑ bladder dysfunction (usually retention) is an indication for urgent CT scan or MRI and surgical decompression within 24 hours (**immediately?**).
- ❑ MRI is more sensitive and specific than CT scan but is more costly and less available
- ❑ MRI is less costly and invasive, but just as accurate as CT myelography

MANAGEMENT

At the Initial Visit it is most important to address the concerns of the patient with explanation, reassurance and advice regarding staying active. 'Pain related fear is more disabling than pain itself'.

Explanation

- You should explain the self limiting nature of acute low back pain. Provide with a biological model of their pain.
- Address any misunderstanding they have about their pain and reassure that light activity will not cause further injury.
- Explain that increased muscle tension and spasm can increase pain and how this may be relieved by simple stretching and mobilising the lumbar spine by light activity
- Instruct the patient on simple stretching techniques
- Advise walking as flexibly as possible.
- Suggest gradually increasing aerobic activity such as walking and / or swimming on a daily basis, aiming for at least 30 minutes a day
- Advise that when lifting:
 - avoid twisting and bending
 - for heavy objects use thighs with a vertical back, and
 - at other times, use the back and flex it;
 - not to be afraid

Reassurance

- Reassure that light activity will not harm the spine and that most patients are better within 4 weeks.
- Answer any negative questions in a positive way. Simply labeling the patient as 'functional' may deny a patient treatment without offering a viable alternative.

Work intervention

- Early intervention is recommended to reduce the likelihood of chronic disability.
- Encourage the patient to remain in his or her job, or to return at an early stage, even if there is still some low back pain - do not wait until they are completely pain-free.
- With the patient's consent, contact with the employer may facilitate maintaining sympathetic contact with the absent patient.

Provide analgesia

- Assess requirements by first assessing pain level on a scale of 0 to 10
0 = no pain, 10 = worst pain imaginable
- First line – paracetamol 500-1000mg every 4 hours up to 4 gms per day
- Second line – Non steroidal anti-inflammatory drug
- Third line – Add codeine 30-60 mg. 4 hourly or Tramadol 50mg 6 hourly.
Use for 2 weeks to assist activation. Warn about constipation
- Avoid the use of strong opioids.

Manipulation and physical therapy

- There is moderately good evidence for manual therapy in the form of mobilisation and / or manipulation in the first 6 weeks of low back pain.

REVIEW AND FOLLOW-UP

With each visit:

- Check for Red Flags / Neurological signs
- Assess need for investigation / referral
- Check compliance with medications and exercise advice and reinforce
- Review medication

- ❑ Assess and address fears:
 - Explain / educate / inform
 - Reassure / encourage
 - Activate
 - Check return to work progress if applicable
- ❑ If poor response to initial therapy consider other therapies from the following (conflicting research exists):
 - focal local anaesthetic injections, acupuncture, TENS, specific exercises
- ❑ The following therapies are not recommended (no supporting research):
 - passive physical treatments such as heat, ultrasound, traction, back school.

REVIEW AFTER 4 WEEKS

- ❑ Most patients should be improving well by this stage. If there is no or little improvement consider investigations such as plain x-ray to exclude red flags.
- ❑ Reconsider psychosocial factors. [\(deleted reference to table\)](#) Patients that are frightened by pain and avoid all activities that might hurt, tend to become more disabled and have a poorer prognosis
- ❑ Try to maintain a positive outlook and maintain activity. However, if the patient is becoming depressed they may need more complex management. Consider referral early.

FAILURE TO RETURN TO WORK AFTER 4 WEEKS

- ❑ understand that the longer anyone is off work with low back pain, the greater the risk of chronic pain and disability, and the lower their chances of ever returning to work.
- ❑ Address the common misconception among patients and employers of the need to be pain-free before return to work. Some pain is to be expected and the early resumption of work activity improves the prognosis.
- ❑ With the patient's consent, advise employers on ways in which the physical demands of the job can be temporarily modified to facilitate return to work.

- ❑ Consider referral to an active and progressive physical fitness programme if failure to improve by 6 weeks.