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Evidence-based Management of Acute Musculoskeletal Pain

A Guide for Clinicians

Australian Acute Musculoskeletal Pain Guidelines Group

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Project Overview, Funding and Participants

This guide is derived from an evidence review, "Evidence-based Management of Acute Musculoskeletal Pain" (available online at www.nhmrc.gov.au), undertaken by the Australian Acute Musculoskeletal Pain Guidelines Group (2003). The evidence review was submitted to the National Health and Medical Research Council (NHMRC) and was approved by the Council in June 2003. This guide summarises the findings of the evidence review and provides information sheets for consumers.

The evidence review was coordinated by the University of Queensland, funded by the Commonwealth Department of Health and Ageing, and approved by the following organisations:

- Australian and New Zealand College of Anaesthetists, Faculty of Pain Medicine
- Australian Osteopathic Association
- Australian Physiotherapy Association
- Australian Rheumatology Association
- Chiropractic and Osteopathic College of Australasia
- Chiropractors' Association of Australia
- Consumers' Health Forum of Australia
- Royal Australian College of General Practitioners.

Disclaimer

Every attempt has been made to locate the most recent scientific evidence. Judgment is necessary when applying evidence in a clinical setting. It is important to note that weak or insufficient evidence does not necessarily mean that a practice is inadvisable, but may reflect the insufficiency of evidence or the limitations of scientific investigation.

This document is intended as a guide to practice. The ultimate decision of how to proceed rests with the clinician and the patient and depends on individual circumstances and beliefs (NHMRC 1999).

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Contents

List of Tables & Figures

About this Group

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About this Guide

Objectives

The objectives of this guide are:

- To inform practice in the management of acute musculoskeletal pain
- To promote partnership between patients and clinicians in decision-making.

Information for Clinicians

- This guide summarises the findings of a multi-disciplinary review of the evidence on the diagnosis, prognosis and interventions for acute musculoskeletal pain. The source document ("Evidence-based Management of Acute Musculoskeletal Pain") is available at www.nhmrc.gov.au.
- The guide covers the management of five regions of acute musculoskeletal pain (acute low back pain, acute thoracic spinal pain, acute neck pain, acute shoulder pain, anterior knee pain).
- The scientific evidence on the diagnosis, prognosis and interventions for each of the five regions is summarised in the form of Key Messages. The level of evidence (see Table 1.1) for each Key Message is provided.
- An overview of acute pain management and effective communication is provided.
- An outline of the management plan for acute musculoskeletal pain is provided on the back cover of this booklet.
- An electronic version of this guide is available at www.nhmrc.gov.au.

Information for patients

- Information sheets for acute low back pain, acute thoracic spinal pain, acute neck pain, acute shoulder pain and anterior knee pain are provided in the appendices to this booklet (see Appendix E: Patient Information Sheets).
- The information sheets are designed for photocopying.
- Electronic versions of the information sheets are also available for downloading from www.nhmrc.gov.au.

1 Introduction

1.1 Background

Pain and disability associated with musculoskeletal conditions represent a significant health burden in Australia. This guide summarises the results of an evidence review (AAMPGG 2003) on the diagnosis, prognosis and treatment of the following acute musculoskeletal conditions:

- Acute low back pain
- Acute thoracic spinal pain
- Acute neck pain
- Acute shoulder pain
- Anterior knee pain.

The evidence review is available at www.nhmrc.gov.au (AAMPGG 2003).

1.2 Summary of the Findings of the Evidence Review

The following are the main findings of the evidence review (AAMPGG 2003):

Adopt a partnership approach

Management of acute musculoskeletal pain involves a partnership approach. The clinician and the patient should work together to develop a management plan (see back cover of this guide).

Manage acute pain to prevent chronic pain

An episode of acute musculoskeletal pain is of short duration (less than three months), although such episodes may recur. Chronic pain will occur in some cases when pain is unrelieved

over time. Successful management of acute pain reduces the risk of chronic pain.

In the absence of a serious cause, a specific diagnosis is not required for effective pain management

Clinical assessment comprising a history and physical examination is important to identify features of rare but serious causes of acute musculoskeletal pain. In the majority of the remaining cases, it is not possible to determine the cause of acute musculoskeletal pain and a specific diagnosis is not required for effective management.

Investigations are not generally indicated unless features of serious conditions are evident

Ancillary investigations are generally not indicated for acute non-specific musculoskeletal pain. When there are features of serious conditions, further investigation is warranted (refer to Appendix B: Ancillary Investigations).

Provide information, assurance and encouragement to remain active

Simple interventions (providing information, assurance and encouraging reasonable maintenance of activity) may be all that are required for the successful management of acute musculoskeletal pain, or they can be used in combination with other interventions.

Review progress

People with acute musculoskeletal pain should be monitored to evaluate progress and to check for latent features of serious conditions ('red flags') and psychosocial factors ('yellow flags') that may influence recovery.

1.3 Scope

The information contained in this guide is concerned only with the management of acute episodes of pain (i.e. pain present for a duration of less than three months). Discussion of chronic musculoskeletal pain (i.e. pain persisting for longer than three months) is beyond the scope of this work.

Table 1.1: Levels of Evidence

LEVEL OF EVIDENCE*	STUDY DESIGN
I	Evidence obtained from a systematic review of all relevant randomised controlled trials.
II	Evidence obtained from at least one properly designed randomised controlled trial.
III-1	Evidence obtained from well-designed pseudo randomised controlled trials (alternate allocation or some other method).
III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised (cohort studies), case control studies, or interrupted time series with a control group.
III-3	Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without parallel control group.
IV	Evidence obtained from case series, either post-test or pre-test and post-test.
CONSENSUS	In the absence of scientific evidence and where the executive committee, steering committee and review groups are in agreement, the term 'consensus' has been applied.

* These levels of evidence have been developed primarily for intervention studies. Adapted from: National Health and Medical Research Council of Australia (1999). A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines. NHMRC: Canberra.

This guide summarises the evidence on the diagnosis, prognosis and management of 'non-specific' conditions presenting as acute musculoskeletal pain. Discussion of the management of specific and serious conditions associated with acute musculoskeletal pain is beyond the scope of this document.

The evidence contained in this document is current to January 2003.

1.4 Evidence Review and Guideline Development Process

The process of reviewing the evidence and developing guidelines was overseen by a national, multi-disciplinary steering

Table 1.2: Criteria for Categorising Interventions

CATEGORY	CRITERIA
Evidence of Benefit	Interventions for which there is evidence of a clinically significant beneficial effect compared to placebo, natural history or to other interventions that have demonstrated a beneficial effect vs. placebo or natural history.
Conflicting Evidence	Interventions for which there have been a number of similar controlled trials that have achieved conflicting results.
Insufficient Evidence	Interventions for which there have been no controlled trials or those for which an effect has been demonstrated in a general sense but not in all specific regions of musculoskeletal pain or those interventions that have not been tested against placebo.
Evidence of No Benefit	Interventions that have demonstrated no effect vs. placebo or natural history and have confidence intervals that exclude a clinically important benefit.

committee and undertaken by multi-disciplinary review groups. The work was developed according to standards outlined in the National Health and Medical Research Council (NHMRC) Toolkit series (1999b, 2000a,b,c,d).

The guideline development process consisted of:

- An evaluation of existing guidelines in the five topic areas;
- A systematic search for new evidence to update existing material;
- Critical appraisal of new studies that met selection criteria;
- Data analysis (description of the results of new studies and formulation of Key Messages to highlight the main points);
- Development of a management plan for acute musculoskeletal pain;
- Public consultation and independent review.

1.5 Key Messages

The scientific evidence on the diagnosis, prognosis and interventions for acute low back, thoracic spinal, neck, shoulder and anterior knee pain is summarised in the form of Key Messages. The aim of the Key Messages is to provide information for use in decision-making that is based on the best available evidence.

The level of scientific evidence accompanies each Key Message (refer to Table 1.1). In the absence of scientific evidence and where the executive committee, steering committee and review groups were in agreement, the term 'consensus' was used. Where sufficient evidence has been available or consensus achieved, recommendations have been made. Study selection criteria and full references for the Key Messages are available in the evidence review (AAPMGG 2003, available online at www.nhmrc.gov.au).

1.5.1 Key Messages: Interventions

Systematic reviews and randomised controlled trials (i.e. Level I and II evidence) were sought to determine the efficacy of interventions for acute musculoskeletal pain. While there was a paucity of evidence, it is important to note that this does not necessarily mean that a particular intervention is not efficacious or beneficial. There are limits to scientific investigation and in addition, evidence for interventions may exist in study types excluded from the evidence review (AAMPGG 2003).

Because effect sizes were not always available, criteria were developed to categorise the findings (refer to Table 1.2).

1.6 Limitations of the Evidence Review

> The majority of studies included in the evidence review were performed in tertiary settings; there are limitations to applying the findings to other settings.

> There was both a lack of evidence (i.e. few or no studies conducted) and a lack of high quality, generalisable results in studies of treatments for acute musculoskeletal pain. This does not mean that an intervention is not efficacious or beneficial.

> There were limitations to the results of some systematic reviews where data from heterogeneous interventions were pooled. Specific and uniformly applied definitions for treatment modalities are required.

> There were difficulties in locating studies and comparing the results due to the range of terms used to describe acute musculoskeletal pain.

> The use of a variety of outcome measures limited the ability to compare results between studies.

> Few articles on treatments drew a distinction between acute and chronic musculoskeletal pain. Systematic reviews comprising studies on acute and chronic populations were included when there were no studies involving specifically 'acute' populations.

> The decision to restrict the evidence review on interventions to Level I and II studies (with the exception of the thoracic spinal pain guidelines) precluded the inclusion of the results of Level III and IV studies on treatment.

> The authors acknowledge that the NHMRC Levels of Evidence used in this document are designed to rank studies of interventions and may not adequately reflect the study quality for other question types (e.g. diagnosis and prognosis), where cross-sectional and cohort studies may be the design of choice.

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National Health and Medical Research Council (2000d). How to Use the Evidence: Assessment and Application of Scientific Evidence. NHMRC: Canberra.

2 Principles of Acute Pain Management

2.1 Pain

Pain is the most common reason for self-medication and entry into the health care system (Eccleston 2001). Pain, acute and chronic, is now appreciated in a biopsychosocial model (Engel 1977) that acknowledges the biological, psychological and social dimensions of the pain experience.

This model acknowledges that pain is not simply determined either by somatic factors or by factors 'outside' the body, but rather is the end result of a disturbance in nociceptive function interacting with a person's experience of being. This is influenced in turn by interaction with people, objects and events in the outside world, including the family, the community and the environment. Thus whilst knowledge of nociception and pain from a traditional medical science aspect is essential to the understanding of pain, it cannot be divorced from knowledge of perception and pain from a psychosocial point of view.

Pain is an individual, multi-factorial experience influenced by culture, previous pain experience, belief, mood and ability to cope. Pain may be an indicator of tissue damage but may also be experienced in the absence of an identifiable cause. The degree of disability experienced in relation to the experience of pain varies; similarly there is individual variation in response to methods to alleviate pain (Eccleston 2001).

Effective pain relief is a human right (NHMRC 1999a):

- Unrelieved severe pain has adverse psychological and physiological effects.
- Consumers should be involved in the assessment and management of their pain.
- To be effective, pain treatment should be flexible and tailored to individual needs.

- It should be possible to reduce pain to a comfortable or tolerable level.
- Pain should be treated early, as established, severe pain is more difficult to treat.

2.2 Acute and Chronic Pain

The term 'acute pain' refers to pain that has been present for less than three months (Bonica 1953; Merskey 1979). Chronic pain is pain that has been present for longer than three months (Merskey and Bogduk 1994). Successful management of pain in the acute phase is essential to prevent transition to chronic pain, which presents a significant individual, social and economic burden.

The development of chronic pain is likely to be the result of small, cumulative changes in lifestyle that have been made to cope with acute musculoskeletal pain (Linton 2002). The intensity, duration and character of the pain influence the psychosocial response, and the psychosocial response in turn influences the course of events.

Individuals vary in their potential to develop chronic pain. A combination of behaviours, beliefs and emotions may be involved in the transition from acute to chronic pain (Linton 2002). When pain is unrelieved over time, or if there are recurrent episodes of pain, chronic pain may develop. It is essential to identify people with acute pain who are at risk of developing chronic pain, and to intervene early to prevent this occurrence.

2.3 Pain Assessment

A pain assessment can identify features of a serious underlying condition ('red flags') and psychosocial factors that may influence recovery ('yellow flags'). Tools for use in pain assessment, such as a pain history, a pain diagram, and pain intensity scales, are provided in Appendix A.

2.3.1 'Red Flags'

The term 'red flags' refers to clinical features that may be associated with the presence of a serious, but relatively uncommon condition requiring urgent evaluation. Such conditions include tumours, infection, fractures and neurological damage. Screening for serious conditions occurs as part of a history and physical examination and should occur at the initial assessment and subsequent visits. Alerting features of serious conditions are summarised in the specific guideline topics (Chapters 5, 6, 7, 8, 9).

2.3.2 'Yellow Flags'

The term 'yellow flags' was introduced to identify psychosocial and occupational factors that may increase the risk of chronicity in people presenting with acute low back pain. Kendall et al. (1997) developed guidelines for assessing 'yellow flags' in acute low back pain (see www.nzgg.org.nz), outlining factors that should be assessed particularly when progress is slower than expected. The presence of such factors is a prompt for further detailed assessment and early intervention. The areas to evaluate include:

- Attitudes and beliefs about pain;
- Behaviours;
- Compensation issues;
- Diagnostic and treatment issues;
- Emotions;
- Family;
- Work.

'Red flags' and 'yellow flags' are not mutually exclusive and intervention may be required for both clinical and psychosocial risk factors.

2.4 Pain Management

Von Korff (1999) demonstrated that people in pain want to:

- Know what the problem is;
- Be reassured that it is not serious;
- Be relieved of their pain;
- Receive information.

People in pain want advice on how to manage their pain, including non-pharmacological and pharmacological interventions, and how to return to normal activity. It is important to satisfy the need for knowledge, alleviate fear and to focus on preventing disability due to pain (Main 2002). The use of a preventive approach to shape behaviour is best done at the initial visit. This is particularly important in acute musculoskeletal pain, which may recur.

The NHMRC guidelines for the management of acute pain (1999a) cite a number of misconceptions about pain management, including a lack of understanding of the pharmacokinetics of analgesics, mistaken beliefs about addiction, poor knowledge of dosage requirements, concerns about side effects and a lack of awareness that pain is potentially harmful.

2.5 Key Messages: Acute Pain Management

The Key Messages in Table 2.1 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information is intended to inform the decision-making process.

Table 2.1: Acute Pain Management: Key Messages

ACUTE PAIN MANAGEMENT: KEY MESSAGES	EVIDENCE LEVEL
INTERVENTIONS	
Information, Assurance, and Encouragement to Remain Active Simple interventions (providing information, assurance and encouraging reasonable maintenance of activity) may be used alone or in combination with other interventions for the successful management of acute non-specific musculoskeletal pain.	CONSENSUS

Table 2.1 continued

ACUTE PAIN MANAGEMENT: KEY MESSAGES	EVIDENCE LEVEL
INTERVENTIONS (continued)	
Non-pharmacological Interventions Non-phamacological interventions including active, passive and behavioural therapies can be used in conjunction with other interventions.	CONSENSUS
Pharmacological Interventions Specific pharmacological interventions may be required to relieve pain; such agents can be used in conjunction with non-pharmacological interventions.	CONSENSUS
Simple Analgesics Paracetamol or other simple analgesics, administered regularly, are recommended for relief of mild to moderate acute musculoskeletal pain.	CONSENSUS
Non-steroidal Anti-inflammatory Drugs Where paracetamol is insufficient for pain relief, a non-steroidal anti-inflammatory (NSAID) medication may be used, unless contraindicated.	CONSENSUS
Opioid Analgesics Oral opioids may be necessary to relieve severe musculoskeletal pain. It is preferable to administer a short-acting agent at regular intervals, rather than on a pain-contingent basis. Ongoing need for opioid analgesia is an indication for reassessment.	CONSENSUS
Adjuvant Agents Adjuvant agents such as anticonvulsants and antidepressants are not recommended in the management of acute musculoskeletal pain.	CONSENSUS
Muscle Relaxants Any benefits from muscle relaxants may be outweighed by their adverse effects, therefore they cannot be routinely recommended.	CONSENSUS

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3 Effective Communication

3.1 Communication

All consultations involve the exchange of information between a clinician and a patient. Effective communication of information is fundamental to the success of any management plan.

Information is gathered from a patient during clinical assessment. It is important for the clinician to communicate their findings to the patient. Once a serious cause for the pain has been ruled out, the patient can be reassured that it is not necessary, or possible in many cases, to know the specific cause of an acute episode of musculoskeletal pain, and that the pain can be managed effectively without an identified cause.

'Two-way' communication should be encouraged so that all issues of concern are raised, a management plan (refer to Chapter 4) is developed, and the respective roles and responsibilities are clear in relation to implementing the plan.

3.2 Key Messages: Communication

The Key Messages in Table 3.1 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information is intended to inform the decision-making process.

Table 3.1: Effective Communication: Key Messages

EFFECTIVE COMMUNICATION: KEY MESSAGES	EVIDENCE LEVEL
Use a Partnership Approach Clinicians should work with patients to develop a management plan (refer to back cover of this guide) so that patients know what to expect, and understand their role and responsibilities.	CONSENSUS
Avoid Jargon Information should be conveyed in correct but neutral terms, avoiding alarming diagnostic labels; jargon should be avoided.	CONSENSUS

Table 3.1 continued

EFFECTIVE COMMUNICATION: KEY MESSAGES	EVIDENCE LEVEL
Provide an Explanation Explanation is important to overcome inappropriate expectations, fears or mistaken beliefs that patients may have about their condition or its management.	CONSENSUS
Use Learning Aids Printed materials and models may be useful for communicating concepts.	CONSENSUS
Communicate at an Appropriate Level Clinicians should adapt their method of communication to meet the needs and abilities of each patient.	CONSENSUS
Address Barriers to Communication Clinicians should check that information has been understood; barriers to understanding should be explored and addressed.	CONSENSUS

References

Australian Acute Musculoskeletal Pain Guidelines Group (AAMPGG) (2003). Evidence-Based Management of Acute Musculoskeletal Pain [Online. Available at http://www.nhmrc.gov.au]. Australian Academic Press: Brisbane.

4 Management Plan for Acute Musculoskeletal Pain

4.1 Developing a Management Plan

A management plan for acute musculoskeletal pain (refer to the back cover of this guide) is designed to help the patient progress through their episode of pain and regain normal function. The following approach is recommended:

- Develop a management plan in conjunction with the patient, fostering a cooperative and supportive environment.
- Tailor the plan to meet the needs of each patient, taking their preferences and abilities into account.
- Include actions that the patient and the clinician may take in the event of an exacerbation or recurrence of pain, or slow progress to recovery.
- The plan should be clear to both parties to facilitate participation, and will require review at follow-up visits.
- The plan should enable the patient to take responsibility for their care (bearing in mind that some people will require greater levels of support and assistance) with the support of their clinician.

4.2 Components of a Management Plan

The management plan comprises the processes of assessment, management and review. An outline of the management plan is provided on the back cover of this guide.

4.2.1 Assessment

A history and physical examination are needed to assess for clinical features of serious conditions ('red flags') and to identify psychosocial and occupational factors ('yellow flags') that may influence recovery.

Ancillary investigations are not generally indicated unless features of serious conditions are identified.

In cases where features of serious conditions are present, an alternative plan of management is required.

4.2.2 Management

Consumers seek an explanation and information about the nature of their pain. An effective communication technique using appropriate terms to describe acute musculoskeletal pain is required.

The natural history of acute musculoskeletal pain is generally favourable; thus, epidemiological data serves as the basis for assurance that recovery can be expected. Information on the prognosis and the provision of assurance is an integral part of the management plan.

Activity should be encouraged; resumption of normal activity should occur as soon as possible. For each of the conditions covered in this guide, activation is a seminal intervention for restoring function and preventing disability.

In addition to initial interventions such as providing information, assurance and advice to maintain reasonable activity levels, non-pharmacological (i.e. active, passive and behavioural therapies) and pharmacological interventions may be needed to assist return to normal activity. Treatment decisions should be made with the patient, giving due consideration to the potential risks and benefits of various treatment options. It is important that patients have realistic expectations of the power of interventions. Evidence for the effectiveness of interventions for acute musculoskeletal pain is provided in this guide and in the patient information sheets (see Appendix E).

4.2.3 Review

Prescription of a single, one-step intervention is unlikely to be successful. The management plan may be iterative, requiring small amendments or major changes. On subsequent visits, the clinician can enquire whether the plan has been satisfactory and explore questions, concerns and possible alternatives as required. Further explanation and assurance can be provided.

Ongoing review provides an important opportunity to assess for features of serious conditions ('red flags') and psychosocial factors ('yellow flags') that may not have been evident on previous visits and to intervene as required.

Review also demonstrates concern that progress has been made. This is particularly important when there was intense pain and distress at the initial presentation. The need for further visits can be discussed at each consultation.

4.3 Key Message: Management Plan

The Key Message in Table 4.1 is a conclusive statement based on the findings of the evidence review (AAMPGG 2003). The information is intended to inform the decision-making process.

Table 4.1: Management Plan: Key Message

MANAGEMENT PLAN: KEY MESSAGE	EVIDENCE LEVEL
MANAGEMENT PLAN	
Develop a Management Plan It is recommended that the clinician and patient develop a management plan for acute musculoskeletal pain comprising the elements of assessment, management and review: • **Assessment** — Conduct a history and physical examination to assess for the presence of serious conditions; ancillary investigations are not generally indicated unless features of serious conditions are identified. • **Management** — Provide information, assurance and advice to resume normal activity and discuss other options for pain management as needed. • **Review** — Reassess the pain and revise the management plan as required.	CONSENSUS

References

Australian Acute Musculoskeletal Pain Guidelines Group (AAMPGG) (2003). Evidence-Based Management of Acute Musculoskeletal Pain [Online. Available at http://www.nhmrc.gov.au]. Australian Academic Press: Brisbane.

5 Acute Low Back Pain

5.1 Background

Low back pain is common in developed countries, affecting approximately 70% of the adult population (Deyo et al. 1992) at some stage. Episodes of low back pain lasting more than two weeks have a cumulative lifetime prevalence of 14% (Deyo and Tsui-Wu 1987).

The cause of pain is non-specific in about 95% of people presenting with acute low back pain; serious conditions are rare (Suarez-Almazor et al. 1997; Hollingworth et al. 2002). The condition is generally self-limiting.

In Australia, back problems are the most frequently seen musculoskeletal condition in general practice and the seventh most common reason for seeking care (AIHW 2000). Chronic low back pain is a well-documented disabling condition, costly to both individuals and society (Waddell 1992).

5.2 Definition

The term 'acute' is used to describe pain that has been present for less than three months (Merskey 1979); it does not refer to the severity or quality of pain. Chronic pain is pain that has been present for at least three months (Merskey and Bogduk 1994).

The International Association for the Study of Pain (IASP) adopted a topographic basis for the definition of acute low back pain (Merskey and Bogduk 1994). The IASP recognises different forms of spinal pain: lumbar spinal pain, sacral spinal pain, or lumbosacral pain, as constituting low back pain. These definitions explicitly locate the pain as perceived in the lumbar and/or sacral regions of the spine, which collectively cover the following regions:

- Superiorly, by an imaginary transverse line through the tip of the last thoracic spinous process;

- Inferiorly, by an imaginary transverse line through the posterior sacrococcygeal joints;
- Laterally, by vertical lines tangential to the lateral borders of the lumbar erectores spinae, continuing to imaginary lines passing through the posterior superior and posterior inferior iliac spines.

5.3 Scope

These guidelines describe the diagnosis and treatment of acute low back pain. The following are beyond the scope of this document:

- Serious conditions including infection, neoplasm, fracture;
- Neuropathic conditions including radicular pain (i.e. 'sciatica');
- Specific conditions such as degenerative disc disease, osteoarthritis, spinal canal stenosis and inflammatory conditions such as ankylosing spondylitis;
- Loin pain (pain perceived over the posterior region of the trunk but lateral to the erector spinae muscles);
- Gluteal pain (pain in a sector centred on the greater trochanter and spanning from the posterior inferior iliac spine to the anterior superior iliac spine);
- Thoracic spinal pain;
- Somatic referred pain, visceral referred pain;
- Serious underlying conditions including aortic aneurysm, pelvic disease, retroperitoneal disease, Paget's disease, hyperparathyroidism.

5.4 Alerting Features of Serious Conditions (See Table 5.1)

Table 5.1 summarises the features and risk factors associated with serious conditions. While there are no data to substantiate a relationship between precipitating factors and causes of back pain, the presence of these features in conjunction with

acute low back pain should prompt further investigation (refer to Appendix B: Ancillary Investigations). The table is intended as a guide only.

Table 5.1: Alerting Features of Serious Conditions Associated with Acute Low Back Pain

FEATURE OR RISK FACTOR	CONDITION
Symptoms and signs of infection (e.g. fever) Risk factors for infection (e.g. underlying disease process, immunosuppression, penetrating wound)	Infection
History of trauma Minor trauma (if > 50 years, history of osteoporosis and taking corticosteroids)	Fracture
Past history of malignancy Age > 50 years Failure to improve with treatment Unexplained weight loss Pain at multiple sites Pain at rest	Tumour
Absence of aggravating features	Aortic aneurysm

5.5 Key Messages: Acute Low Back Pain

The Key Messages in Table 5.2 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information may be used to inform decisions.

The Key Messages form the basis of an information sheet on the management of acute low back pain (see Appendix E Information Sheet No. 1: Acute Low Back Pain).

Details of study selection criteria, and references for the Key Messages and evidence levels are included in the evidence review (available online at www.nhmrc.gov.au).

Table 5.2: Summary of Key Messages: Acute Low Back Pain

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
DIAGNOSIS	
Aetiology and Prevalence	
• The majority (approximately 95% of cases) of acute low back pain is non-specific; serious conditions are rare causes of acute low back pain.	LEVEL I, III*
• Common findings in patients with low back pain (e.g. osteoarthritis, lumbar spondylosis, spinal canal stenosis) also occur in asymptomatic people; hence, such conditions may not be the cause of the pain.	LEVEL I, III*
History	
• History enables screening for features of serious conditions ►; however the reliability and validity of individual features in histories have low diagnostic significance (refer to Appendix A).	*LEVEL III-2
Physical Examination	
• Clinical signs detected during physical and psychosocial assessment must be interpreted cautiously as many tests lack reliability and validity.	*LEVEL III-2
• A full neurological examination is warranted in the presence of lower limb pain and other neurological symptoms.	LEVEL IV
Ancillary Investigations	
• Plain xrays of the lumbar spine are not routinely recommended in acute non-specific low back pain as they are of limited diagnostic value and no benefits in physical function, pain or disability are observed.	*LEVEL III-2
• Appropriate investigations are indicated (refer to Appendix B) in cases of acute low back pain when alerting features ('red flags') of serious conditions are present. ►	*LEVEL III-2
Terminology	
• A specific patho-anatomic diagnosis is not necessary for effective management of acute non-specific low back pain.	CONSENSUS
• Terms to describe acute low back pain with no identifiable pathology include 'lumbar spinal pain of unknown origin' or 'somatic lumbar spinal pain'.	LEVEL IV

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
PROGNOSIS	
• The majority of people with a short duration of symptoms upon presentation with low back pain recover within three months; however milder symptoms often persist.	*LEVEL III-2
• Recurrences of acute low back pain are not uncommon.	*LEVEL III-3
• Psychosocial and occupational factors ('yellow flags') appear to be associated with progression from acute to chronic pain; such factors should be assessed early to facilitate intervention.	*LEVEL III-2
INTERVENTIONS	
Evidence of Benefit	
Advice to Stay Active (Activation)	
• Advice to stay active provides a small beneficial effect on pain, rate of recovery and function compared to bed rest and compared to a specific exercise regime in mixed (acute/chronic) populations with low back pain.	LEVEL I, II
• Advice to stay active reduces sick leave compared to bed rest in mixed populations with low back pain.	LEVEL I, II
Heat Wrap Therapy	
• Continuous low level heat wrap therapy reduces pain, stiffness and disability extending for three to four days compared with paracetamol, NSAIDs or placebo alone during the first 48 hours of acute low back pain. (This treatment is not routinely available in Australia).	LEVEL II
Patient Information (Printed)	
• Novel or 'activity-focused' printed information plus similar verbal advice provided by a clinician is more effective compared to traditional brochures or no printed information in acute low back pain.	LEVEL II
• Printed information provided through the mail is less likely to have an effect on pain, disability and sick leave compared to information provided in person.	LEVEL II
• Behavioural therapy interventions are more effective than printed information for preventing long-term disability in mixed (acute/chronic) populations.	LEVEL II

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Conflicting Evidence	
Muscle Relaxants	
• There is conflicting evidence that muscle relaxants are effective compared to placebo in acute low back pain.	LEVEL I
• There is insufficient evidence to determine whether muscle relaxants are more or less effective compared to NSAIDs for acute low back pain.	LEVEL I
• Drowsiness, dizziness and dependency are common adverse effects of muscle relaxants.	LEVEL I
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	
• There is conflicting evidence that oral and injectable NSAIDs are effective versus placebo or no treatment for acute low back pain.	LEVEL I
• NSAIDs have a similar effect compared to opioid analgesics, combined paracetamol-opioid analgesics and to each other in their effect on acute low back pain.	LEVEL I
• There is insufficient evidence that NSAIDs are more effective when compared to muscle relaxants and anti-anxiety agents in acute low back pain.	LEVEL I
• NSAIDs are less effective in reducing pain than heat wrap therapy in the first three to four days of acute low back pain.	LEVEL II
• Serious adverse effects of NSAIDs include gastrointestinal complications (e.g. bleeding, perforation).	LEVEL I
Spinal Manipulation	
• There is conflicting evidence that spinal manipulation provides pain relief compared to placebo in the first two to four weeks of acute low back pain.	LEVEL I
• There is insufficient evidence that spinal manipulation is more or less effective than other conservative treatments for acute low back pain.	LEVEL I, II
• Adverse effects of spinal manipulation are rare but potentially serious.	LEVEL IV

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Acupuncture	
• There is insufficient evidence that acupuncture (dry-needling) is effective compared to injection therapy in acute low back pain.	LEVEL I
• Adverse effects of acupuncture are rare but potentially serious.	LEVEL I
Analgesics, Compound and Opioid	
• There are no randomised controlled trials investigating the efficacy of opioids and compound analgesics in acute low back pain.	NO LEVEL I or II EVIDENCE
• There is evidence that the effect of opioid or compound analgesics is similar to NSAIDs for treatment of acute low back pain.	LEVEL I, II
• In general, opioids and compound analgesics have a substantially increased risk of side effects compared with paracetamol alone.	LEVEL I
Analgesics, Simple	
• There are no randomised controlled trials assessing the effectiveness of simple analgesics in acute low back pain.	NO LEVEL I or II EVIDENCE
• There is insufficient evidence for the effectiveness of simple analgesics versus NSAIDs in acute low back pain.	LEVEL I
• Paracetamol is less effective than heat wrap therapy in acute low back pain.	LEVEL II
• There is insufficient evidence for the effect of paracetamol compared to electroacupuncture in mixed populations with low back pain.	LEVEL I
Back Exercises	
• McKenzie therapy provides similar pain and function outcomes compared to usual care in acute low back pain.	LEVEL I
• There is conflicting evidence for the efficacy of back exercises in reducing pain and disability compared to other active and inactive treatments in mixed populations with low back pain.	LEVEL I

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Back Exercises (continued)	
• McKenzie therapy reduces pain and sick leave compared to one back school session, results in similar global improvement compared to manipulation and provision of an educational booklet and provides better functional and pain outcomes compared to flexion exercises in mixed (acute/chronic) populations with low back pain.	LEVEL I
• Lateral multifidus muscle exercises reduce recurrences of low back pain compared to usual care in mixed populations with low back pain.	LEVEL II
Back School	
• There is insufficient evidence that back school is more effective in reducing pain compared to active and passive therapies and to placebo in acute low back pain.	LEVEL I
• There is insufficient evidence that back school is more effective in reducing pain compared to placebo and other treatments in mixed populations with low back pain.	LEVEL I, II
Bed Rest	
• There is insufficient evidence that bed rest is more effective compared to advice to stay active, back exercises, spinal manipulation, non-steroidal anti-inflammatory drugs or no treatment in mixed populations with low back pain.	LEVEL I, II
• There is conflicting evidence that bed rest increases disability and rate of recovery compared to staying active in mixed populations with low back pain.	LEVEL I
• Bed rest for longer than two days increases the amount of sick leave compared to early resumption of normal activity in acute low back pain.	LEVEL I
• There is evidence that prolonged bed rest is harmful.	LEVEL I
Cognitive Behavioural Therapy	
• Cognitive behavioural therapy reduces general disability in the long-term compared to traditional care in mixed (acute/chronic) populations with back pain.	LEVEL I
• Group cognitive behavioural therapy sessions may reduce sick leave and health care utilisation in the long-term compared to general educational information in mixed populations with back pain.	LEVEL II

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Cognitive Behavioural Therapy (continued)	
• While cognitive behavioural strategies are often included as part of specific interventions for acute low back pain such as exercise and activity restoration, there are no studies on the use of this approach as a single intervention.	NO LEVEL I or II EVIDENCE
Electromyographic Biofeedback	
• There are no controlled studies testing the effectiveness of electromyographic biofeedback in acute low back pain.	NO LEVEL I or II EVIDENCE
Injection Therapy	
• There is insufficient evidence demonstrating the effectiveness of injection therapy (facet joint, epidural or soft tissue) in the treatment of acute low back pain.	LEVEL I, II
• Adverse effects of injection therapy are rare but serious.	LEVEL I
Lumbar Supports	
• There are no controlled studies on the effect of lumbar supports in acute low back pain.	NO LEVEL I or II EVIDENCE
• There is insufficient evidence that lumbar supports are effective in reducing pain compared to spinal manipulation, exercises, massage, TENS and simple analgesia in mixed populations with low back pain.	LEVEL I
Massage	
• There are no controlled studies of massage therapy in acute low back pain.	NO LEVEL I or II EVIDENCE
• Massage is superior to placebo (sham laser) and acupuncture in mixed populations with low back pain.	LEVEL I, II
• Massage provides similar effect to back schools (involving exercise and education), corsets and TENS in mixed (acute/chronic) populations with low back pain.	LEVEL I, II
• There is conflicting evidence of the effect of massage compared to manipulation and education in mixed populations with low back pain.	LEVEL I, II
Multi-disciplinary Treatment in the Workplace	
• There are no controlled studies on the effect of multi-disciplinary treatment in the workplace in acute low back pain.	NO LEVEL I or II EVIDENCE

Table 5.2 continued

ACUTE LOW BACK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Multi-disciplinary Treatment in the Workplace (continued)	
• Multi-disciplinary treatment in the workplace improves return to work and subjective disability compared to usual care in mixed populations with low back pain.	LEVEL I, II
Topical Treatment	
• There is insufficient evidence for the effectiveness of spiroflar homeopathic gel or cremol capsici for treatment of acute low back pain.	LEVEL II
Traction	
• There are no controlled studies on the effect of traction for acute low back pain.	NO LEVEL I or II EVIDENCE
• There is insufficient evidence that traction is effective compared to placebo and compared to other treatments in mixed populations with low back pain.	LEVEL I
• Adverse effects from traction have been reported, including reduced muscle tone, bone demineralisation, thrombophlebitis.	LEVEL I
Transcutaneous Electrical Nerve Stimulation (TENS)	
• There are no controlled studies on the effect of TENS in acute low back pain.	NO LEVEL I or II EVIDENCE
• There is insufficient evidence for the effectiveness of TENS compared to exercises, back books, massage, corset use and simple analgesia in mixed populations with low back pain.	LEVEL I, II
COST EFFECTIVENESS	
• Published data is very limited; however there is some evidence that advice to maintain usual activities, provision of an education booklet and community-based exercises appear to be cost effective first line interventions for acute low back pain.	LEVEL II

* Indicative only. A higher rating of the level of evidence might apply (see 1.6: Limitations of the Evidence Review).

► Features of serious conditions are summarised in Table 5.1

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Australian Acute Musculoskeletal Pain Guidelines Group (AAMPGG) (2003). Evidence-Based Management of Acute Musculoskeletal Pain [Online. Available at http://www.nhmrc.gov.au]. Australian Academic Press: Brisbane.

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6 Acute Thoracic Spinal Pain

6.1 Background

There is little in the way of scientific evidence on the diagnosis, prognosis and treatment of thoracic spinal pain. This document provides an overview of the evidence in this area to raise awareness of the need for formal population studies on the diagnosis and management of thoracic spinal pain.

6.2 Definition

In these guidelines, the term 'acute' refers to pain that has been present for less than three months (Merskey 1979); it does not refer to the severity or quality of pain. Chronic pain is pain that has been present for at least three months (Merskey and Bogduk 1994).

The following is a definition of thoracic spinal pain developed by the International Association for the Study of Pain (Merskey and Bogduk 1994):

> Pain perceived anywhere in the region bounded superiorly by a transverse line through the tip of the spinous process of T1, inferiorly by a transverse line through the tip of the spinous process of T12, and laterally by vertical lines tangential to the most lateral margins of the erector spinae muscles. This area can be divided into upper, middle and lower thirds. Pain felt lateral to this area is defined as posterior chest wall pain, and does not constitute thoracic spinal pain.

6.3 Scope

These guidelines describe the diagnosis and treatment of acute thoracic spinal pain. The following conditions are beyond the scope of this document:

- Serious conditions: infection, neoplasm, neuropathic conditions and fractures of the thoracic spine;
- Chronic pain.

6.4 Alerting Features of Serious Conditions (see Table 6.1)

Table 6.1 summarises the features and risk factors associated with serious conditions. While the predictive values of these alerting features have not been tested specifically in relation to thoracic spinal pain, their presence in conjunction with acute thoracic spinal pain should prompt further investigation (refer to Appendix B: Ancillary Investigations). The table is intended as a guide only.

Table 6.1: Alerting Features of Serious Conditions Associated with Acute Thoracic Spinal Pain

FEATURE OR RISK FACTOR	CONDITION
Minor trauma (if > 50 years, history of osteoporosis and taking corticosteroids) Major trauma	Fracture
Fever Night sweats Risk factors for infection (e.g. underlying disease process, immunosuppression, penetrating wound)	Infection
Past history of malignancy Age > 50 Failure to improve with treatment Unexplained weight loss Pain at multiple sites Pain at rest Night pain	Tumour
Chest pain or heaviness Movement, change in posture has no effect on pain Abdominal pain Shortness of breath, cough	Other serious conditions

6.5 Key Messages: Acute Thoracic Spinal Pain

The Key Messages in Table 6.2 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information may be used to inform decisions.

The Key Messages form the basis of an information sheet on the management of acute thoracic spinal pain (see Appendix E Information Sheet No. 2: Acute Thoracic Spinal Pain).

Details of study selection criteria, and references for the Key Messages and evidence levels are included in the evidence review (available online at www.nhmrc.gov.au).

Table 6.2: Summary of Key Messages: Acute Thoracic Spinal Pain

ACUTE THORACIC SPINAL PAIN: KEY MESSAGES	EVIDENCE LEVEL
DIAGNOSIS	
Aetiology and Prevalence	
• Pain may be referred to the upper thoracic spine from visceral structures and cervical spinal structures or arise in the thoracic interspinous ligaments, paravertebral muscles and zygapophyseal joints.	LEVEL IV
• Men and women aged over 60 are at risk for spontaneous osteoporotic fractures of the thoracic spine; extent of vertebral deformity and multiple fractures appear linked with pain intensity.	LEVEL IV
• Clinicians should be alert to the potential for rare, serious conditions ► presenting as acute thoracic spinal pain; however most cases of thoracic spinal pain are of mechanical origin.	LEVEL IV
History	
• History serves to differentiate sources of acute thoracic spinal pain to identify features of potentially serious conditions; however it carries little diagnostic weight (refer to Appendix A).	CONSENSUS
Physical Examination	
• The reliability of palpation for tenderness of the thoracic spine is good but its validity is unknown.	LEVEL IV
• The reliability of motion palpation of the thoracic spine is marginal.	LEVEL IV
• Following blunt trauma, a negative clinical examination in the presence of a clear sensorium makes a thoracic spinal fracture unlikely.	LEVEL IV

Table 6.2 continued

ACUTE THORACIC SPINAL PAIN: KEY MESSAGES	EVIDENCE LEVEL
Physical Examination (continued)	
• Despite the absence of supportive, scientific data on the utility of physical examination of the thoracic spine, such examination provides an important opportunity to identify features of serious conditions.	LEVEL IV
Ancillary Investigations	
• In the absence of trauma, plain radiography is of limited use in defining the cause of pain (refer to Appendix B).	LEVEL IV
• Fractures are more likely to occur in people over age 60 with a history of blunt trauma; a lower threshold for investigation is warranted in this group.	LEVEL IV
• In the presence of trauma, xray of the thoracolumbar spine is not indicated in those who are awake, alert and have no clinical evidence of injury; however those with equivocal or positive clinical findings or with an altered level of consciousness should undergo thoracolumbar spine evaluation.	LEVEL IV
• CT scanning is only indicated for the evaluation of the neural canal and posterior elements of the thoracic spine when fractures have been detected with plain films.	LEVEL IV
• There is no research to inform ancillary investigations for acute thoracic spinal pain; investigations should be selected on the basis of clinical features suggesting the presence of serious conditions. ►	CONSENSUS
Terminology	
• The appropriate labels for non-specific 'mechanical' thoracic spinal pain are 'thoracic spinal pain of unknown origin' or 'somatic thoracic spinal pain'.	CONSENSUS
PROGNOSIS	
• There is a lack of published data on the natural history and influence of prognostic risk factors for acute thoracic spinal pain.	NO EVIDENCE

Table 6.2 continued

ACUTE THORACIC SPINAL PAIN: KEY MESSAGES	EVIDENCE LEVEL
INTERVENTIONS	
Evidence of Benefit **Spinal Manipulation** There is evidence from one small study that spinal manipulation is effective compared to placebo in thoracic spinal pain.	LEVEL II

► Features of serious conditions are summarised in Table 6.1

References

Australian Acute Musculoskeletal Pain Guidelines Group (AAMPGG) (2003). Evidence-Based Management of Acute Musculoskeletal Pain [Online. Available at http://www.nhmrc.gov.au]. Australian Academic Press: Brisbane.

Merskey H (1979). Pain terms: a list with definitions and notes on usage recommended by the IASP Subcommittee on Taxonomy. Pain, 6: 249–252.

Merskey H, Bogduk N (eds) (1994). Classification of Chronic Pain. Descriptions of Chronic Pain Syndromes and Definitions of Pain Terms (2nd Edition). IASP Press: Seattle. p 210.

7 Acute Neck Pain

7.1 Background

Neck pain is one of several regional pain problems affecting the musculoskeletal system. International figures indicate that at any point in time approximately 10–15% of the population will be suffering an episode of neck pain, and 40% will suffer neck pain during a 12-month period (Ariens et al. 1999). Figures for the Australian population are lacking, although one survey reported that 18% of individuals woke with cervical pain and 4% suffered from it all day (Gordon et al. 2002).

7.2 Definition

In these guidelines, the term 'acute' refers to pain that has been present for less than three months (Merskey 1979); it does not refer to the severity or quality of pain. Chronic pain is pain that has been present for at least three months (Merskey and Bogduk 1994).

Although no organisation has explicitly defined neck pain, it is taken to mean cervical spinal pain, for which the International Association for the Study of Pain (IASP) supplies the following definition:

> [P]ain perceived as arising from anywhere within the region bounded superiorly by the superior nuchal line, inferiorly by an imaginary transverse line through the tip of the first thoracic spinous process and laterally by sagittal planes tangential to the lateral borders of the neck (Merskey and Bogduk 1994).

This definition is based exclusively on where the individual indicates they perceive pain.

7.3 Scope

These guidelines outline the evidence for the management of acute idiopathic neck pain and acute whiplash-associated

neck pain. The following conditions are beyond the scope of these guidelines:

- Serious conditions: neurological conditions, infection, neoplasm, fracture of the cervical spine;
- Neuropathic pain;
- Cervicogenic headache;
- Pain in the throat;
- Headache;
- Cervical radicular pain (pain perceived in the upper limb);
- Thoracic spinal pain;
- Chronic pain.

7.4 Alerting Features of Serious Conditions (see Table 7.1)

Table 7.1 summarises the features and risk factors associated with serious conditions. Although these features have only face validity in the context of acute neck pain, a similar device has proved effective in screening for serious causes of low back pain (McGuirk et al. 2001).

While the predictive values of these alerting features have not been tested specifically in relation to acute neck pain, their presence in conjunction with such pain should prompt further investigation (refer to Appendix B: Ancillary Investigations). The table is intended as a guide only.

Table 7.1: Alerting Features of Serious Conditions Associated with Acute Neck Pain

FEATURE OR RISK FACTOR	CONDITION
Symptoms and signs of infection (e.g. fever, night sweats) Risk factors for infection (e.g. underlying disease process, immuno-suppression, penetrating wound, exposure to infectious diseases)	Infection
History of trauma Use of corticosteroids	Fracture
Past history of malignancy Age > 50 years Failure to improve with treatment Unexplained weight loss Dysphagia, headache, vomiting	Tumour
Neurological symptoms in the limbs	Neurological condition
Cerebrovascular symptoms or signs, anticoagulant use	Cerebral or spinal hemorrhage
Cardiovascular risk factors, transient ischaemic attack	Vertebral or carotid aneurysm

7.5 Key Messages: Acute Neck Pain

The Key Messages in Table 7.2 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information may be used to inform decisions.

The Key Messages form the basis for an information sheet on the management of acute neck pain (see Appendix E Information Sheet No. 3: Acute Neck Pain).

Details of study selection criteria, and references for the Key Messages and evidence levels are included in the evidence review (available online at www.nhmrc.gov.au).

Table 7.2: Summary of Key Messages: Acute Neck Pain

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
DIAGNOSIS	
Aetiology and Prevalence	
• Acute neck pain is most commonly idiopathic or attributed to a whiplash accident; serious causes of acute neck pain are rare (< 1%).	*LEVEL III-3
• Degenerative changes, osteoarthrosis or spondylosis of the neck are neither causes of nor risk factors for idiopathic neck pain.	*LEVEL III
• The most consistent determinant of idiopathic neck pain is the social nature of the work environment; occupation and stress at work are weakly associated risk factors.	*LEVEL III
• Involvement in a motor vehicle accident is not a risk factor for developing neck pain; however individuals who experience neck pain soon after such an event are more likely to develop chronic neck pain.	*LEVEL III
History	
• Attention should be paid to the intensity of pain because regardless of its cause, severe pain is a prognostic risk factor for chronicity and patients with severe pain may require special or more concerted interventions.	CONSENSUS
• The hallmarks of serious causes of acute neck pain are to be found in the nature and mode of pain onset, its intensity and alerting features (refer to Appendix A).	CONSENSUS
• Eliciting a history aids the identification of potentially threatening and serious causes ► of acute neck pain and distinguishes them from non-threatening causes.	CONSENSUS
Physical Examination	
• Physical examination does not provide a patho-anatomic diagnosis of acute idiopathic or whiplash-associated neck pain as clinical tests have poor reliability and lack validity.	*LEVEL III
• Despite limitations, physical examination is an opportunity to identify features of potentially serious conditions. ►	CONSENSUS
• Tenderness and restricted cervical range of movement correlate well with the presence of neck pain, confirming a local cause for the pain.	*LEVEL III

Table 7.2 continued

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Ancillary Investigations	
• Plain radiography is not indicated for the investigation of acute neck pain in the absence of a history of trauma, or in the absence of clinical features of a possible serious disorder (refer to Appendix B).	*LEVEL III
• In symptomatic patients with a history of trauma, radiography is indicated according the Canadian C-Spine Rule (refer to Appendix C).	*LEVEL III
• CT is indicated only when: plain films are positive, suspicious or inadequate; plain films are normal but neurological signs or symptoms are present; screening films suggest injury at the occiput to C2 levels; there is severe head injury; there is severe injury with signs of lower cranial nerve injury, or pain and tenderness in the sub-occipital region.	CONSENSUS
• Acute neck pain in conjunction with features alerting to the possibility of a serious underlying condition ► is an indication for MRI.	CONSENSUS
Terminology	
• Except for serious conditions, precise identification of the cause of neck pain is unnecessary.	CONSENSUS
• Once serious causes have been recognised or excluded, terms to describe acute neck pain can be either 'acute idiopathic neck pain' or 'acute whiplash-associated neck pain'.	CONSENSUS
PROGNOSIS	
• Approximately 40% of patients recover fully from acute idiopathic neck pain, approximately 30% continue to have mild symptoms and 30% of patients continue to have moderate or severe symptoms.	*LEVEL III
• Approximately 56% of patients fully recover within three months from onset of acute whiplash-associated neck pain, 80% recover fully within one or two years; 15–40% continue to have symptoms and 5% are severely affected.	*LEVEL III, IV
• Psychosocial factors are not determinants of chronicity in whiplash-associated neck pain.	*LEVEL III
• Risk factors for chronicity following whiplash-associated neck pain are older age at time of injury, severity of initial symptoms, past history of headache or head injury.	*LEVEL III

Table 7.2 continued

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
INTERVENTIONS	
Evidence of Benefit	
Advice to Stay Active (Activation)	
• Encouraging resumption of normal activities and movement of the neck is more effective compared to a collar and rest for acute neck pain.	LEVEL I, II
Exercises	
• Gentle neck exercises commenced early post-injury are more effective compared to rest and analgesia or information and a collar in acute neck pain.	LEVEL II
• Exercises performed at home are as effective for neck pain as tailored outpatient treatments at two months and appear to be more effective at two years after treatment.	LEVEL II
Multi-modal Therapy	
• Multi-modal (combined) treatments inclusive of cervical passive mobilisation in combination with specific exercise alone or specific exercise with other modalities are more effective for acute neck pain in the short-term compared to rest, collar use and single modality approaches.	LEVEL I, II
Pulsed Electromagnetic Therapy (PEMT)	
• Pulsed electromagnetic therapy reduces pain intensity compared to placebo in the short term but is no different to placebo at 12 weeks for acute neck pain.	LEVEL I
Insufficient Evidence	
Acupuncture	
• There are no randomised controlled studies on the effect of acupuncture or infrared acupuncture in the treatment of acute neck pain.	NO LEVEL I OR II EVIDENCE
• There is conflicting evidence that acupuncture is more effective compared to placebo and other treatments for neck pain in mixed populations.	LEVEL I
Analgesics, Opioid	
• Opioids may be used; however there are no randomised controlled studies of their effectiveness for acute neck pain.	NO LEVEL I OR II EVIDENCE
• In general, opioid and compound analgesics have a substantially increased risk of side effects compared with paracetamol alone.	LEVEL I

Table 7.2 continued

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Analgesics, Simple	
• Simple analgesics may be used to treat mild to moderate pain; however there is insufficient evidence that paracetamol is more effective than placebo, natural history or other measures for relieving acute neck pain.	NO LEVEL I OR II EVIDENCE
Cervical Manipulation	
• There are no randomised controlled trials investigating the effect of cervical manipulation in the treatment of acute neck pain.	NO LEVEL I OR II EVIDENCE
• Adverse effects of cervical manipulation are rare but potentially serious.	LEVEL I
Cervical Passive Mobilisation	
• There are no randomised controlled studies on the effect of cervical passive mobilisation compared to natural history or placebo in the treatment of acute neck pain.	NO LEVEL I OR II EVIDENCE
Electrotherapy	
• There is insufficient evidence that electrotherapy is effective compared to no treatment in acute neck pain.	LEVEL I
Gymnastics	
• There are no randomised controlled trials on the effect of gymnastics for acute neck pain.	NO LEVEL I OR II EVIDENCE
• Gymnastics may be no more effective than natural history in mixed populations.	LEVEL I
Microbreaks	
• There is insufficient evidence that taking regular breaks from computer work is more effective compared to irregular breaks for preventing acute neck pain.	LEVEL II
Multi-disciplinary Biopsychosocial Rehabilitation	
• There are no randomised controlled studies investigating the effect of multi-disciplinary treatment in acute neck pain.	NO LEVEL I OR II EVIDENCE
• There is insufficient evidence that multi-disciplinary treatment is effective compared to other interventions for reducing neck pain in mixed populations.	LEVEL I, II

Table 7.2 continued

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Muscle Relaxants	
• There are no randomised controlled trials investigating the efficacy of muscle relaxants for the treatment of acute neck pain.	NO LEVEL I OR II EVIDENCE
• Muscle relaxants are no more effective than placebo for neck pain in mixed (acute/chronic) populations.	LEVEL I, II
• Drowsiness, dizziness and dependency are common adverse effects of muscle relaxants.	LEVEL I
Neck School	
• There are no randomised controlled trials on the effect of neck school for acute neck pain.	NO LEVEL I OR II EVIDENCE
• Neck school appears no more effective than no treatment for neck pain in mixed populations.	LEVEL II
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	
• There are no randomised controlled trials on the effectiveness of NSAIDs for acute neck pain.	NO LEVEL I OR II EVIDENCE
• There is evidence that NSAIDs are no more effective than placebo ultrasound for neck pain in mixed populations.	LEVEL I
• Serious adverse effects of NSAIDs include gastrointestinal complications (e.g. bleeding, perforation).	LEVEL I
Patient Education	
• There are no randomised controlled trials investigating the effect of patient education as a single strategy in the treatment of acute neck pain.	NO LEVEL I OR II EVIDENCE
Spray and Stretch Therapy	
• There are no randomised controlled trials investigating the effect of spray and stretch therapy in acute neck pain.	NO LEVEL I OR II EVIDENCE
• Spray and stretch therapy appears no more effective than placebo for neck pain in mixed populations.	LEVEL I
Traction	
• There are no randomised controlled trials investigating the effectiveness of traction for acute neck pain.	NO LEVEL I OR II EVIDENCE

Table 7.2 continued

ACUTE NECK PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Traction (continued)	
• In mixed populations, there is evidence that traction is of no benefit compared to a range of other interventions for neck pain.	LEVEL I
Transcutaneous Electrical Nerve Stimulation (TENS)	
• There is insufficient evidence of benefit from TENS compared to a collar or manual therapy in acute neck pain.	LEVEL I
Evidence of No Benefit	
Collars	
• Soft collars are not effective for acute neck pain compared to advice to resume normal activity and other interventions.	LEVEL I, II

* Indicative only. A higher rating of the level of evidence might apply (see 1.6: Limitations of the Evidence Review).

► Features of serious conditions are summarised in Table 7.1

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8 Acute Shoulder Pain

8.1 Background

Approximately 10% of the general adult population will experience an episode of shoulder pain in their lifetime (van der Heijden et al. 1996). Pain in the shoulder is the third most commonly experienced type of musculoskeletal pain, exceeded only by low back and neck pain (Cailliet 1981). Shoulder pain is a common reason for care seeking as it impacts upon a range of activities of daily living, including sleep. It is estimated that around 95% of people with shoulder pain are treated in primary care settings (van der Heijden 1999).

Many people presenting with acute shoulder pain are likely to have conditions that will resolve spontaneously regardless of treatment. Indeed, there are reports that 50% of people with shoulder pain do not seek care at all. Van der Windt et al. (1996) reported that 23% of all new episodes of shoulder pain resolved fully within one month and 44% resolved within three months of onset. However, the results of studies on the natural history of shoulder pain vary considerably because of the range of definitions used to describe shoulder disorders (van der Heijden 1999).

The risk that uncomplicated shoulder pain will persist beyond the acute phase appears to be related to personality traits, coping style and occupational factors (van der Heijden 1999). Van der Windt et al. (1996) noted that 41% of cases had symptoms persisting for longer than one year. It is important to take prognostic risk factors into consideration and to intervene early to prevent progression to chronic pain.

8.2 Definition

In these guidelines, the term ‘acute’ is defined as pain that has been present for less than three months (Merskey 1979); it does not refer to the severity or quality of pain. Chronic pain

is pain that has persisted for longer than three months (Merskey and Bogduk 1994).

There is no universal definition of shoulder pain. For the purposes of these guidelines, 'shoulder' refers to the articulations of the scapula, clavicle and humerus together with the ligaments, tendons, muscles and other soft tissues with a functional relationship to these structures.

8.3 Scope

These guidelines describe the diagnosis and treatment of acute shoulder pain of unknown or uncertain origin. The following conditions are beyond the scope of this document:

- Serious conditions: infection, neoplasm, inflammatory arthropathies and fracture, rupture, instability or joint dislocation related to trauma;
- Neurological conditions;
- Hemiplegic shoulder pain (post-cerebrovascular accident);
- Conditions characterised by pain referred to the shoulder;
- Chronic pain (e.g. due to 'frozen shoulder' or 'adhesive capsulitis').

8.4 Alerting Features of Serious Conditions (see Table 8.1)

Table 8.1 summarises the features and risk factors associated with serious conditions. While the predictive values of these alerting features have not been tested specifically in relation to shoulder pain, their presence in conjunction with acute shoulder pain should prompt further investigation (refer to Appendix B: Ancillary Investigations). The table is intended as a guide only.

Table 8.1: Alerting Features of Serious Conditions Associated with Acute Shoulder Pain

FEATURE OR RISK FACTOR	CONDITION
Symptoms and signs of infection (e.g. fever) Risk factors for infection (e.g. underlying disease process, immunosuppression, penetrating wound)	Infection
History of trauma Sudden onset of pain	Fracture/dislocation
Past history of malignancy Age > 50 years Failure to improve with treatment Unexplained weight loss Pain at multiple sites Pain at rest	Tumour

8.5 Key Messages: Acute Shoulder Pain

The Key Messages in Table 8.2 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information may be used to inform decisions.

The Key Messages form the basis for an information sheet on the management of acute low back pain (see Appendix E Information Sheet No. 4: Acute Shoulder Pain).

Details of study selection criteria, and references for the Key Messages and evidence levels are included in the evidence review (available online at www.nhmrc.gov.au).

Table 8.2: Summary of Key Messages: Acute Shoulder Pain

ACUTE SHOULDER PAIN: KEY MESSAGES	EVIDENCE LEVEL
DIAGNOSIS	
Aetiology and Prevalence	
• Clinicians should be alert to the potential for rare, serious conditions (e.g. fracture/dislocation, tumour, infection, inflammatory arthropathies) presenting as acute shoulder pain.	LEVEL IV
• Most cases of acute shoulder pain are of 'mechanical' origin and can be managed as acute regional pain.	*LEVEL III-2, III-3
• Biological factors such as age, female gender, past history and response to repetitive physical tasks may contribute to the development of acute shoulder pain.	*LEVEL III-3
• Psychosocial factors such as job dissatisfaction and work demands may contribute to the onset of acute shoulder pain.	*LEVEL III-2
History	
• Information obtained from the history may alert to the presence of a serious condition as the underlying cause of acute shoulder pain (refer to Appendix A).	CONSENSUS
• The reliability and validity of individual features in histories have low diagnostic significance; the history is to be interpreted with caution when choosing a course of action.	*LEVEL III-2
Physical Examination	
• Findings of shoulder examination must be interpreted cautiously in light of the evidence of limited utility; no clinical test is both reliable and valid for any specific diagnostic entity.	*LEVEL III-2
• Causes of acute shoulder pain cannot be diagnosed by clinical assessment; however with the exception of serious conditions, satisfactory outcomes do not depend on precise identification of cause.	CONSENSUS
• Despite limitations, physical examination is an opportunity to identify features of potentially serious conditions. ►	*LEVEL III-2
Ancillary Investigations	
• Imaging is not necessary unless there are alerting features of serious conditions ►; in the absence of alerting features, the diagnostic utility of imaging is minimal and the results are unlikely to improve management (refer to Appendix B).	*LEVEL III

Table 8.2 continued

ACUTE SHOULDER PAIN: KEY MESSAGES	EVIDENCE LEVEL
Ancillary Investigations (continued)	
• There is a need to educate consumers about the limitations of imaging and the risks of radiation exposure.	LEVEL IV
Terminology	
• Terms to describe acute shoulder pain should summarise the discernible features of the condition to form the basis for a management plan.	CONSENSUS
PROGNOSIS	
• Approximately 50% of people with acute shoulder pain (treated conservatively) recover within six months; approximately 60% recover within 12 months.	*LEVEL III-2
• Shoulder pain may recur even in those who appear to fully recover in the short-term.	*LEVEL III-2
INTERVENTIONS	
Evidence of Benefit	
Corticosteroid Injection	
• Subacromical corticosteroid injection for acute shoulder pain may improve pain at four weeks compared to placebo but this benefit is not maintained at 12 weeks.	LEVEL I
Exercises	
• Exercises may improve shoulder pain compared to placebo in people with rotator cuff disease in both the short and longer-term.	LEVEL I
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	
• Topical and oral NSAIDs improve acute shoulder pain by a small to moderate degree for up to four weeks compared to placebo.	LEVEL I
• Serious adverse effects of NSAIDs include gastrointestinal complications (e.g. bleeding, perforation).	LEVEL I
Ultrasound	
• Therapeutic ultrasound may provide short-term pain relief in calcific tendonitis compared to placebo.	LEVEL I
Conflicting Evidence	
Acupuncture	
• There is conflicting evidence of the effectiveness of acupuncture compared to placebo ultrasound for shoulder pain and function.	LEVEL I

Table 8.2 continued

ACUTE SHOULDER PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence	
Analgesics	
• There are no randomised controlled trials investigating the use of analgesics (paracetamol or compound analgesics) for acute or chronic shoulder pain.	NO LEVEL I OR II EVIDENCE
Extracorporeal Shock Wave Treatment (ESWT)	
• There are no randomised controlled trials of ESWT for acute shoulder pain.	NO LEVEL I OR II EVIDENCE
• Trials conducted in populations with chronic shoulder pain show conflicting results for ESWT compared with placebo.	LEVEL I
Manual Therapy	
• Shoulder joint mobilisation with combined treatments (hot packs, active exercise, stretching, soft tissue mobilisation and education) may improve acute shoulder pain in the short-term compared to the combined treatments alone.	LEVEL I
Oral Corticosteroids	
• There are no randomised controlled trials investigating the use of oral corticosteroids for acute shoulder pain.	NO LEVEL I OR II EVIDENCE
• Studies of mixed populations do not report significant benefit from oral corticosteroids compared with placebo or no treatment for adhesive capsulitis.	LEVEL I
Suprascapular Nerve Blocks	
• There are no published studies investigating the value of suprascapular nerve blocks for acute shoulder pain.	NO LEVEL I OR II EVIDENCE
• There is some evidence of short-term effect from suprascapular nerve blocks for chronic adhesive capsulitis and rotator cuff disease.	LEVEL I
Surgery	
• There are no published randomised controlled trials investigating the effectiveness of surgery for acute shoulder pain although studies exist for chronic populations.	NO LEVEL I OR II EVIDENCE
Transcutaneous Electrical Nerve Stimulation (TENS)	
• There is insufficient evidence for the use of TENS for acute shoulder pain.	LEVEL I

* Indicative only. A higher rating of the level of evidence might apply (see 1.6: Limitations of the Evidence Review).

► Features of serious conditions are summarised in Table 8.1

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9 Anterior Knee Pain

9.1 Background

Patellofemoral pain, a benign condition of the anterior knee, is a common condition diagnosed on the basis of features identified during clinical assessment. The incidence of patellofemoral pain in the general population is reported in some studies to be as high as one in four, with the proportion increasing in athletes (Levine 1979; Outerbridge 1964). The rate is around 7% in young active adults (Witvrouw et al. 2000), between 1% and 15% in army recruits (Almeida et al. 1999a,b; Heir and Glomskaer 1996; Jones et al. 1993; Kowal 1980; Milgrom et al. 1991; Schwellnus et al. 1990; Shwayhat et al. 1994) and between 2% and 30% of presentations to sports medicine clinics (Baquie and Brukner 1997; Clement et al. 1981; DeHaven and Lintner 1986; Derscheid and Feiring 1987; Devereaux and Lachman 1984; James et al. 1978; Matheson et al. 1989; Pagliano and Jackson 1987).

While patellofemoral pain may persist, regular activity provides relief in the majority of cases. Surgery appears to offer no advantage. The aim in management of acute, non-specific patellofemoral pain is to:

- Identify potentially serious causes of acute knee pain; and
- Promote effective self-management of symptoms through the provision of timely and appropriate advice.

9.2 Definition

The term ‘patellofemoral’ pain refers to pain predominantly experienced in the anterior aspect of the knee, in close proximity to the patellofemoral complex. The term does not infer anything more than the probable site of pain origin and is appropriate for practical purposes to classify anterior knee pain problems of otherwise unknown origin (Crossley et al. 2001).

The diagnosis of patellofemoral pain is based on two key elements:

- The area in which the pain is perceived
- The exclusion of other causes of anterior knee pain.

In these guidelines, the term 'acute' refers to pain that has been present for less than three months (Merskey 1979); it does not refer to the severity or quality of pain. Chronic pain is pain that has been present for at least three months (Merskey and Bogduk 1994).

9.3 Scope

These guidelines describe the diagnosis and treatment of patellofemoral pain that is not attributable to a particular pathology. The following conditions are beyond the scope of the document:

- Serious conditions: infection, neoplasm, fracture, neurological conditions, inflammatory arthropathies;
- Osteoarthritis and other specific conditions (e.g. Fat Pad Syndrome, Osgood-Schlatter Disease, Sinding-Larsen-Johannson Syndrome, plica syndromes, pre-patellar and infra-patellar bursitis, tendonitis, complex regional pain syndromes, osteonecrosis);
- Medial, lateral and posterior knee pain;
- Internal mechanical derangements (e.g. meniscal tear, cruciate ligament damage);
- Conditions characterised by pain referred from other structures (e.g. hip);
- Neuropathic pain;
- Pain in the anterior thigh and other regions of the knee.

9.4 Alerting Features of Serious Conditions (see Table 9.1)

Table 9.1 summarises the features and risk factors associated with serious conditions. While the predictive values of these

features have not been tested specifically in relation to patellofemoral pain, their presence in conjunction with anterior knee pain should prompt further investigation (refer to Appendix B: Ancillary Investigations). The table is intended as a guide only.

Table 9.1: Alerting Features of Serious Conditions Associated with Anterior Knee Pain

FEATURE OR RISK FACTOR	CONDITION
Major trauma Sudden onset of pain (alerting feature for such entities as fracture and osteonecrosis) Minor trauma (if > 50 years, history of osteoporosis and taking corticosteroids)	Fracture or tendon and ligament rupture, osteonecrosis
Fever, night sweats, signs of inflammation (large, warm effusion) Risk factors for infection (e.g. underlying disease process, immunosuppression, penetrating wound)	Infection (e.g. septic arthritis), crystal arthritis
Past history of malignancy Age > 50 Failure to improve with treatment Unexplained weight loss Pain at multiple sites Pain at rest Night pain	Tumour

9.5 Key Messages: Anterior Knee Pain

The Key Messages in Table 9.2 are conclusive statements based on the findings of the evidence review (AAMPGG 2003). The information may be used to inform decisions.

The Key Messages form the basis for an information sheet on the management of anterior knee pain (see Appendix E Information Sheet No. 5: Anterior Knee Pain).

Details of study selection criteria, and references for the Key Messages and evidence levels are included in the evidence review (available online at www.nhmrc.gov.au).

Table 9.2: Summary of Key Messages: Anterior Knee Pain

ANTERIOR KNEE PAIN: KEY MESSAGES	EVIDENCE LEVEL
DIAGNOSIS	
Aetiology and Prevalence	
• 'Patellofemoral pain' is a general term used to describe idiopathic pain arising from the anterior knee/patellofemoral region that is of otherwise unknown origin.	CONSENSUS
• Anterior knee pain is commonly idiopathic; serious causes are rare.	LEVEL IV
• Intrinsic risk factors for knee pain may include female gender, knee anatomy, joint laxity, muscle imbalance and prior injury. Extrinsic risk factors include occupation, sport and obesity.	LEVEL IV
History	
• The history (refer to Appendix A) provides information on possible causes of anterior knee pain and assists the identification of serious underlying conditions. ►	CONSENSUS
Physical Examination	
• Although examination techniques lack specificity for diagnosing knee disorders, physical examination may assist the identification of serious conditions underlying anterior knee pain.	*LEVEL III, IV
Ancillary Investigations	
• Indications for plain radiography are a history of trauma and: qualification under one of the Knee Rules (refer to Appendix D): or sudden onset of severe pain, or alerting features of a serious condition. ►	*LEVEL III, IV
• Suspected fracture in the presence of a normal plain radiograph is an indication for CT scan (refer to Appendix B).	CONSENSUS
• The presence of alerting features of a serious condition ► is an indication for the use of MRI.	CONSENSUS
• Swelling or potential rupture of anterior knee structures are indications for the use of ultrasound.	LEVEL IV
Terminology	
• The term 'patellofemoral pain' describes anterior knee pain for which there is no specific identifiable cause; it refers to the probable anatomical site of origin and is synonymous with retropatellar and patellofemoral joint pain.	CONSENSUS

Table 9.2 continued

ANTERIOR KNEE PAIN: KEY MESSAGES	EVIDENCE LEVEL
PROGNOSIS	
• Multiple studies on a range of populations show a trend towards improvement with time; however anterior knee pain persists to some degree in the majority of people.	LEVEL IV
INTERVENTIONS	
Evidence of Benefit **Advice to Stay Active (Activation)** • Maintenance of normal activity has a beneficial effect on patellofemoral pain compared to no treatment and to the use of patellofemoral orthoses.	LEVEL II
Injection Therapy • There is evidence that injection therapy (treatment and placebo saline) is effective for the management of patellofemoral pain in the short-term compared to no injection therapy.	LEVEL II
Orthoses (Foot) • There is evidence that corrective foot orthoses in combination with quadriceps and hamstring exercises are effective compared to placebo insoles in women with patellofemoral pain.	LEVEL I
Exercises • A six-week regimen of quadriceps muscle retraining, patellofemoral joint mobilisation, patellar taping and daily home exercises significantly reduces patellofemoral pain compared to placebo in the short-term.	LEVEL II
• Eccentric quadriceps exercises produce better functional outcomes compared to standard quadriceps strengthening exercises.	LEVEL I
Conflicting Evidence **Orthoses (Patellofemoral)** • There is conflicting evidence that patellofemoral orthoses are effective compared to other interventions and to no treatment for patellofemoral pain.	LEVEL I
Insufficient Evidence **Acupuncture** • There are no randomised controlled studies evaluating the effect of acupuncture for relief of patellofemoral pain.	NO LEVEL I OR II EVIDENCE

Table 9.2 continued

ANTERIOR KNEE PAIN: KEY MESSAGES	EVIDENCE LEVEL
Insufficient Evidence (continued)	
Analgesics (Simple and Opioid)	
• There are no randomised controlled studies of the effectiveness of paracetamol or opioids versus placebo in the treatment of patellofemoral pain.	NO LEVEL I OR II EVIDENCE
Electrical Stimulation	
• There are no randomised controlled studies of the effectiveness of electrical stimulation of the quadriceps muscle for patellofemoral pain.	NO LEVEL I OR II EVIDENCE
• There is insufficient evidence that one form of electrical stimulation of the quadriceps muscle is superior to another for treating patellofemoral pain.	LEVEL II
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	
• There are no randomised controlled studies of the effectiveness of NSAIDs versus placebo in the treatment of patellofemoral pain.	NO LEVEL I OR II EVIDENCE
• Different types of NSAIDs provide similar relief of patellofemoral pain after five days of use.	LEVEL II
• Serious adverse effects of NSAIDs include gastrointestinal complications (e.g. bleeding, perforation).	LEVEL I
Patellar Taping	
• There is insufficient evidence that patellar taping alone is effective in relieving patellofemoral pain; however it may be a useful adjunct to exercise therapy programs.	LEVEL I, II
Progressive Resistance Braces	
• There is insufficient evidence that progressive resistance braces are effective in relieving patellofemoral pain compared to no treatment (this treatment is not routinely available in Australia).	LEVEL I
Therapeutic Ultrasound	
• There is insufficient evidence that therapeutic ultrasound is more effective compared to ice massage for the treatment of patellofemoral pain.	LEVEL I
Evidence of No Benefit	
Laser Therapy	
• There is evidence that low-level laser therapy provides similar effect to sham laser in the management of patellofemoral pain.	LEVEL I

* Indicative only. A higher rating of the level of evidence might apply (see 1.6: Limitations of the Evidence Review).

► Features of serious conditions are summarised in Table 9.1

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APPENDIX A

Pain Assessment Tools

The elements of a pain history (Figure A1) provide information that can alert to the presence of a serious underlying condition. It is important to note that in the absence of a serious cause of pain, it is not necessary to obtain a specific patho-anatomic diagnosis to manage acute musculoskeletal pain effectively.

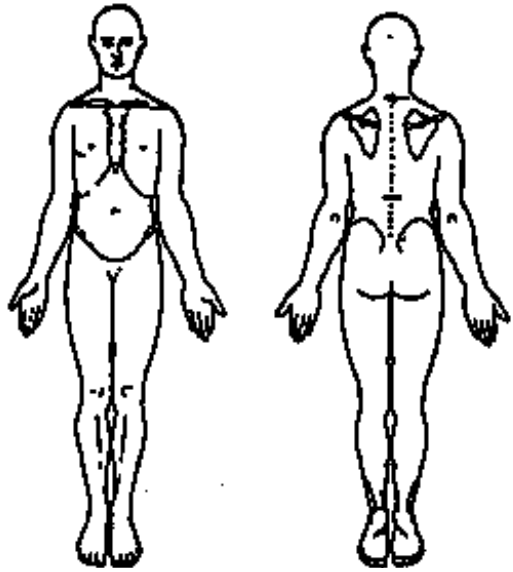
Figure A1: Elements of a Pain History

PAIN HISTORY
Site
Distribution (refer to Figure A2)
Quality
Duration
Temporal factors
Intensity (refer to Figures A3, A4, A5)
Aggravating factors
Relieving factors
Impact on activities of daily living
Associated symptoms
Onset
Previous similar symptoms
Previous treatment
Current treatment

Figure A2: Pain Diagram

Please describe the pain problem:

Please indicate with an 'x' on these figures where your main pain is. Shade any area where your pain spreads. Please number (2,3,4 etc) any other areas where you have pain.

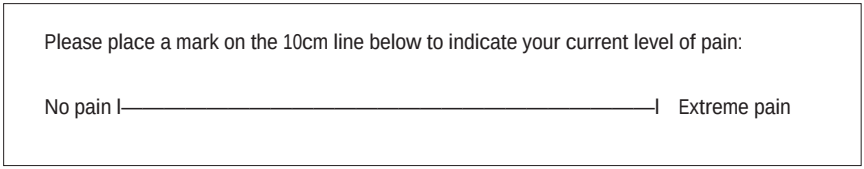


Note: Based on National Health and Medical Research Council (1999). Acute Pain Management: Scientific Evidence. Commonwealth of Australia: Canberra.

Figure A3: Categorical Pain Rating Scale

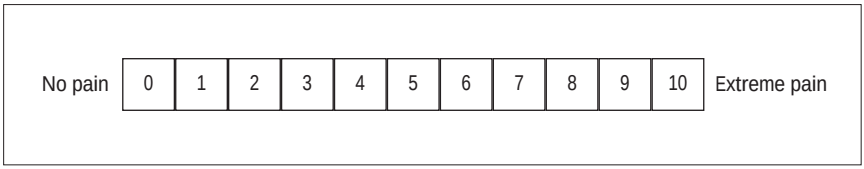
Note: Based on National Health and Medical Research Council (1999). Acute Pain Management: Scientific Evidence. Commonwealth of Australia: Canberra.

Figure A4: Visual Analogue Scale of Pain Intensity (VAS)



Note: Based on National Health and Medical Research Council (1999). Acute Pain Management: Scientific Evidence. Commonwealth of Australia: Canberra.

Figure A5: Ten Point Numerical Rating Scale (NRS)



Note: Based on National Health and Medical Research Council (1999). Acute Pain Management: Scientific Evidence. Commonwealth of Australia: Canberra.

APPENDIX B

Ancillary Investigations

Figure B1: Appropriate Investigations for Possible Serious Causes of Acute Musculoskeletal Pain (intended as a general guide only)

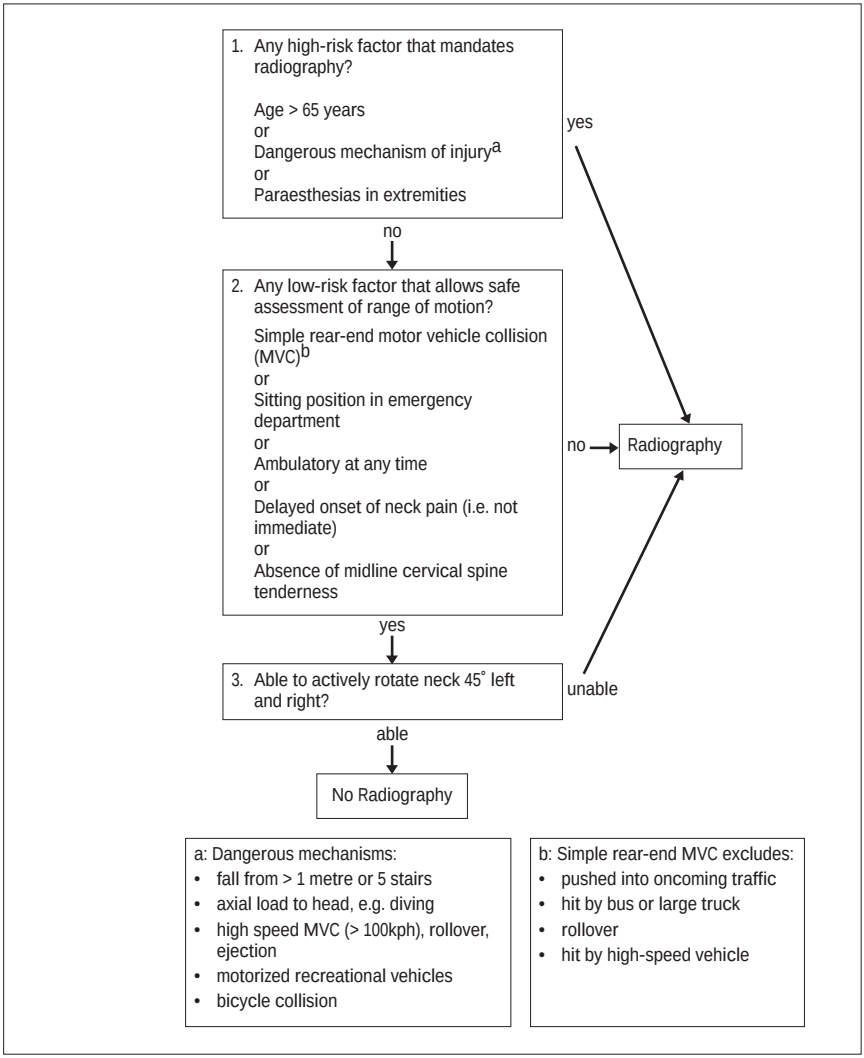
SUSPECTED CONDITION (and alerting clinical features or risk factors)		REGION OF PAIN				
		Lumbar Spine	Cervical Spine	Thoracic Spine	Shoulder	Knee
Fracture History of significant trauma History of minor trauma in association with corticosteroid use, age over 50, history of osteoporosis History of previous fracture or metabolic disease Positive for Canadian C-spine rule Positive for Knee Rule	All cases	Plain radiography				
	Stress of pars inter-articularis	Bone scan				
Infection Fever Sweating Risk factors for infection (e.g. invasive procedure, trauma to skin or mucous membrane, immunosuppressive disease or treatment)	All cases	ESR, FBC, CRP				
	Spinal	MRI				
	Osteomyelitis				MRI	
	Joint				Aspiration, Culture and Microscopy	
Tumour Palpable mass Past history of malignancy Age > 50 years Failure to improve with treatment Unexplained weight loss Pain not relieved by rest	Myeloma	IEPG, Serum protein electrophoresis				
	Prostate	PSA				
	All cases	First line: ESR, CRP Second line: MRI				
Crystal arthritis Joint effusion					Aspiration, Microscopy	
Aneurysm Cardiovascular risk factors Anticoagulants Transient ischaemic attacks Bruits Recent history of torsion to neck Absence of musculoskeletal signs	Vertebral, Carotid		MRA			
	Aortic	Ultrasound				
Osteonecrosis Immunosuppression Renal dialysis Use of corticosteroids Diabetes, alcoholism					MRI	

Note: ESR: erythrocyte sedimentation rate; FBC: full blood count; CRP: C-reactive protein; MRI: magnetic resonance imaging; IEPG: immunoelectrophoretogram; MRA: magnetic resonance angiography.

APPENDIX C

Canadian C-Spine Rule

Figure C1: The Canadian C-Spine Rule



Note: Based on Stiell, I.G., Wells, G.A., Vandemheen, K.L., Clement, C.M., Lesiuk, H., De Maio, V.J., Laupacis, A., Schull, M., McKnight, R.D., Verbeek, R., Brison, R., Cass, D., Dreyer, J., Eisenhauer, M.A., Greenberg, G.H., MacPahil, I., Morrison, L., Readon, M., & Worthington, J.W. (2001). The Canadian C-spine rule for radiography in alert and stable trauma patients. Journal of the American Medical Association, 286, 1841–1848.

APPENDIX D

Knee Rules: Indications for Knee Xray

Traumatic Knee Pain

The following Rules provide indications for conventional xray in the event of acute traumatic knee injury:

- The Ottawa Knee Rule
- The Pittsburgh Knee Rule
- The Bauer Rule.

Figure D1: Ottawa Knee Rule

The rule states that a conventional xray is required for acute knee injury in the presence of any of the following findings:

- Age 55 years or older
- Isolated tenderness of patella
- Tenderness at head of fibula
- Inability to flex to 90°
- Inability to bear weight both immediately post-injury or in the emergency department (described as 'unable to transfer weight twice onto each lower limb regardless of limping').

This rule has been validated and found to be reliable in the absence of head injury, drug or alcohol intoxication, paraplegia and diminished limb sensation. It has a sensitivity of 97%, specificity of 27% and likelihood ratio of 1.3%.

Note: Based on Stiell, I.G., Greenberg, G.H., Wells, G.A., McDowell, I., Cwinn, A.A., Smith, N.A., Cacciotti, T.F., & Sivilotti, M.L. (1996). Prospective validation of a decision rule for the use of radiography in acute knee injuries. Journal of the American Medical Association, 275, 611-615.

Figure D2: Pittsburgh Knee Rule

For patients with acute knee pain and a history of a fall or blunt trauma, the following rules apply:

- All patients aged 11 or younger and those aged 51 and older are xrayed
- Of those remaining, only those who cannot walk four weight-bearing steps in the emergency department are xrayed. Weight-bearing ability is the ability to bear weight fully on the toe pads and heels for four full steps.

The Pittsburgh Knee Rule has the greatest predictive value of the three rules (sensitivity of 99%, specificity of 60% and a likelihood ratio of 2.5).

Note: Seaberg, D.C., & Jackson, R. (1994). Clinical decision rule for knee radiographs. American Journal of Emergency Medicine, 12, 541-543.

Figure D3: Bauer Rule

In the Bauer Rule, the inability to bear weight combined with the presence of an effusion or an ecchymosis was initially found to be 100% sensitive and specific for the detection of a fracture.

Note: Bauer, S.J., Hollander, J.E., Fuchs, S.H., & Thode, H.C. (1995). A clinical decision rule in the evaluation of acute knee injuries. Journal of Emergency Medicine, 13, 611-615.

APPENDIX E

Patient Information Sheets

This appendix contains five Information Sheets

- Information Sheet No. 1: Acute Low Back Pain
- Information Sheet No. 2: Acute Thoracic Spinal Pain
- Information Sheet No. 3: Acute Neck Pain
- Information Sheet No. 4: Acute Shoulder Pain
- Information Sheet No. 5: Anterior Knee Pain

It is intended that you will make multiple copies of the following Information Sheets to use with your patients, keeping the originals to make additional copies as required.

These Information Sheets can be downloaded from www.nhmrc.gov.au/publications/cphome.htm

Glossary of Terms

This glossary contains definitions obtained from a range of sources.

Acute Pain

'Acute' pain refers to the duration of pain rather than to its severity. Bonica (1953) defined acute pain as pain that is likely to resolve spontaneously within a relatively short time. Merskey (1979) subsequently specified the timeframe for acute pain as pain of less than three months duration.

Chronic Pain

The International Association for the Study of Pain (IASP) defines chronic pain as pain that has persisted for longer than three months (Merskey and Bogduk 1994).

Clinician

In this document the term 'clinician' refers to health professionals who receive a fee for service independently (i.e. general practitioners, physiotherapists, chiropractors, osteopaths, specialist medical consultants). This list is not exhaustive in relation to clinicians who participate in the care of people with musculoskeletal pain.

Consumer

In this document the term 'consumer' is used in cases where a person is acting independently of a clinician. Where a person is receiving care from a clinician, the term 'patient' is used instead.

Effect Size

An effect size is the standardised mean difference between two groups. An effect size quantifies the effectiveness of a particular intervention relative to a comparison intervention by measuring the size of the difference between two groups. It provides a measure of how well an intervention works in a range of contexts.

Efficacy

The efficacy of a therapeutic intervention is its rate of successful outcomes when applied under ideal conditions. Efficacy is expressed as number-needed-to-treat (NNT).

Health Practitioner

In this document the term 'health practitioner' refers to health professionals who receive a fee for service independently (i.e. general practitioners, physiotherapists, chiropractors, osteopaths, specialist medical consultants). This list is not exhaustive.

Intervention

An intervention will generally be a therapeutic procedure such as treatment with a pharmaceutical agent, surgery, a dietary supplement, a dietary change or psychotherapy. Some other interventions are less obvious, such as early detection (screening), patient educational materials, or legislation. The key characteristic is that a person or their environment is manipulated in order to benefit that person.

Manipulation (Spinal)

Manual therapy technique in which loads are applied to the spine using short or long-lever methods. The spinal joint to which the technique is applied is moved to its end range of voluntary motion, followed by application of a single high velocity, low amplitude thrust. Spinal manipulation is usually accompanied by an audible pop or click.

Manual Therapy
The application of physical techniques, which includes but is not limited to, massage, spinal manipulation and mobilisation.

Massage
A mechanical form of therapy in which the soft tissue structures of the low back are pressed and kneaded, using the hand or a mechanical device. Many different types of massage are performed, including but not limited to, acupressure, deep-tissue therapy, friction massage, Swedish massage, myofascial release, shiatsu, reflexology, craniosacral therapy, trigger and pressure point therapy.

Mobilisation
Mobilisation is the passive application of repetitive, rhythmical, low velocity movements of varying amplitudes applied within the joint range of motion. The technique includes methods of a singular or repetitive movement and/or stretching of the spinal joints.

Pain
Pain is defined as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (Merskey and Bogduk 1994).

Pain, Recurrent
Recurring episodes of pain may be labelled as 'recurrent pain' and classified as acute or chronic depending on the duration of the episode.

Patient
In this document the term 'consumer' is used in cases where a person is acting independently of a clinician. Where a person is receiving care from a clinician, the term 'patient' is used instead.

'Red Flags'
The term 'red flags' refers to clinical (i.e. physical) features that may alert to the presence of serious but relatively uncommon conditions or diseases requiring urgent evaluation. Such conditions include tumours, infection, fractures and neurological damage. Screening for serious conditions occurs as part of the history and physical examination and should occur at the initial assessment and subsequent visits. Alerting features of serious conditions are covered in detail in the specific guideline topics.

Randomised Controlled Trial
An experimental comparison study in which participants are allocated to treatment/intervention or control/placebo groups using a random mechanism to allocate them to either group. When there is equal chance of allocation to either the treatment or the control group, allocation bias is eliminated.

Systematic Review
The process of systematically locating, appraising and synthesising evidence from scientific studies in order to obtain a reliable overview.

Treatment
See 'Intervention'.

'Yellow Flags'
The term 'yellow flags' was introduced to identify psychosocial factors that may increase the risk of chronicity and that should be assessed when progress is slower than expected. The presence of psychosocial factors is a prompt for further detailed assessment and early intervention. The areas to evaluate include:

- Attitudes and beliefs about pain
- Behaviours
- Compensation issues
- Diagnostic and treatment issues
- Emotions
- Family
- Work.

'Red flags' and 'yellow flags' are not mutually exclusive and intervention may be required for both clinical and psychosocial risk factors.

➔ NOTES

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