Clinical guidelines for best practice management of acute and chronic **whiplash-associated disorders**

Clinical resource guide

Australian Government
National Health and Medical Research Council
NHMRC

Government of South Australia

MOTOR ACCIDENT COMMISSION

TRACsa was integrated into the Motor Accident Commission (MAC) in November 2008. MAC is now responsible for TRACsa projects.

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Disclaimer

This resource guide is intended to assist health practitioners delivering primary care to adults with acute or chronic neck pain following a motor vehicle collision or other accident. The recommendations are a guide to best practice, however each case should be assessed and treated individually. Clinical management should be tailored to meet each patient's presenting symptoms, with the practitioner exercising his or her professional judgement in each case.

The *Clinical resource guide* is based on the *Clinical guidelines for best practice management of acute and chronic whiplash-associated disorders.* (TRACsa, Adelaide: 2008), which has been endorsed by the National Health and Medical Research Council (NHMRC).

Copies of the *Clinical resource guide* and the *Clinical guidelines* can be downloaded from www.mac.sa.gov.au

TRACsa acknowledges the work of the NSW Motor Accidents Authority in developing *Guidelines for the management of acute whiplash-associated disorders* in 2001 and in undertaking a major revision in 2007.

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November 2008

Commissioned by the South Australian Centre for Trauma and Injury Recovery (TRACsa) for the Motor Accident Commission (MAC)

Australian Government
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N H M R C

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About this guide

The *Clinical guidelines for the best practice management of acute and chronic whiplash-associated disorders: Clinical resource guide* (Short title: *Best practice management of whiplash-associated disorders: Clinical resource guide*) was developed by TRACsa, the South Australian Centre for Trauma and Injury Recovery Inc. and its Implementation Working Group for the Motor Accident Commission (MAC). The guide is designed to assist health practitioners in day-to-day practice to provide optimal care to adults with a whiplash-associated disorder (WAD).

This guide summarises the *Clinical guidelines for best practice management of acute and chronic whiplash-associated disorders*[1] (the guidelines) endorsed by the National Health and Medical Research Council (NHMRC). It was a requirement that the development of the guidelines meet NHMRC standards for assessing levels of evidence and grading recommendations. The work aimed to incorporate evidence gathered from comprehensive systematic reviews of diagnosis, prognosis and treatment of acute and chronic WAD. A complete guide to the methodology used to create the guidelines is provided in the accompanying *Evidence report*.[2]

To assist in the dissemination and implementation of the guidelines, TRACsa developed three companion documents:

Information for health practitioners

1. This publication, the *Clinical resource guide* (the guide), is a concise version of the guidelines, for use in a practice setting. The guide contains additional material, derived from multidisciplinary consensus, considered by the Implementation Working Group to reflect a biopsychosocial approach to the management of WAD.
2. The *Management pathway: Whiplash-associated disorders (WAD)* is a companion desktop tool summarising the assessment and treatment pathways for acute and chronic WAD.

Information for patients

3. *Recovering after whiplash: A self-management guide* is a plain language booklet for patients including an illustrated set of recommended exercises.

The source documents, *Management pathway: Whiplash-associated disorders (WAD)*, and patient *Recovering after whiplash: A self-management guide* can be accessed from the MAC website, www.mac.sa.gov.au.

How to use this guide

This guide is structured in the following manner:

- Key messages are summarised on page 1.
- Section 1 provides a brief description of whiplash-associated disorders, outlines the scope of the guidelines, and explains the methodology used to develop the guidelines.
- Section 2 contains the clinical pathway, followed by details of the assessment and treatment considerations for each review point.
- Section 3 details how recommendations regarding assessment and diagnosis, prognosis and treatment may be implemented in clinical practice.
- Section 4 contains a series of appendices:
  - Advisory and working groups appear in Appendix 1 (page 42)
  - A glossary to assist with interpretation of technical terms and abbreviations appears in Appendix 2 (page 43)
  - Outcome evaluation tools referred to in the text appear in Appendix 3 (page 46) and can also be accessed via the MAC website, www.mac.sa.gov.au
  - Examples of advice that can be provided to patients appear in Appendix 4 (page 62)

A booklet for patients *Recovery from whiplash: A self-management guide* is available from the MAC website. The booklet provides plain-English information on the self-management of whiplash-associated disorders, tips for the home and workplace, recommended exercises (with photographic illustrations), and a summary of recommended treatments.

The information in the guide is derived from the source document *Clinical guidelines for best practice management of acute and chronic whiplash associated disorders*[1]. The reader is directed to this document, available at www.mac.sa.gov.au, for an overview of the methodology used to develop the guidelines, a detailed discussion of the evidence supporting each recommendation, and references to research studies included in the review.

Additional content in this guide

The Implementation Working Group included additional 'good practice points', derived on the basis of consensus. Good practice points address psychosocial and other factors known to be useful in the management of other chronic pain states and soft tissue injuries. These were considered by the group to be relevant to the management of acute and chronic WAD.

The rationale for and methodology used to include good practice points is outlined on page 4 of this guide. All good practice points are clearly identified and can be distinguished by the colour of the text boxes in which they appear.

Key messages

The *Clinical guidelines for best practice management of acute and chronic whiplash-associated disorders*[1] aim to promote best practice treatment and patient care based on a review of the literature and consensus opinion.

The guidelines emphasise a number of key themes and treatment priorities:

- Undertake a comprehensive assessment and physical examination.
- Classify the Grade of WAD according to the Quebec Taskforce classification system.
- Apply the Canadian C-Spine rule to determine whether an X-ray is required to confirm the diagnosis of a fracture or dislocation.
- Consider the role of radiological imaging and special tests.
- Identify clinical and psychosocial risk factors.
- Inform and educate patients and emphasise, in a practical way, the importance of staying active (promote active rather than passive treatment).
- Consider the ability to monitor and evaluate treatment and progress using outcome measures.
- Use a stepped approach to care.
- Take recommended action if there is a lack of improvement.
- Promote self-management of the condition.
- Promote health literacy and collaboration between patients, health practitioners, and where relevant, employers, family members and claims/case managers.

SECTION 1: Introduction

Whiplash-associated disorders (WAD) are caused by an acceleration-deceleration mechanism of energy transfer to the neck. The most common cause of WAD is a motor vehicle collision. Sporting accidents or falls can also cause whiplash. Whiplash-associated disorders are the single most frequently recorded injuries among Compulsory Third Party (CTP) motor vehicle accident claimants in South Australia.

In many cases, recovery from WAD occurs quickly. However, WAD-related neck pain and disability persist in approximately half of all people at three months post-injury and are still present in approximately 35% of people at 12 months.

To deal with more complex cases the *Clinical guidelines for best practice management of acute and chronic whiplash-associated disorders* presents a clinical pathway and guidelines which offer ways to take action by:

- ensuring a comprehensive history and physical examination is undertaken
- confirming that the diagnosis of a fracture or dislocation warrants immediate referral to an Emergency Department or a medical specialist
- alerting primary health care practitioners to adverse prognostic indicators which may indicate the need for more intensive management or early referral
- providing advice as to when referral to multidisciplinary team, rehabilitation providers or specialists should be considered.

Definition of whiplash-associated disorders

One of the difficulties in diagnosing whiplash is that the term 'whiplash' describes a mechanism of injury and not a single pathology. This mechanism of injury may, in turn, lead to a variety of clinical manifestations, the most common of which is neck pain.

The Quebec Taskforce (QTF)[3] definition of whiplash-associated disorders (WAD) was adopted for the purposes of the pathway.

> Whiplash is an acceleration-deceleration mechanism of energy transfer to the neck. It may result from "...motor vehicle collisions...". The impact may result in bony or soft tissue injuries which in turn may lead to a variety of clinical manifestations (whiplash-associated disorders).

Grades of WAD

In 1995 the QTF[3] developed a classification system that was designed to improve the management of WAD by providing a guide to the signs and symptoms of whiplash indicative of the seriousness of the injury sustained. This system has helped guide assessment and diagnosis over the past decade. The clinical classification provided by the QTF is shown in the Table 1, on the next page.

Table 1

Quebec Taskforce Classification of Grades of WAD

Grade	Classification
0	No complaint about the neck No physical sign(s)
I	Neck complaint of pain, stiffness or tenderness only No physical sign(s)
II	Neck complaint AND musculoskeletal sign(s) Musculoskeletal signs include decreased range of motion and point tenderness
III	Neck complaint AND neurological sign(s) Neurological signs include decreased or absent tendon reflexes, weakness and sensory deficits
IV	Neck complaint AND fracture or dislocation

Scope

The scope of the guidelines and clinical pathway covers WAD Grades I to IV following a motor vehicle crash, whether or not WAD is the only injury.

Grade IV is only considered in this guide to the extent of diagnosing the condition followed by immediate referral to an Emergency Department or appropriate medical specialist.

When to consult the guidelines

The clinical pathway and guidelines are relevant when an adult experiencing neck pain after a motor vehicle collision (or other accident) consults their general practitioner or other health practitioner. It applies when:

- undertaking an assessment
- establishing a diagnosis
- determining what, if any, investigations are required
- providing advice to patients
- developing a management plan
- considering treatment recommendations and referral options
- reviewing progress (for instance, where a lack of improvement is noted).

Terminology

Throughout the guide, the term '**management**' refers to the overall approach to care, or plan, formulated for individual patients. The term '**treatment**' refers to the therapeutic modalities utilised as part of the management approach. 'Treatments' include advice and education, exercise, passive joint mobilisation, multimodal therapy, and occupational/psychological therapy.

Methodology

A complete guide to the methodology used to create the guidelines is provided in the *Evidence report*.[2]

The development of the guidelines and the process of examining the evidence were overseen by a Technical Advisory Group (TAG), using methodology consistent with National Health and Medical Research Council (NHMRC).[4] The development process included:

- a comprehensive search of the literature in relation to both acute and chronic WAD
- critical appraisal of the level of evidence and quality of individual studies
- determining a grade of evidence (refer Table 2, on the next page) for each recommendation according to the volume, quality, consistency, clinical impact, generalisability and applicability of the evidence
- findings of the review process examined by the Technical Advisory Group who discussed any modifications
- recommendations presented to a steering committee, and agreed changes incorporated into the final document
- formal public consultation and independent review.

Table 2

NHMRC Grades of evidence for recommendations

[Grade A]	Body of evidence can be trusted to guide practice
[Grade B]	Body of evidence can be trusted to guide practice in most situations
[Grade C]	Body of evidence provides some support for recommendation(s), but care should be taken in its application
[Grade D]	Body of evidence is weak and recommendation must be applied with caution

A Best Practice Taskforce (BPT) auspiced the development of the guidelines. This group comprised health practitioners representing the disciplines of general medicine, orthopaedic surgery, physiotherapy, chiropractic, psychology, psychiatry, and occupational therapy, in addition to stakeholders representing the legal profession, the compensation and insurance sectors, and consumer groups. The role of the BPT was to develop a multi disciplinary consensus about recognised best practice in the treatment of soft tissue injuries, and provide recommendations to the TAG in the development of the guidelines. A subgroup of the BPT, comprised only of clinicians, formed the Implementation Working Group (IWG) who developed this guide.

Limitations of the evidence review

The evidence and research for WAD is largely biomedical – there are few scientifically admissible studies that examine the role of psychological or social factors in the onset of and prognosis for WAD, particularly for chronic whiplash. To address this limitation, the IWG included additional material in the guide, based on multidisciplinary consensus, to address areas in which evidence was lacking. **This material is clearly identified in the document.** In particular, good practice points address psychosocial and other factors known to be useful in the management of other chronic pain states and soft tissue injuries.

Throughout the guide, recommendations appear with a grade of evidence, derived according to NHMRC standards where evidence exists (see Table 2, above). These recommendations are identified with the convention **Grade A, Grade B** etc.

Recommendations made on the basis of a consensus of expert medical and multidisciplinary opinion are identified with the symbol ☑.

Good practice points included by the Implementation Working Group are named as such, and can be distinguished by the different coloured text boxes in which they appear.

SECTION 2: The WAD pathway

The following section outlines a clinical pathway of care for patients presenting with a whiplash-associated disorder to any primary care practitioner.

There are two pathways:

- The **acute pathway** is applicable to an adult patient presenting between 0 to 12 weeks post accident. The review time points in the pathway relate to time after initial presentation to the health practitioner.
- The **chronic pathway** is applicable both to patients presenting for the first time in the chronic phase (> 12 weeks post accident) and patients who initially present in the acute phase and require treatment through this phase and into the chronic phase. The review time points of this pathway relate to time after presentation to the health practitioner in the chronic phase.

Both pathways include a section on the initial assessment of a WAD patient appropriate for each phase. The development of these pathways, including the proposed review times after injury, were by consensus, and aimed to ensure that ineffective treatment is not continued where it may lead to chronicity.

The flowchart offers a summary of how to apply the recommendations in the guidelines. It is a guide only, as there will always be individual variations. Review dates relate to time since initial presentation (an assumption is made that patients are receiving appropriate treatment during this time).

A glossary appears at page 43 to assist with interpretation of technical terms and abbreviations.

The acute WAD pathway

The flowchart (Figure 1 and Figure 2) provides a structure for the assessment and management of patients with WAD during the first 12 weeks following injury. The flowcharts are followed by details of how to apply the recommendations in the guidelines. It is a guide only, as there will always be individual variations.

Good practice point

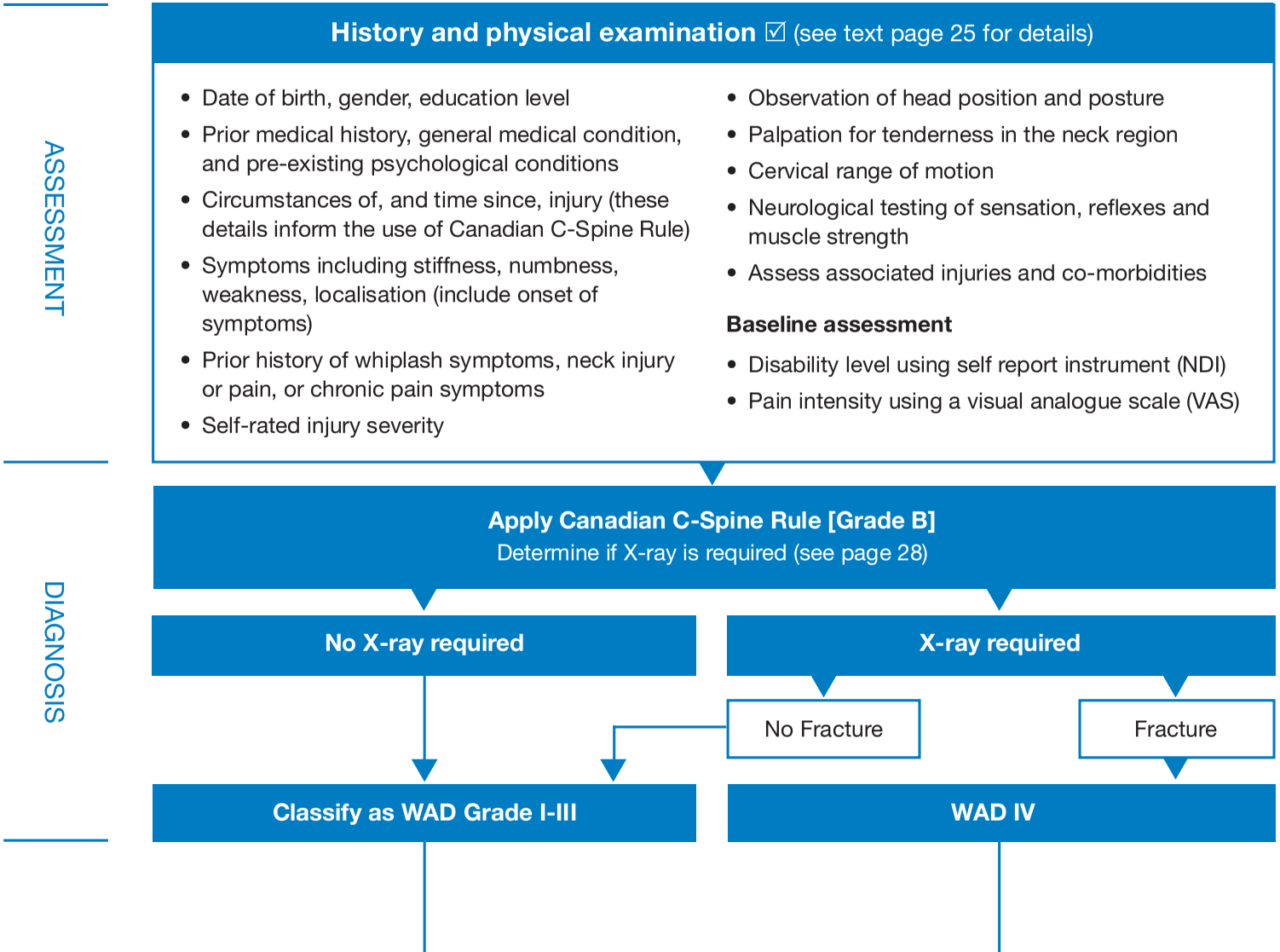
People in pain want to:

- understand what the problem is
- be reassured the problem is not serious
- be relieved of their pain
- receive information.

Von Korff, 1999[5], cited by *Australian Acute Musculoskeletal Pain Guidelines Group*, 2004[6]

Figure 1

Initial assessment of a whiplash-associated disorder



INITIAL MANAGEMENT

Identify poor prognostic indicators [Grade A]

High initial disability (NDI >40/100)
High initial pain scores (VAS >7/10)
Education level
Low self-efficacy
Cold sensitivity

☑ Refer immediately for specialist management (ie, emergency physician, neurosurgeon, orthopaedic surgeon)

1. Provide reassurance, advice and education material, including advice to 'act as usual' (Refer Appendix 4) **[Grade B]**
2. Prescribe appropriate neck strengthening exercises **[Grade A]**
3. Provide advice regarding appropriate analgesia coverage ☑

Good practice point

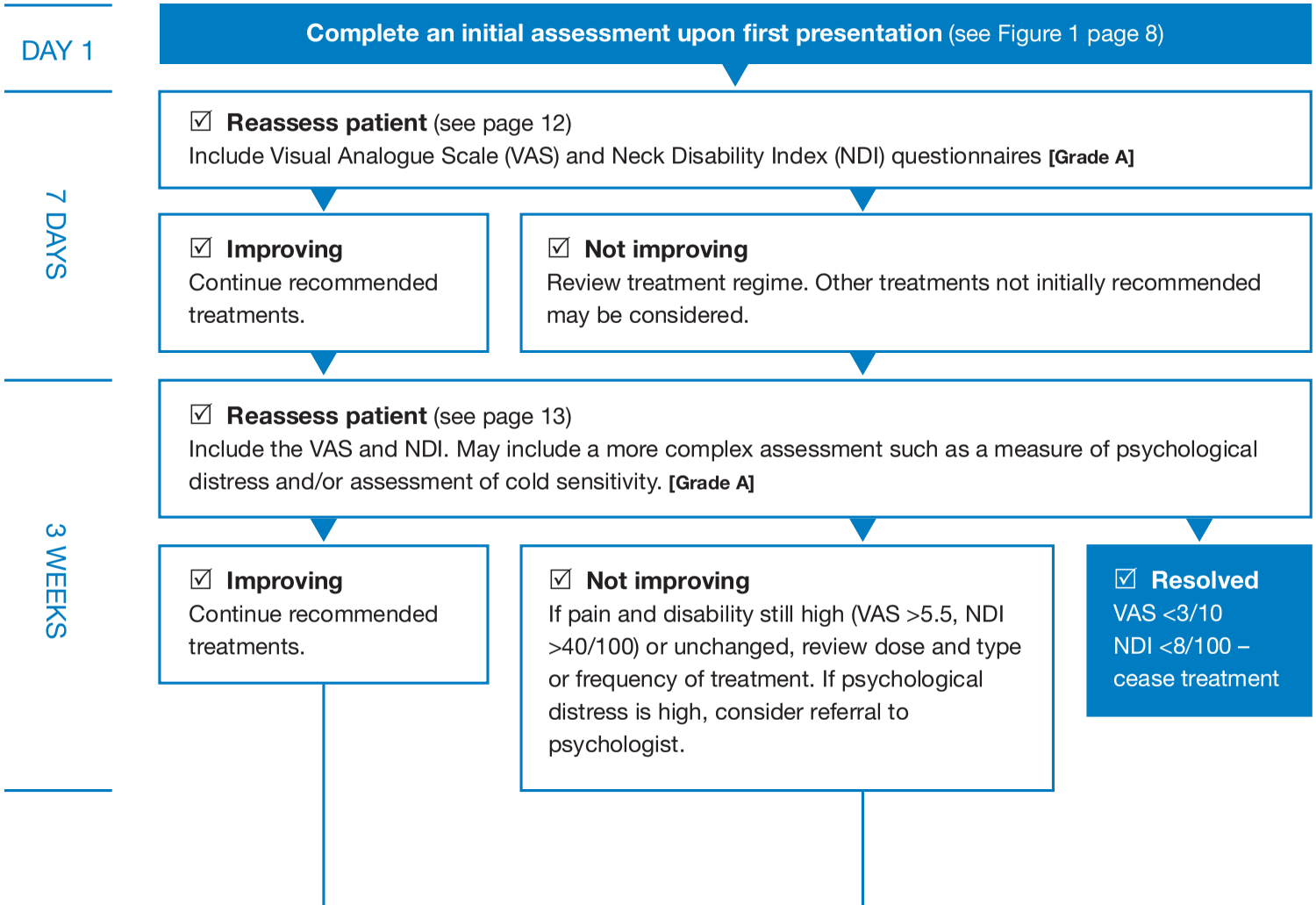
Adopt a positive and supportive approach. Acknowledge that the patient has been hurt and has symptoms. Advise that:

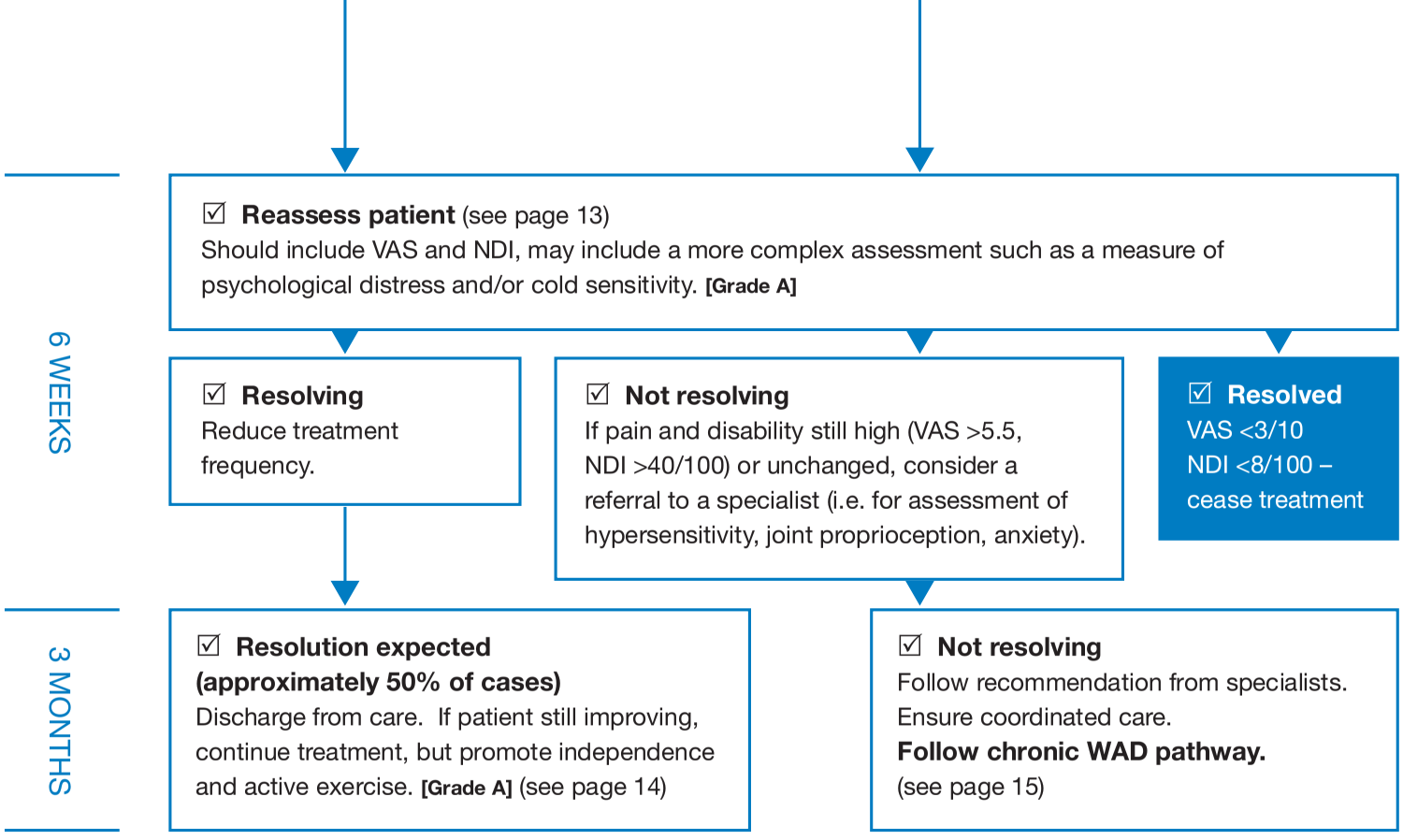
- symptoms are a normal reaction to being hurt
- maintaining as many pre-injury activities as possible is an important factor in getting better
- staying active, and undertaking light activity is important in the recovery process
- voluntary restriction of activity may lead to delayed recovery
- it is important to focus on improvements in function.

Remain mindful that psycho-social and other health and non-health issues may impact on recovery.

Figure 2

Acute WAD pathway – up to 12 weeks




6 WEEKS
☑ Reassess patient (see page 13)
Should include VAS and NDI, may include a more complex assessment such as a measure of psychological distress and/or cold sensitivity. [Grade A]
☑ Resolving
Reduce treatment frequency.
☑ Not resolving
If pain and disability still high (VAS >5.5, NDI >40/100) or unchanged, consider a referral to a specialist (i.e. for assessment of hypersensitivity, joint proprioception, anxiety).
☑ Resolved
VAS <3/10
NDI <8/100 – cease treatment
3 MONTHS
☑ Resolution expected (approximately 50% of cases)
Discharge from care. If patient still improving, continue treatment, but promote independence and active exercise. [Grade A] (see page 14)
☑ Not resolving
Follow recommendation from specialists. Ensure coordinated care.
Follow chronic WAD pathway.
(see page 15)

Good practice point: Acute pain

The successful management of acute pain reduces the risk of chronic pain.

Australian Acute Musculoskeletal Pain Guidelines Group, 2004[6]

The acute pathway details

Initial assessment

Undertake a comprehensive assessment and physical examination of the patient (refer to recommendations for assessment and diagnosis on page 24).

Classify the Grade of WAD according to the QTF classification (refer Table 1, page 3) and assess the need for X-ray using the Canadian C-spine rule[7] (refer page 28).

Undertake a baseline assessment of self-reported pain intensity and disability using the Visual Analogue Scale (VAS)[8] and the Neck Disability Index (NDI)[9] respectively. Identify the patient's education level by asking *"What is the highest level of education you have achieved?"*

Poor prognosis is associated with a high pain score (VAS >7/10), and/or a high disability score (NDI >40/100), and/or a non-tertiary education level (defined as no education after secondary school). Reassessing pain and disability with the use of the VAS and the NDI at all review points is recommended in order to identify WAD patients at risk of non-recovery. Copies of the VAS and NDI and instructions for their use appear in Appendix 3 (page 46).

Primary care practitioners should review patients at least at the intervals shown in the flowchart, namely at seven days, three weeks, six weeks and three months for acute WAD. Review should include reassessment of pain and disability using the VAS and the NDI respectively. ***Improvement is considered at least a 10% change on these assessment scales.***

Seven day reassessment

Reassess, including the VAS and NDI. If these are high or unchanged, treatment type and intensity should be reviewed. Other treatments listed in this guide may be considered. The effectiveness of such treatments should be closely monitored and only continued if there is evidence of benefit (***at least 10% change on Pain VAS and NDI***).

The practitioner should remain mindful of psychosocial issues that may influence recovery ('yellow flags', see Good practice point on page 14). Identifying psychological and socio-occupational factors early in the course of rehabilitation is of particular importance, as these are potentially modifiable with early intervention.

Three week reassessment

Reassess including the VAS and NDI. If these are unchanged, a more complex assessment may need to be considered and treatment type and intensity should again be reviewed.

Baseline measurement of functional ability and psychological distress should be undertaken where appropriate. The Self-Efficacy Scale (SES)[10] or the catastrophising subscale of the Coping Strategies Questionnaire (CSQ)[11] (see Appendix 3) may be used as a baseline for psychological assessment. Other validated psychological scales such as the Impact of Events Scale (IES)[12] or Kessler Psychological Distress Scale (K10)[13] can be used.

Good practice point: Post-traumatic responses

Most people recover from the shock of an event such as a motor vehicle accident with the support of family and friends. A minority of patients may continue to experience high levels of acute stress, or trauma-specific psychological reactions, and this is associated with poor emotional recovery post injury. [14]

Where trauma-specific symptoms such as intrusive recollections of the event (eg, nightmares), avoidance and emotional numbing (eg, avoiding reminders of the event, loss of interest in normal activities) or hyperarousal (eg, difficulty sleeping or irritability) persist beyond one to two weeks and interfere with the patients daily activities, work or relationships, early referral to a psychologist or psychiatrist is recommended.

As the onset of post-traumatic symptoms can be delayed, the practitioner should remain mindful of the possibility that post-traumatic responses may be implicated where the patient's recovery is delayed.

For further information, the reader is directed to the Australian Guidelines for the Treatment of Adults with Acute Stress Disorder and Posttraumatic Stress Disorder: Practitioner Guide, located at www.acpmh.unimelb.edu.au.

Six week reassessment

Reassess again at this point.

Resolved or Resolving: In at least 45% of cases resolution should have occurred or be occurring (defined as VAS <3/10 and NDI <8/100, and the process of reducing treatment in resolving cases should commence or continue.

Not resolved: If resolution is not occurring (i.e. pain and disability scores remain high - VAS >5.5 and NDI >40/100) or if the VAS and NDI have not changed by at least 10% from the last review, consider referral to a medical specialist or allied health practitioner for more complex physical and/or psychological examination (such as assessment of hypersensitivity, joint proprioception, anxiety or post-traumatic stress).

Where there is evidence of significant reduction in activity, consider a referral to an appropriate health practitioner, such as an occupational therapist, to assist the patient in normalising activities (eg, at home and/or work) and facilitate a return to pre-injury activities.

Assessing the patients' activity limitations or participation restrictions may be undertaken by asking *"How are you managing at home [or work]?"*, *"What can't you do now that you could do before [the MVA]?*".

The practitioner should remain mindful of psychosocial issues that may influence recovery ('yellow flags', see good practice point below). Identifying psychological and socio-occupational factors early in the course of rehabilitation is of particular importance, as these are potentially modifiable with early intervention.

Good practice point: 'Yellow flags'

Identifying psychological and socio-occupational factors ('yellow flags') early in the course of rehabilitation is of particular importance, as these are potentially modifiable with early intervention.

Remain mindful that the following issues may flag the need for early referral to a specialist, such as a psychologist or psychiatrist. Strategies to address these factors need to be considered in the management plan:

- Attitudes and beliefs about pain
- Emotional response
- Behaviours
- Family
- Work
- Compensation issues
- Diagnostic and treatment issues

Source: *Evidence-based Management of Acute Musculoskeletal Pain: A Guide for Clinicians* (2004) Australian Acute Musculoskeletal Pain Guidelines Group[6]

Three month reassessment

Resolution should have occurred in approximately 50% of acute cases. In these cases treatment should have ceased. If the patient is still improving, continue treatment, however self-management should be promoted (focus on active exercise rather than passive treatment). In these resolving cases, the patient should be reviewed intermittently (suggested three monthly) over the next 6-12 months until resolution, to ensure self-management programs are maintaining improvement.

Patients who still require treatment after three months are considered to have chronic WAD.

The chronic WAD pathway

The flowcharts on the following pages (Figure 3 and Figure 4) provide a structure for the assessment and treatment of people with WAD in the chronic phase (> 12 weeks post injury).

Review dates relate to time since presentation in the chronic phase (an assumption is made that patients are receiving appropriate treatment during this time).

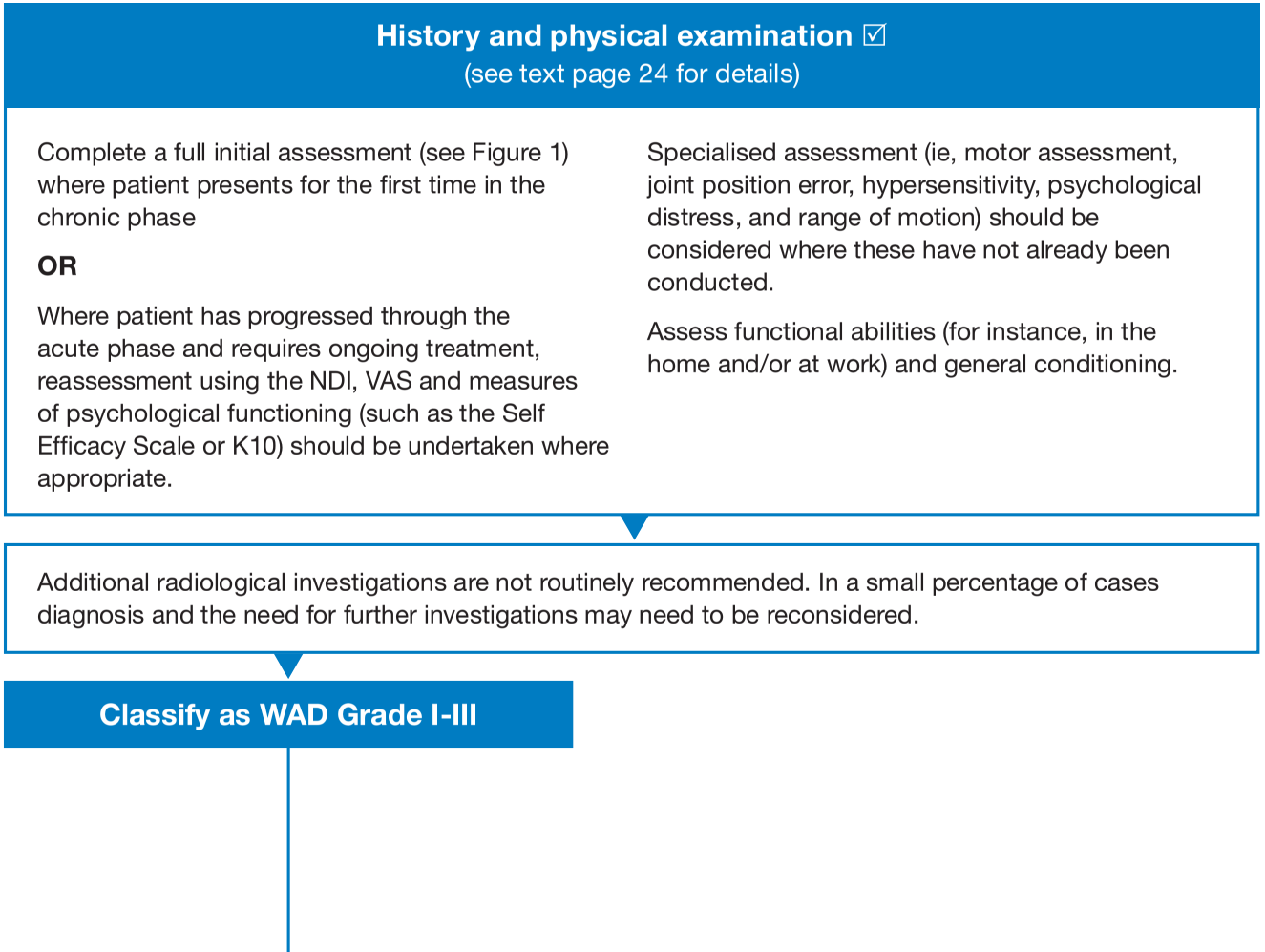
> *"The mechanism of injury is different from the mechanism of chronicity"* Professor Chris Main[15]

Management of chronic WAD requires a different model of care, and may involve a multi-disciplinary approach. To ensure integrated care and reinforce a consistent message regarding optimal management of the condition, it is important that communication occur between all health practitioners involved, the patient, the patients' family, and (where relevant) case/claims managers and employers. The primary practitioner should ensure coordinated care.

Assess the patient's knowledge and understanding of self-management strategies, and their capacity to apply this information to manage their condition.

Figure 3

Initial or re-assessment of chronic WAD >12 weeks post MVA



Identify poor prognostic indicators
[Grade A]

- NDI > 30/100
- Pain VAS > 7/10
- Education level
- Low self-efficacy (i.e. using the SES)
- Catastrophising (i.e. using the CSQ)
- Cold sensitivity

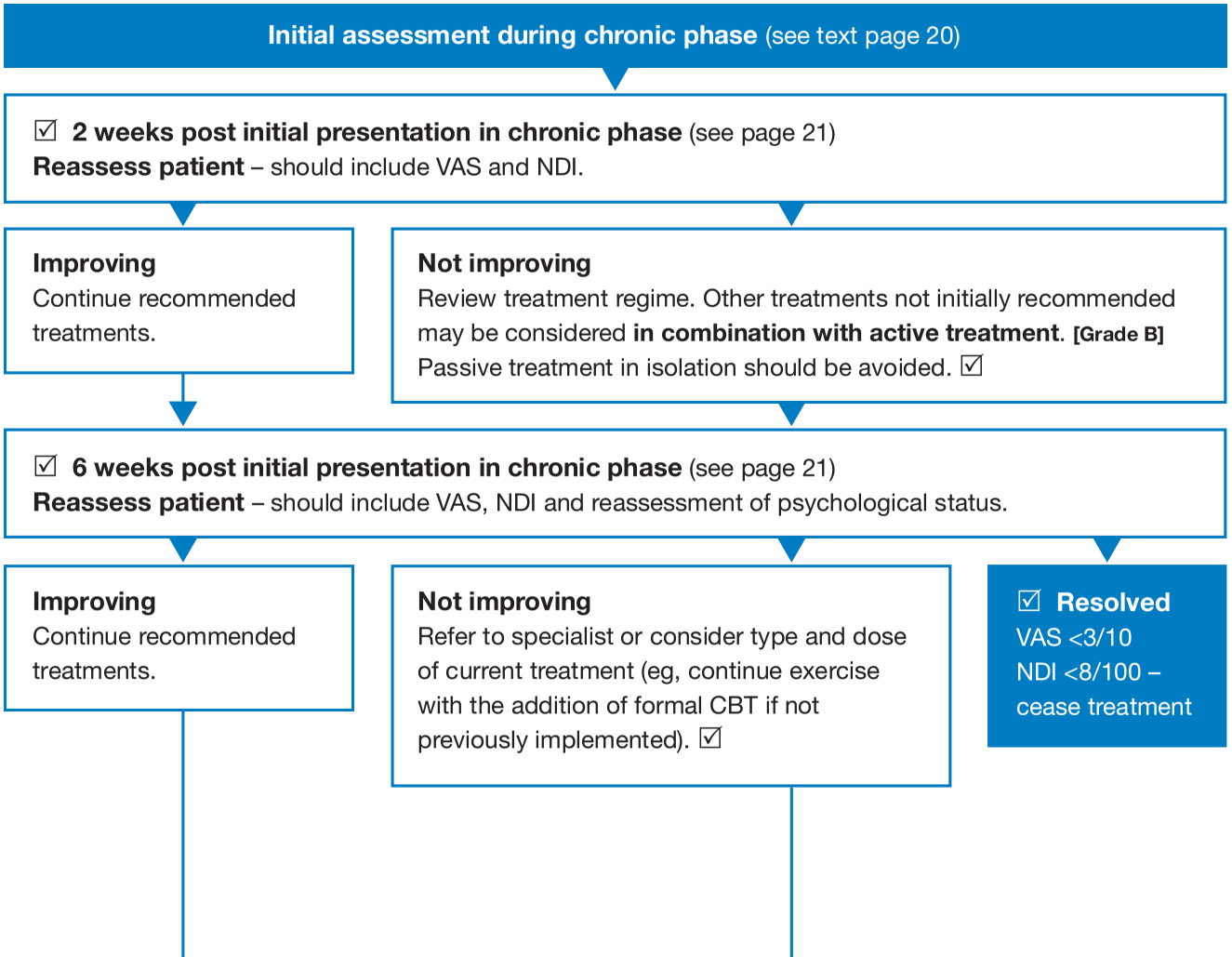
Treatments that should NOT be undertaken

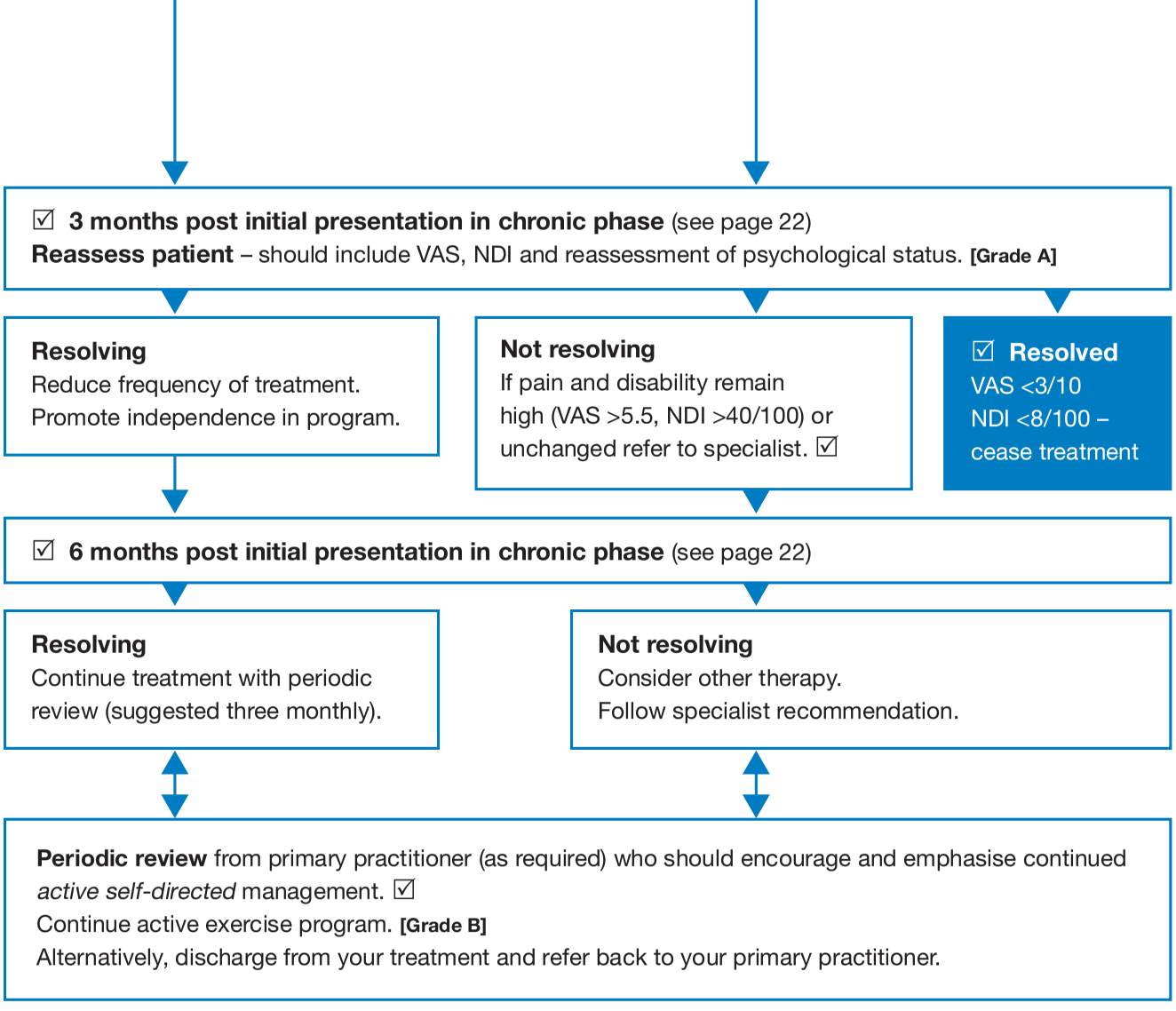
- Collar immobilisation **[Grade A]**
- Prescribed rest ☑
- Intra-articular injections ☑
- Analgesic injections ☑

1. Provide a clear explanatory model for symptoms. ☑
2. Provide reassurance, education and advice to return to normal activities. (Refer Appendix 4) **[Grade B]**
3. Set obtainable yet challenging goals. ☑
4. Prescribe appropriate exercises (based on functional deficits) involving functional exercises, range of motion exercises, strengthening of neck and scapular muscles, specific strength- ening of deep neck flexors. **[Grade A]**
5. Coordinate specialist referrals as necessary. ☑

Figure 4

Chronic WAD pathway > 12 weeks post MVA




☑ 3 months post initial presentation in chronic phase (see page 22)
Reassess patient – should include VAS, NDI and reassessment of psychological status. [Grade A]
Resolving
Reduce frequency of treatment.
Promote independence in program.
Not resolving
If pain and disability remain high (VAS >5.5, NDI >40/100) or unchanged refer to specialist. ☑
☑ Resolved
VAS <3/10
NDI <8/100 –
cease treatment
☑ 6 months post initial presentation in chronic phase (see page 22)
Resolving
Continue treatment with periodic review (suggested three monthly).
Not resolving
Consider other therapy.
Follow specialist recommendation.
Periodic review from primary practitioner (as required) who should encourage and emphasise continued active self-directed management. ☑
Continue active exercise program. [Grade B]
Alternatively, discharge from your treatment and refer back to your primary practitioner.

Good practice point: Chronic pain management

Chronic pain management differs significantly from that for acute pain. It is recommended that the practitioner:

- provides a clear explanatory model for symptoms
- provides reassurance, education and advice that the patient return to as many of their usual (pre-injury) activities as possible (refer Appendix 4)
- evaluates 'yellow flags' and include strategies to address these in the management plan
- sets obtainable yet challenging goals (in collaboration with the patient)
- prescribes appropriate exercises (based on functional deficits) involving functional exercises, range of motion exercises, strengthening of neck and scapular muscles, and specific strengthening of deep neck flexors.
- coordinates specialist referrals as necessary.

The chronic pathway details

Initial or re-assessment

It is important to establish that the diagnosis is correct, and ensure that no clinical features ('red flags') exist which may alert the practitioner to a serious but uncommon condition requiring urgent evaluation. These conditions include tumours, infection, fractures and neurological damage. The practitioner should also establish the reasons for lack of improvement, including an assessment of 'yellow flags' (see page 14). The management plan should include strategies to address yellow flags where these have been identified.

A comprehensive initial assessment and physical examination is appropriate for patients presenting to a practitioner for the first time in the chronic phase. Patients who have progressed through the acute phase and require ongoing treatment should be reassessed using the NDI, pain VAS and measures of psychological functioning (SES and CSQ) as appropriate.

Where this has not already been undertaken, patients in the chronic phase should be considered for further and/or specialised assessment (in addition to standard assessment) such as motor assessment, assessment of joint position error, hypersensitivity and assessment of psychological distress (using tools such as the IES). Additional diagnostic imaging is **not** routinely recommended at this stage. In a small percentage of cases the diagnosis may need to be reconsidered and additional investigations undertaken.

It remains important to classify the grade of WAD, as WAD III patients (that is, persons with neurological signs) may require different management (such as avoidance of manipulation) or care with application of techniques and may have a different prognosis from those with WAD I and II.

Primary care practitioners should review patients at least at the intervals shown in the flowchart, namely at 14 days, 6 weeks, 12 weeks and 6 months post initial presentation for chronic WAD. Review (as a minimum) should include reassessment of the VAS and the NDI. ***Improvement is considered at least a 10% change on these scales (since previous review).***

Two week reassessment

Reassess, including the VAS, NDI and psychological status (SES or CSQ). If these are high or unchanged, treatment type and intensity should be reviewed. Other treatments listed in this guide (such as joint mobilisation) may be considered ***in combination with active treatment. Passive treatment in isolation should be avoided.*** The effectiveness of such treatments should be closely monitored and only continued if there is evidence of benefit (***at least 10% change on VAS and NDI***).

Where there is evidence of significant reduction in activity, consider a referral to an appropriate health practitioner, such as an occupational therapist, to assist the patient in normalising activities, promote independence (e.g. at home and/or work) and facilitate a return to pre-injury activities. Assessing the patient's activity limitations or participation restrictions may be undertaken by asking *"How are you managing at home [or work]?"*, *"What can't you do now that you could do before [the MVA]?"*.

Six week reassessment

Reassess, including the VAS, NDI and psychological status (SES or CSQ). If these are unchanged, a more complex assessment may need to be considered and treatment type and intensity should again be reviewed. ***Introduction of formal cognitive behavioural therapy is appropriate at this stage if not already commenced.*** If the measures of pain, disability (the VAS and NDI) or psychological status are unchanged, consider referral to a medical or allied health practitioner specialising in chronic pain management (if not already undertaken). Ensure coordinated care if multidisciplinary treatment is being undertaken.

Amongst other things, if the pain VAS and NDI are unchanged, the specialist should undertake a more complex physical and/or psychological examination (such as assessment of hypersensitivity, joint proprioception, anxiety or post-traumatic stress). They should direct more appropriate care and liaise with the treating practitioner to ensure this. If the symptoms are resolving treatment should be reduced.

Three month reassessment

Reassess again at this point. If resolution is not occurring and the pain VAS and NDI have not changed by at least 10% from the last review (or have at this point a VAS score of >5.5 or NDI score of >40/100), specialist care should still be followed, or refer to a specialist if this has not already been done. A further review of treatment intensity and compliance with treatment should be undertaken.

Six month reassessment

Resolution should have occurred in up to 65% of cases 12 months post accident. In these cases treatment should have ceased. At this point, even if resolution has not occurred and provided six months of appropriate treatment has been undertaken, treatment should be reduced. Patients at this stage should receive periodic (suggested three monthly) review from their primary care practitioner. Practitioners should encourage patients to continue an ***active exercise*** program and should emphasise ***self-directed active management*** strategies. Alternatively, discharge from your treatment and refer back to primary practitioner. When there is no demonstrable evidence of benefit*, consider appropriate referral to another relevant practitioner, or a 'measured therapy break' (a trial of no treatment) to provide clinical justification for the continuation of treatment (refer outcome evaluation and clinical justification on page 35).

* Evidence of benefit refers to at least a 10% reduction on measures of pain (VAS) and disability (NDI).

SECTION 3:
Recommendations for clinical practice

Assessment and diagnosis

The clinical signs and symptoms following whiplash are diverse. Both acute and chronic WAD are characterised by reduced range of motion of the neck. The evidence suggests that chronic whiplash is characterised by disturbances in motor function, altered joint proprioception, generalised sensory hypersensitivity and psychological distress. Assessment of these factors may assist health practitioners in identifying patients at risk of developing a chronic condition, informing future management decisions.

The picture with acute whiplash is less clear. Whilst a loss of range of motion (in all planes) is a consistent finding, there is less evidence to support other findings such as altered muscle recruitment or sensory hypersensitivity. The physical examination techniques recommended in this pathway include items that will assist grading of WAD patients but also take into account the common features of WAD.

It is important that practitioners identify signs and symptoms indicative of various levels of severity of WAD so appropriate management can be undertaken.

The most important element of initial assessment and diagnosis of WAD is the identification of patients who are at risk of developing, or who have developed, serious consequences (such as fractures, dislocations or significant neurological damage) following a motor vehicle collision, so these issues can be treated appropriately.

When making an assessment of a person with whiplash it is important to use appropriate tests to diagnose or classify the condition correctly. The practitioner should screen for clinical features indicative of a serious but relatively uncommon condition requiring urgent evaluation (‘red flags’). Additionally, practitioners need to gather information regarding prognostic factors and any additional information that will help guide treatment and provide a baseline determination of health status, which will help to determine the effectiveness of any ongoing treatment.

History taking

History taking is important during all visits for the management of WAD patients of all grades. The history should include information about the following:

- Date of birth, gender and education level (assessed by asking *"What is the highest level of education you have achieved?"*)
- Circumstances of injury, such as relevant crash factors, which are related to the Canadian C-Spine rule (see page 28)
- Time since injury (to determine chronicity and appropriate management as per the pathway)
- Symptoms, including pain intensity (using a visual analogue scale (VAS), numerical rating pain scale (NRS) or similar – see Appendix 3). Stiffness, numbness, weakness and associated extra-cervical symptoms. Number of symptoms, localisation, time of onset and profile of onset should also be recorded for all symptoms. Self-rated injury severity should also be measured. Practitioners should assess patients' belief systems where appropriate.
- Disability level, preferably using the Neck Disability Index (NDI)
- Other scales such as the Functional Rating Index, Patient-Specific Functional Scale, Core Whiplash Outcome Measure, or similar may also be used (see Appendix 3). Such an assessment should be completed at the initial visit.
- Prior history of neck problems including previous whiplash injury

Where appropriate, further assessment to determine psychological status may be undertaken at 3 or 6-week review. The preferred tools are the Self-Efficacy Scale (SES) and the Coping Strategies Questionnaire (CSQ), both of which are validated tools. Other scales such as the Impact of Event (IES) Scale, or the Kessler Psychological Distress Scale (K10) may be useful to assess features of trauma-related symptoms or psychological distress respectively.

History details should be recorded. A standard form may be used.

Physical examination

A physical examination is necessary for all patient visits. Results of the physical examination should be recorded and include the following:

- Observation (particularly of head position / posture)
- Palpation for tender points
- Assessment of cervical range of motion (ROM) including flexion (chin to chest), extension, rotation and lateral flexion. Tools, such as a universal goniometer or inclinometer, can be used to measure neck range of motion (ROM), and may be more reliable than observation
- Neurological testing of sensation, reflexes and muscle strength (where appropriate). Neurological testing is appropriate when the patient complains of pins and needles, numbness and/ or weakness into the extremities
- Assessment of associated injuries and co-morbidities
- Assessment of general medical condition including psychological state (as appropriate)

A further, more specialised, physical examination (particularly with regard to chronic whiplash) might include the following:

- Assessment of joint position error (cervical proprioception)
- Assessment of cervical flexor muscle control
- An assessment of widespread sensory hypersensitivity (which should include cold sensitivity)
- A standard form may be used to record results of the assessment

Following assessment, patients should be classified as a Grade I, II, III or IV according to the QTF Classification of Grades. (It remains important to classify the grade of WAD, as WAD III patients (with neurological involvement) may require different management (such as avoidance of manipulation) or care with application of techniques and may have a different prognosis from those with WAD I and II). **Patients with potentially poor prognosis (i.e. high Pain VAS scores (pain ≥ 7/10) and high NDI scores (disability score > 40/100)) should be noted.**

Plain radiographs

The Canadian C-spine rule[7] (see page 28) should be used to decide whether X-ray of the cervical spine is required for diagnosis of fracture / dislocation. This rule has been validated and has been shown to have a sensitivity of 100% and specificity of 42.5%. Essentially physicians who follow this rule can be assured that a fracture will not be missed (95% confidence interval 98 to 100%) [Grade B].[2]

Specialised imaging techniques

WAD Grades I and II

There is no role for specialised imaging techniques (eg X-ray tomography, CT, MRI, myelography, discography etc.) in WAD Grades I and II.

WAD Grade III

Specialised imaging techniques might be used in selected WAD Grade III patients eg, nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

Specialised examinations

WAD Grades I and II

There is no role for specialised examination techniques (eg EEG, EMG and specialised peripheral neurological tests) in case of WAD Grade I or II.

WAD Grade III

Specialised examinations may be used in selected WAD Grade III patients eg, those with nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

WAD Grade IV

Where an X-ray confirms the existence of a fracture, it is anticipated that the patient will have been referred for immediate specialist management (ie, emergency physician, neurosurgeon or orthopaedic surgeon).

Good practice point: Assessment

Assessing the patient's level of functioning (i.e. activity limitations or participation restrictions) may be undertaken by asking *"How are you managing at home [or work]?"*, *"What can't you do now that you could do before [the MVA]?"*.

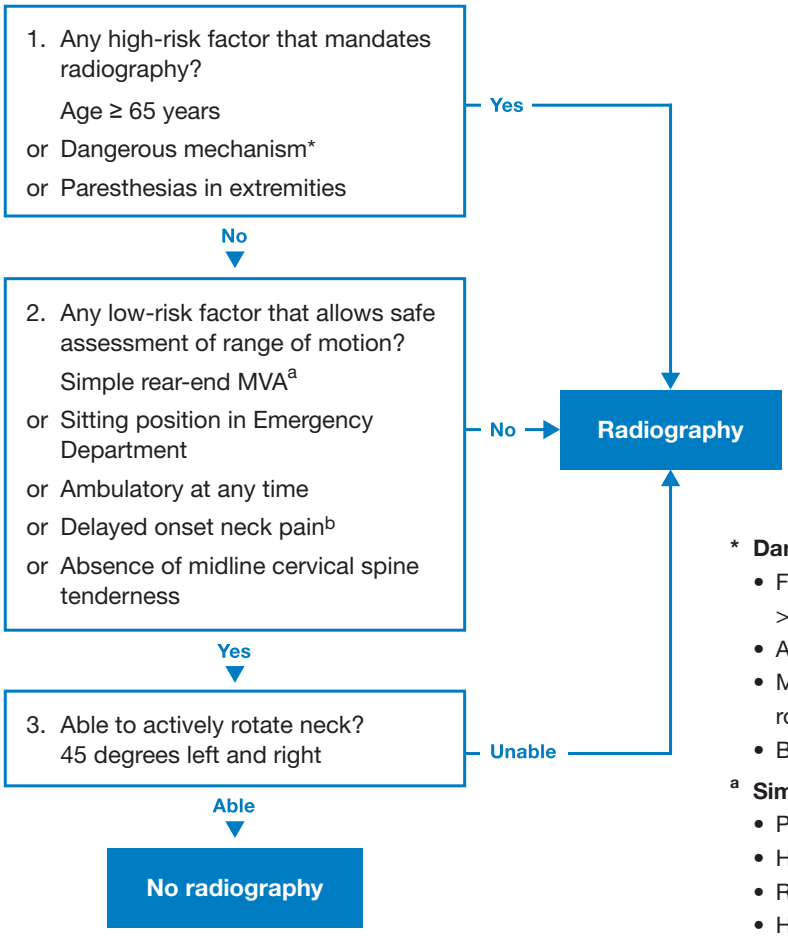
Patients with acute whiplash should be monitored to evaluate progress and identify psycho-social and occupational factors ('yellow flags') that may influence recovery. Early intervention to address these issues may prevent the development of chronic pain and disability.

Where symptoms such as intrusive recollections of the event (eg, nightmares), avoidance and emotional numbing, (eg, avoiding reminders of the event, loss of interest in normal activities) or hyperarousal (eg, difficulty sleeping or irritability) persist beyond one to two weeks, and interfere with the patient's daily activities, work or relationships, the patient may benefit from early referral to a psychologist or psychiatrist.

Figure 5

The Canadian C spine rule

For alert (GCS score = 15) and stable trauma patients when cervical spine injury is a concern



* **Dangerous mechanism**
- Fall from elevation >3 ft/5 stairs
- Axial load to head eg, diving
- MVA high speed (>100km/h), rollover, ejection
- Bicycle crash

[a] **Simple rear-end MVA excludes:**
- Pushed into oncoming traffic
- Hit by bus/large truck
- Rollover
- Hit by high-speed vehicle

[b] **Delayed**
- ie, not immediate onset of neck pain

Instructions for using the Canadian C-Spine Rule

1. Define whether there is a high-risk factor present (age ≥ 65 years), a dangerous mechanism (includes high speed or roll over or ejection, motorised recreation vehicle or bicycle crash). If this is the case an X-ray of the cervical spine should be performed.
2. Define low-risk factors that allow safe assessment of neck range of motion (ROM). If the low-risk factors in the figure are not present, an X-ray of the neck should be performed.
3. Assess rotation of the neck to 45 degrees in people who have low-risk factors. If people are able to rotate to 45 degrees they do not require an X-ray of the neck.

Table 3

Summary of recommendations for assessment and diagnosis

Recommendation	Evidence type
History taking should include; - information regarding date of birth, gender and the circumstances of injury and relevant crash factors; time since injury; self-reported injury severity; and prior history of neck or other pain symptoms, including previous whiplash injury.	☑
History taking should include the education level of the person	Grade A
A focused physical examination is necessary for all patient visits. Results of the physical examination should be documented.	☑
The routine use of a measure of pain intensity, such as the Visual Analogue Scale (VAS), and disability, such as the Neck Disability Index (NDI) is recommended for all WAD patients at initial assessment, and at each review appointment.	Grade A
Following assessment patients should be graded as a level I, II, III, or IV according to the QTF Classification.	☑
Patients with potentially poor prognosis, that is high Pain VAS scores (pain ≥ 7/10), and high NDI scores (disability score ≥ 40/100) should be noted	Grade A
The Canadian C-spine rule is the most appropriate rule to apply to determine whether X-ray of the cervical spine is required to confirm a diagnosis of fracture/dislocation.	Grade B
Measuring aspects of patient distress via the use of the Self Efficacy Scale (SES) and the Coping Strategies Questionnaire (CSQ-CAT) is recommended as part of the assessment of the psychological status of persons with whiplash. This may occur, where appropriate, at the three to six week review.	☑

Recommendations for prognosis

Best estimates of the course of recovery of after whiplash indicate that 44% of patients have recovered at one month post injury, 65% of patients have recovered by 12 months post injury, and 75% of patients have recovered by five years post injury. However the actual reported recovery rate from individual studies varied greatly, due to differences in both the study cohorts and outcomes measured.

Table 4 summarises risk factors associated with poor prognosis. Table 5 summarises the factors demonstrated to be *unrelated* to poor prognosis. These findings are discussed on the following pages.

Table 4

Factors associated with poor prognosis

Factor associated with poor prognosis	Evidence Type
High initial self reported pain intensity (eg, pain 7/10 on VAS scale) and disability (eg, NDI > 40/100), are associated with both ongoing pain symptoms and ongoing disability after whiplash. The presence of either of these factors should alert the practitioner to the potential need for more regular review of treatment or earlier referral to a specialist	Grade A
Low self-efficacy is strongly associated with ongoing pain	Grade A
Catastophising is strongly associated with ongoing disability	Grade A
Lower educational level is associated with ongoing disability after whiplash	Grade A
Increased sensitivity to cold is associated with ongoing disability after whiplash	Grade A
Anxiety is associated with ongoing pain	Grade B
A large number of initial symptoms, and self-rated injury severity are associated with ongoing pain symptoms after whiplash	Grade B
Reduced cervical range of motion (ROM) is associated with ongoing disability after whiplash	Grade B

Good practice point

The practitioner should remain mindful of the possibility that post-traumatic responses may be implicated where the patient's recovery is delayed.

Table 5

Factors not associated with poor prognosis

Grade	NOT associated with ongoing pain	NOT associated with ongoing disability
A	Flattened cervical lordosis on X-ray Dissatisfaction at work Diverting attention Increased behavioural activity Poor mental health (SF36) Poor physical health (SF36) Direction of impact Presence of head rest Speed of impact Wearing a seatbelt	Poor physical health (SF36) Poor social function (GHQ) Direction of impact Presence of headrest Speed of impact Seating position in car Vehicle drivable Awareness of collision
B	Degenerative changes on X-ray Avoidance Depression Older age (up to 75 years) Awareness of collision Reduced ROM Previous neck pain	Older age (> 75 years) Wearing a seatbelt Gender

Self-reported and physical impairment factors

The most important finding of the prognostic review was that **high initial self-reported pain intensity and high initial self reported disability were strongly associated with ongoing pain and disability**. It is therefore strongly recommended that these prognostic indicators be evaluated during the initial assessment of a patient with a whiplash-associated disorder.

A large number of initial symptoms, self-reported injury severity, and increased sensitivity to cold were related to ongoing pain.

Radiological findings

The findings from the prognostic review indicate that radiological findings **should not** be used to determine prognosis after whiplash. In particular, flattened cervical lordosis or degenerative changes noted on X-ray were not associated with poor prognosis.

Physical impairment factors

Reduced cervical range of motion (ROM) was associated with ongoing disability post-collision, but unrelated to ongoing pain.

The findings of the prognostic review indicated that poor physical health was not associated with ongoing pain and disability. These findings were based on a limited number of studies, and appear in contrast to evidence from related fields of health inquiry [16,17]. **Until more research in this area is conducted, findings related to poor physical health and its impact on prognosis should be viewed with caution.**

Psychological factors

Catastrophising was associated with ongoing pain following whiplash, while low self-efficacy and anxiety were related to ongoing disability following whiplash. Catastrophising refers to negative self-statements and thoughts such as *"I worry all the time about whether it [pain] will end"*. Self-efficacy is the patient's confidence in their ability to perform certain activities or pursue a particular plan of action. Anxiety may have been a pre-existing psychological factor or emerged in response to a motor vehicle accident. Anxiety is known to influence the perception and experience of pain, and is related to fear of pain (fear avoidance), including beliefs such as *"increased pain means I have made my injury worse, so I must avoid activity that aggravates my pain"*. Fear avoidance may lead to unhelpful behaviours (avoidance) that facilitate a chronic course. Anxiety is also implicated in the development of acute stress responses and conditions such as travel phobia post accident.[18]

The prognostic review indicated that mental health status, depression and avoidance were unrelated to prognosis following whiplash. These findings also appear at odds with evidence from related areas of health inquiry [14,19]. **Until more research in this area is conducted, the latter findings – related to mental health status and its influence on prognosis – should be viewed with caution**.

Previous symptoms

There was conflicting evidence regarding prior history and previous symptoms, however there was Grade B evidence that a prior history of neck pain was **not** associated with ongoing pain after whiplash.

Crash-related factors

Crash-related factors such as the speed or direction of impact, whether the vehicle was driveable, whether the patient was wearing a seatbelt, aware of the collision, or their seating

position in the vehicle were unrelated to poor prognosis. Crash-related factors should not be used to determine prognosis after whiplash. (Note however that crash-related factors should be documented, as these are related to the use of the Canadian C-Spine Rule).

Compensation-related factors

The relationship of compensation-related factors, such as pursuing compensation and/or consulting a lawyer, to ongoing pain or disability following whiplash is conflicting.

Evidence from other areas of health research suggests that people who are injured and claim compensation for that injury have poorer health outcomes that people who have similar injuries but are not involved in the compensation environment[20]. Further research is required to determine whether prognosis in whiplash is associated with legislation, which varies across Australian states.

Socio-demographic factors

Lower educational level is associated with ongoing disability. Neither older age nor gender was found to be associated with poor prognosis.

Good practice point: Trauma-specific psychological distress

The relationship between trauma-specific psychological distress and whiplash-associated disorders was not specifically addressed in the evidence review. It was the consensus view of the Implementation Working Group that trauma-specific psychological distress is relevant to whiplash-associated disorders.

Most people recover from traumatic events, and their injuries, with the support of family and friends, and without requiring mental health care[14]. A minority (between 4 to 16%)[18,21] may continue to experience high levels of acute stress, or trauma-specific psychological reactions, and this is associated with poor emotional recovery post injury[14]. The nature of chronic post trauma psychopathology is disabling, however the majority of injury survivors are not identified for treatment of their posttraumatic psychological problems[22].

It is important to identify early, at least six weeks following an injury, those persons who do not readily recover from the mental health consequences of a traumatic incident. Where the patient remains significantly distressed at the three-week review, they may benefit from early referral to a psychologist or psychiatrist.

As symptoms of posttraumatic stress can have a delayed onset (weeks or months following the event) the practitioner should remain mindful of the possibility that posttraumatic responses may be implicated where the patient's recovery is delayed.

The reader is directed to the Australian Guidelines for the *Treatment of Adults with Acute Stress Disorder and Posttraumatic Stress Disorder: Practitioner Guide*. A full description of Acute Stress Disorder, Post Traumatic Stress Disorder, psychological first aid, and a list of screening measures are available in these guidelines, located at www.acpmh.unimelb.edu.au.

Treatment recommendations

Table 6

Effective management: Key messages

The successful management of acute pain reduces the risk of chronic pain
Adopt a supportive, patient centred approach. Acknowledge that the patient has been hurt and has symptoms.
Provide information and advice at the initial visit. Use jargon-free language. Provide reassurance that recovery is anticipated.
Provide a clear explanation for the symptoms the patient is experiencing.
Ensure that a consistent message is conveyed. Communication should occur between relevant parties such as health practitioners, case manager, employer (where relevant) family and patient in order to limit confusion, reinforce positive messages, and improve outcomes.
Develop a management plan in collaboration with the patient. Review the management plan regularly.
Use a stepped approach to care. Stepped care refers to the practice of offering the least intrusive (and costly) intervention first, and increasing the intensity of intervention as is necessary to achieve a desired therapeutic outcome. A stepped care approach involves: 1. screening to identify those who are vulnerable 2. monitoring those identified as 'at risk' 3. offering early intervention to those who remain symptomatic after a period of time[23].
Encourage active forms of treatment Emphasise, in a practical way, the importance of staying active to restore function and prevent disability (promote *active* rather than passive forms of treatment). Resuming normal (pre-injury) activities, including a return to work, should occur as soon as possible.
Promote independence and self-management Provide support to enable the patient to self-manage the condition from the outset of treatment (see principles of self-management page 35).
Review the effectiveness of treatment Consider the ability to monitor and evaluate progress with the use of standardised outcome measures at baseline, with regular review.
Take recommended action(s) where there is a lack of improvement
Enduring recovery from an injury requires reconnection to valued social and occupational roles Where recovery is delayed, the practitioner should consider broadening the scope of acute symptomatic interventions to occupational and family intervention. Referral to an appropriate health practitioner, such as an occupational therapist, for an assessment of functional abilities and barriers to participation in activities (eg, at home or work) may promote independence, enhance self management, and assist the patient to return to pre-injury activities.

Good practice point

A stepped approach to care should be applied to take into account those who frequently improve spontaneously, or with self-management. **Simple intervention and reassurance may be all that is required.** Management should be tailored to the individual circumstances of the person.

Outcome measures should be used to assess the effectiveness of treatment.

Principles of self-management

From the outset of treatment all health practitioners should apply basic cognitive, behavioural and self-management principles. This includes:

- helping the patient develop specific, realistic, achievable and relevant goals (for instance, completing a set of movement exercises each day)
- the use of positive encouragement to develop self-efficacy (the patient's confidence in themselves and their ability to perform certain activities), which may motivate the patient to engage in health promoting behaviours and better adhere to treatment recommendations
- encouraging 'pacing' of activities throughout the day – rather than doing more activity when in less pain, and little or nothing when experiencing pain
- enquiring about barriers to undertaking activities. This can be addressed by asking *"Is there anything that prevents your from undertaking [light exercise]?"*
- addressing fear-avoidance (where it exists) (ie, beliefs such as *"Increased pain means I've made my injury worse, so I must avoid any activity that aggravates my pain"*) and catastrophising (ie, beliefs such as *"I can't cope with this… I will never get better"*) through education, reassurance and activity pacing.

Outcome evaluation and clinical justification

'Outcome' has been defined as a change in a patient characteristic as a consequence of an intervention. Outcome measures are tools used to assess baseline levels of impairment (ie, pain) or functioning (ie, disability or distress due to a neck condition), and to assess change in patient characteristics over time. Outcome is related to the goals of treatment, and the selection, continuation, or cessation of treatment components[24].

The regular use of standardised outcome measures enables the health practitioner to evaluate the patient's level of pain, disability and (physical or psychological) functioning at baseline, and assess change in those characteristics over time.

Decisions to continue treatment should be *clinically justified* with the ongoing and regular use of standardised outcome measures. Treatment should only be continued where there is ongoing evidence of benefit. Ongoing treatment should occur **in addition to active exercise**, and the practitioner should continue to promote self-management, independence,

and integration of the patient's functional goals into physical and recreational activities in everyday life[24]. This approach constitutes best practice.

For further information regarding clinical justification, the reader is directed to the Victorian Transport Accident Commission website, www.tac.vic.gov.au.

Table 7, below, provides recommendations for the treatment in the acute phase of whiplash (between 0 to 12 weeks post injury).

Table 7

Treatment recommendations for acute whiplash

Acute whiplash (0-12 weeks)	Grade of evidence
Treatments that should be routinely provided	
Active exercise (involving range of movement and mobilising exercises, and strengthening of the neck and scapular muscles)	Grade A
Advice to 'act as usual' / reassurance / education	Grade B
Treatments that may be undertaken provided there is ongoing evidence of benefit (and *in addition* to active exercise)	
Passive joint mobilisation / manipulation	Grade C
Heat, ice and massage	☑
Electrotherapies, including TENS, pulsed electromagnetic therapy, electrical stimulation, ultrasound and shortwave diathermy)	Grade C
Pharmacology – simple analgesics and NSAIDs	Grade B
Multimodal therapy (multimodal therapy utilises a range of individual treatment modalities such as joint mobilisation, relaxation techniques, electrotherapies, and exercises, as part of a package to address individual patient deficits such as pain, loss of range of movement, and loss of strength)	Grade C
Treatments that should NOT be undertaken	
Collar immobilisation and/or prescribed rest	Grade A
Surgery, except in WAD IV	☑
Cervical pillows	☑
Intrathecal and intra-articular injections	☑
Pharmacology – intravenous methylprednisolone	☑

Table 8, below, summarises recommendations for treatment during the chronic phase.

Table 8

Treatment recommendations for chronic whiplash

Chronic whiplash (> 12 weeks)	Grade of evidence
Treatments that should be routinely provided	
Advice to 'act as usual' / reassurance	Grade B
Active exercise (in combination with advice), involving functional exercises, range of motion exercises, strengthening of neck and scapular muscles, specific strengthening of deep neck flexors	Grade B
Treatments that may be undertaken provided there is ongoing evidence of benefit (and *in addition* to active exercise)	
A cognitive behavioural approach to treatment	Grade C
Passive joint mobilisation / manipulation, in combination with active therapy	☑
Multimodal therapy	☑
Vestibular rehabilitation	Grade C
Radiofrequency neurotomy (in carefully selected cases)	Grade B
Subcutaneous sterile water injections (in carefully selected cases)	Grade C
Treatments that should NOT be undertaken	
Collar immobilisation	☑
Prescribed rest	☑
Surgery (other than radiofrequency neurotomy)	☑
Cervical pillows	☑
Intrathecal and intra-articular injections	☑
Botox injections	☑
Electrotherapy	☑
Analgesic injections	☑

Recommendations for treatment: Acute WAD

Treatments that *should* be routinely undertaken

- Active exercise involving functional exercises (stretching and isometric), range of motion exercises, strengthening of neck and scapular muscles and strengthening of deep neck flexors is recommended **[Grade A]**.
- Advice to 'act as usual' / reassurance / education. Health practitioners should provide reassurance and education (including providing videos) about the recovery process. Specifically, patients should be educated that pain symptoms are a normal reaction to being hurt, and that maintaining normal life activities and remaining active are important in the recovery process. The person should also be advised that voluntary restriction of activity may delay recovery, and that it is important to focus on improvements in function. An example of whiplash advice is provided in Appendix 4 **[Grade B]**.

Treatments that *may* be undertaken provided there is ongoing evidence of benefit

- Passive joint mobilisation / manipulation may be given in combination with active exercises, in situations where exercise and advice alone are not proving effective, provided there is evidence of continuing measurable improvement. This technique should be restricted to registered health practitioners trained in the specific methods of passive joint mobilisation and manipulation and undertaken according to current professional standards. WAD Grade III (decreased or absent tendon reflexes and / or weakness and sensory deficit) is a relative contra-indication for manipulation.
- Passive modalities (such as heat, ice and massage) ☑ and electrotherapies (including TENS, pulsed electromagnetic therapy, electrical stimulation, ultrasound and shortwave diathermy) are optional adjuncts to exercise and manual therapy in those cases where the person is not improving with active exercise or advice alone **[Grade C]**.
- Pharmacotherapy. For WAD Grade I-III simple (non-opioid) analgesics and NSAIDs can be used to alleviate pain in the short term. Their use should be limited and weighed against known side effects, which appear to be dose related **[Grade B]**.
- Multimodal therapy (a range of individual treatment modalities such as joint mobilisation, relaxation techniques, electrotherapies and exercises as part of a package to address individual patient deficits such as pain, loss of range of movement and loss of strength) can be used provided there is continuing evidence of benefit. Ideally these packages should include an active treatment component **[Grade B]**.

Treatments that *should not* be undertaken

- Collars *should not* be prescribed for WAD. If they are prescribed they should not be used for greater than 48 hours **[Grade A]**.
- Surgery (except in WAD IV). There are no indications for surgical intervention in almost all cases of acute and sub-acute WAD Grades I-III. Surgical treatment to reduce dislocation or stabilise the cervical spine may be required in WAD IV. ☑
- Cervical pillows are not recommended, as there were no studies demonstrating the effectiveness of this treatment. ☑
- Intrathecal and intra-articular steroid injections are not recommended, as there were no studies demonstrating the effectiveness of this treatment. ☑
- There was evidence supporting the use of a high dose intravenous methylprednisolone infusion for the acute management of WAD Grade I-III **[Grade B]**, however the use of this treatment was not recommended given its potential side effects. ☑

Recommendations for treatment: Chronic WAD

Treatments that *should* be undertaken

- Advice to act as usual / reassurance. The practitioner should adopt a positive and supportive approach and acknowledge that the patient is hurt and has symptoms. He/she should advise that symptoms are a normal reaction to being hurt, and that maintaining normal life activities and remaining active are important in the recovery process. The person should also be advised that voluntary restriction of activity may lead to secondary complications and delay recovery, and that it is important to focus on improvements in function. An example of whiplash advice appears in Appendix 4. **[Grade B]**.
- Active exercise involving functional exercises (prescribed exercises targeting specific muscle group), range of motion exercises, strengthening of neck and scapular muscles and strengthening of deep neck flexors is recommended **[Grade B]**.

Treatments that *may* be undertaken provided there is ongoing evidence of benefit

- A cognitive behavioural approach to treatment may be useful **[Grade C]**.
- Passive joint mobilisation / manipulation may be given in combination with exercise in the chronic phase provided there is evidence of continuing measurable improvement. Reliance on passive therapy alone without an 'active' component is not recommended. This technique should be restricted to registered health practitioner trained in the specific methods of passive joint mobilisation and manipulation. ☑
- A vestibular rehabilitation may be instituted for persons experiencing dizziness in the chronic phase **[Grade C]**.
- Treatment packages that are 'multimodal' in nature and address a range of patient deficits such as loss of range of motion and strength may be used provided there is continuing evidence of benefit. Such packages should include an active treatment component in the chronic phase. ☑
- Radiofrequency neurotomy may be useful for chronic whiplash sufferers whose symptoms have been shown by diagnostic blocks to arise from the lower cervical joints **[Grade B]**.
- Subcutaneous sterile water injections may be useful in carefully selected cases. This technique should be provided by practitioners with expertise with such injections **[Grade C]**.

Treatments that *should not* be undertaken

- Intra-articular and intrathecal steroid injections are not recommended for chronic WAD. **[Grade B]**
- Analgesic injections are not recommended for the treatment of chronic WAD. ☑

Treatments that *should not* be undertaken until evidence is available

- Collar immobilisation should not be undertaken with chronic whiplash. ☑
- Prescribed rest is not recommended for chronic whiplash. ☑
- Surgical intervention (aside from radiofrequency neurotomy) is not recommended in almost all cases of chronic WAD Grades I – II. ☑
- Cervical pillows are not recommended. ☑
- The use of Botox injections in chronic whiplash is not recommended. ☑
- The use of electrotherapy in the treatment of chronic whiplash is not recommended. ☑

SECTION 4: Appendix

Appendix 1: Advisory and working groups

Thanks to the research consultants the Technical Advisory Group (TAG) who guided the development of the *Clinical guidelines for best practice management of acute and chronic whiplash-associated disorders*.

Thanks also to the Implementation Working Group (IWG) who guided the development of this publication, *Best practice management of whiplash-associated disorders: Clinical resource guide*. The IWG comprised representatives from the disciplines of general medicine, orthopaedic surgery, chiropractic, physiotherapy, occupational therapy, psychology, and psychiatry. This group introduced additional good practice points, derived on the basis of consensus, to foster a biopsychosocial approach to the management of whiplash.

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Appendix 2: Glossary

Activity	Execution of a task or action by an individual
Activity limitations	Difficulties an individual may have in executing activities
Adverse prognostic indicators	Factors that have been associated with adverse outcomes
CBT	Cognitive Behavioural Therapy. Elements of this form of therapy have been adopted to assist the patients' recovery, and are collectively known as a 'cognitive behavioural approach to therapy'. Formal CBT refers to a therapeutic modality delivered by health practitioners with training in this area.
Cervical pillows	Commercially made contoured pillows
Evidence of benefit	Refers to change of at least a 10% reduction on measures of pain (VAS) and disability (NDI)
Exercise	A physical activity such as aerobic, fitness or progressive resistance training.
Functional exercises	Prescribed stretching and isometric exercises designed to strengthen specific muscle groups. In the case of whiplash, functional exercises target the neck and shoulder muscles, with the aim of restoring normal range of movement and reducing pain.
Immobilisation	To prevent motion of the neck usually by application of a cervical collar
Manipulation	A technique of treatment applied to joints for the relief of pain and improvement of motion. It is a single high velocity, low amplitude movement applied passively to the joint towards the limit of its available range.
Manual and physical therapies	Methods of treatment (eg, manipulative and exercise therapy) used in the rehabilitation of persons with musculoskeletal disorders. They are non-invasive, non-pharmaceutical methods of treatment.
Miscellaneous interventions not otherwise defined	A set of complementary health treatments identified in the QTF guidelines not addressed separately
MAC	Motor Accident Commission
Multi-disciplinary pain team	A group of health care providers capable of assessing and treating the physical, psychological, medical, vocational and social aspects of patients with chronic pain. The health care team should hold regular meetings concerning individual treatment outcomes and evaluate overall program effectiveness.

Multimodal treatment	Management that includes concurrent application of several different treatment modalities including relaxation training, manual and physical therapies, exercise, postural training and psychological support
MVA	Motor vehicle accident
MVC	Motor vehicle collision
NDI	Neck Disability Index, a measure of disability
NHMRC	National Health and Medical Research Centre
NSAIDs	Non-steroidal anti-inflammatory drug(s)
Participation restrictions	Problems an individual may experience in involvement in life situations
Passive joint mobilisation	A technique of treatment applied to joints for the relief of pain and improvement of motion. Mobilisation is the passive application of repetitive, rhythmical, low velocity, small amplitude movements to the joint within or at the end of range.
Passive modalities	Those electrotherapeutic agents that are applied for such purposes as the relief of pain and assisting the resolution of the inflammatory response. They are administered passively to the patient
PEMT	Pulsed electromagnetic treatment
Postural advice	Specific instructions on posture
Prescribed function	Recommendation of specific activity eg, walking
Prescribed rest	Recommendation of 'rest' that may include avoidance of some activities of daily living
QTF	Quebec Task Force
Radicular irritation	Symptoms caused by irritation of the nerve root
RCT	Randomised controlled trial
Relaxation	Techniques used to reduce muscle tension and anxiety
ROM	Range of movement
Soft collars	Foam neck supports
Specialised examinations	Specialised tests that are not routinely performed as part of physical examination and that often require specialised testing equipment
Specialised imaging techniques	All radiological techniques except plain film radiology

Spray and stretch	Techniques where a coolant spray is applied to a painful area as a precursor to stretching
TENS	Transcutaneous Electrical Nerve Stimulation is a non-invasive low frequency electrical stimulation, which is applied through the skin with the aim of introducing an afferent barrage to decrease the perception of pain
Traction	A passive, longitudinal force of a vertebral segment that can be applied manually or mechanically with the aim of inducing subtle vertebral distraction for duration of the procedure
VAS	The Visual Analogue Scale, a measure of pain intensity
Whiplash-associated disorders (WAD)	Whiplash is an acceleration-deceleration mechanism of energy transfer to the neck. It may result from "...motor vehicle collisions..." The impact may result in bony or soft tissue injuries, which in turn may lead to a variety of clinical manifestations
Work alteration	Modification of work duties and/or environment to accommodate an injured worker

Appendix 3: Outcome measures for the assessment of whiplash-associated disorders

Visual Analogue Scale

Ref: Huskisson EC. Measurement of Pain. *Lancet* 1974;2(7889):1127-1131.

The Visual Analogue Scale (VAS) is a subjective measure of pain. It consists of a 10cm line with two end-points representing 'no pain' and 'worst pain imaginable'. Patients are asked to rate their pain by placing a mark on the line corresponding to their current level of pain. The distance along the line from the 'no pain' marker is then measured with a ruler giving a pain score out of 10.

No pain **Worst pain imaginable**

The Neck Disability Index

Ref: Vernon H, Mior S. The Neck Disability Index: a study of reliability and validity. J Manipulative Physiol Ther 1991;14(7):409-415.

The Neck Disability Index (NDI) (see overleaf) is designed to measure neck-specific disability. The questionnaire has 10 items concerning pain and activities of daily living including personal care, lifting, reading, headaches, concentration, work status, driving, sleeping and recreation. Each item is scored out of 5 (with the no disability response given a score of 0) giving a total score for the questionnaire out of 50. Higher scores represent greater disability. The result can be expressed as a percentage (score out of 100) by doubling the total score. The Neck Disability Index is translated into over 20 languages.

The Neck Disability Index (NDI)

Instructions

This questionnaire has been designed to give your health practitioner information as to how your neck pain has affected your ability to manage in everyday life. Please answer every section and mark in each section only the ONE box which applies to you. We realise you may consider that two of the statements in any one section relate to you, but please just mark the box which most closely describes your problem.

Section 1 - Pain intensity

- ☐ I have no pain at the moment.
- ☐ The pain is very mild at the moment.
- ☐ The pain is moderate at the moment.
- ☐ The pain is fairly severe at the moment.
- ☐ The pain is very severe at the moment.
- ☐ The pain is the worst imaginable at the moment.

Section 2 - Personal care (washing, dressing etc)

- ☐ I can look after myself normally without causing extra pain.
- ☐ I can look after myself normally but it causes extra pain.
- ☐ It is painful to look after myself and I am slow and careful.
- ☐ I need some help but manage most of my personal care.
- ☐ I need help every day in most aspects of self-care.
- ☐ I do not get dressed, I wash with difficulty and stay in bed.

Section 3 - Lifting

- ☐ I can lift heavy weights without extra pain.
- ☐ I can lift heavy weights but it gives extra pain.
- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, for example on a table.
- ☐ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.
- ☐ I can lift very light weights.
- ☐ I cannot lift or carry anything at all.

Section 4 - Reading

- ☐ I can read as much as I want to with no pain in my neck.
- ☐ I can read as much as I want to with slight pain in my neck.
- ☐ I can read as much as I want with moderate pain in my neck.
- ☐ I cannot read as much as I want because of moderate pain in my neck.
- ☐ I can hardly read at all because of severe pain in my neck.
- ☐ I cannot read at all.

Section 5 - Headaches

- ☐ I have no headaches at all.
- ☐ I have slight headaches which come infrequently.
- ☐ I have moderate headaches which come infrequently.
- ☐ I have moderate headaches which come frequently.
- ☐ I have severe headaches which come frequently
- ☐ I have headaches almost all the time.

Section 6 - Concentration

- ☐ I can concentrate fully when I want to with no difficulty.
- ☐ I can concentrate fully when I want to with slight difficulty.
- ☐ I have a fair degree of difficulty in concentrating when I want to.
- ☐ I have a lot of difficulty in concentrating when I want to.
- ☐ I have a great deal of difficulty in concentrating when I want to.
- ☐ I cannot concentrate at all.

Section 7 - Work

- ☐ I can do as much work as I want to.
- ☐ I can only do my usual work, but no more.
- ☐ I can do most of my usual work, but no more.
- ☐ I cannot do my usual work.
- ☐ I can hardly do any work at all.
- ☐ I cannot do any work at all.

Section 8 - Driving

- ☐ I can drive my car without any neck pain.
- ☐ I can drive my car as long as I want with slight pain in my neck.
- ☐ I can drive my car as long as I want with moderate pain in my neck.
- ☐ I cannot drive my car as long as I want because of moderate pain in my neck.
- ☐ I can hardly drive at all because of severe pain in my neck.
- ☐ I cannot drive my car at all.

Section 9 - Sleeping

- ☐ I have no trouble sleeping.
- ☐ My sleep is slightly disturbed (less than 1 hr sleepless).
- ☐ My sleep is mildly disturbed (1-2 hrs sleepless).
- ☐ My sleep is moderately disturbed (2-3 hrs sleepless).
- ☐ My sleep is greatly disturbed (3-5 hrs sleepless).
- ☐ My sleep is completely disturbed (5-7 hrs sleepless).

Section 10 - Recreation

- ☐ I am able to engage in all my recreation activities with no neck pain at all.
- ☐ I am able to engage in all my recreation activities, with some pain in my neck.
- ☐ I am able to engage in most, but not all of my usual recreation activities because of pain in my neck.
- ☐ I am able to engage in a few of my usual recreation activities because of pain in my neck.
- ☐ I can hardly do any recreation activities because of pain in my neck.
- ☐ I cannot do any recreation activities at all.

The Functional Rating Index

Ref: Feise RJ, Michael MJ. Functional rating index: a new valid and reliable instrument to measure the magnitude of clinical change in spinal conditions. Spine 1987;26(1):78-86.

The Functional Rating Index (FRI) combines concepts of the Oswestry Low Back Pain Disability Questionnaire and the Neck Disability Index to improve on clinical utility (time required for administration). It is an instrument specifically designed to quantitatively measure subjective perception of function and pain of the spinal musculoskeletal system in a clinical environment.

It consists of 10 questions each containing five statements representing increasing problems on that dimension. The questionnaire can be completed by the patient and scored by the therapist. It takes considerably less time to administer than the Neck Disability Index. For each section the maximum score is '4' with the first statement marked with a '0' and the last statement with a '4'. If all 10 sections are completed the maximum score is 40 points which is sometimes converted to a percentage. High percentages represent high disability.

Obtaining copies of the Functional Rating Index

The Functional Rating Index can be downloaded from the Institute of Evidence-Based Chiropractors at www.chiroevidence.com.

Solo practitioners or groups of up to nine practitioners may copy and use The Functional Rating Index subject to the terms of the Limited Licence agreement outlined on the website. Groups of 10 or more practitioners must contact Dr R Feise (rjf@chiroevidence.com) at the Institute of Evidence-Based Chiropractors for licence agreement details.

The Self-Efficacy Scale

Ref: Sherer M, Maddux JE, Mercadante B, Prentice-Dunn S, Jacobs B, Rogers RW. The Self-efficacy Scale: construction and validation. Psychological Reports 1982;51(2):663-671.

The Self-Efficacy Scale (SES) was initially designed to measure perceived self-efficacy in performing 20 common activities relevant to patients with chronic low back pain

Subjects are asked to rate how confident they are to perform each of a number of activities in spite of pain. The activities covered are listed below. The response format is 11-grade numerical rating scales where 0 = not at all confident and 10 = very confident. The total range is 0–200 points with higher scores indicating higher perceived self-efficacy.

Items

Taking out the trash
Concentrating on a project
Going shopping
Playing cards
Shovelling snow
Driving the car
Eating in a restaurant
Watching television
Visiting friends
Working on the car
Raking leaves
Writing a letter
Doing a load of laundry
Working on a house repair
Going to a movie
Washing the car
Riding a bicycle
Going on vacation
Going to a park
Visiting relatives

The Coping Strategies Questionnaire

Ref: Rosenstiel AK, Keefe FJ. The use of coping strategies in chronic low back pain patients: relationship to patient characteristics and current adjustment. Pain 1983;17(1):33-44.

The Coping Strategies Questionnaire (CSQ) is a widely used instrument for measuring pain coping strategies. The CSQ is a 50-item self-report questionnaire designed to assess 6 cognitive coping responses to pain and 2 behavioural responses. Subjects rate the frequency of their use of each coping strategy on a seven-point Likert-type scale, from (0) 'Never' through (3) 'Sometimes' to (6) 'Always'.

The Catastrophising subscale of the CSQ (CSQ-CAT) (Rosenstiel and Keefe, 1983) has six items.

It’s terrible and I feel it’s never going to get any better.

0	1	2	3	4	5	6
Never			Sometimes			Always

It’s awful and I feel that it overwhelms me.

0	1	2	3	4	5	6
Never			Sometimes			Always

I feel my life isn’t worth living.

0	1	2	3	4	5	6
Never			Sometimes			Always

I worry all the time about whether it will end.

0	1	2	3	4	5	6
Never			Sometimes			Always

I feel I can’t stand it anymore.

0	1	2	3	4	5	6
Never			Sometimes			Always

I feel like I can’t go on.

0	1	2	3	4	5	6
Never			Sometimes			Always

Patient-Specific Functional Scale

Ref: Westaway MD, Stratford PW, Binkley JM. The patient-specific functional scale: validation of its use in persons with neck dysfunction. J Orthop Sports Phys Ther 1998;27(5):331-338.

The Patient-Specific Functional Scale requires patients to generate their own list of problematic activities and assign a score to these activities rather than relying on a list of common activities. In the Patient-Specific Functional Scale subjects are asked to identify three important activities that they are unable to do or are having difficulty performing as a result of their neck problem. Subjects are asked to score each of these activities on an 11-point numeric rating scale (NRS) where 0 represents 'unable to perform activity' and 10 represents 'able to perform activity at pre-injury level'. Higher scores represent lower levels of disability. This measure is then repeated at appropriate follow-up points.

Instructions

- Clinician to read and fill in. Please complete at the end of the history and prior to physical examination.
- Read at baseline assessment.
- I'm going to ask you to identify up to three important activities that you are unable to do or have difficulty performing as a result of your problem.
- Today, are there any activities that you are unable to do or have difficulty with because of your problem? (show scale)
- Read at follow-up visits.
- When I assessed you on (state previous assessment date), you told me that you had difficulty with (read 1, 2, 3 from list).
- Today do you still have difficulty with activity? 1 (have patient score this activity); 2 (have patient score this activity); 3 (have patient score this activity).

Scoring scheme (show patient scale):

0	1	2	3	4	5	6	7	8	9	10
able to perform at pre-injury level										unable to perform at pre-injury level

	Date/ score								
Activity									
1.									
2.									
3.									
Additional									
Additional									

Core Whiplash Outcome Measure

Ref: Rebbeck TJ, Refshauge KM, Maher CG, Stewart M. Evaluation of the core outcome measure in whiplash. Spine 2007;32(6):696-702.

The Core Whiplash Outcome Measure (CWOM) appears on the following page. This five-item scale is brief and user friendly for clinicians. It measures several constructs of health including pain symptoms, function and well-being. In addition it measures the number of days off work, a useful measure for CTP insurers. The CWOM has high construct validity with the Functional Rating Index and the Neck Disability Index, and equal responsiveness in the short and long term as these lengthier measures.

Instructions

Score as follows:

Questions 1 and 2: Score from 1 to 5

Question 3: Score from 5 to 1

Questions 4 and 5: Score as follows
0-5 days = 1
6-11 days = 2
12-17 days = 3
18-23 days = 4
24+ days = 5

The total score is created by summating the scores from each of the five items, where the minimum score for each item is 1 and the maximum score for each item is 5. Hence the total score for the CWOM varies from 5-25.

Core Whiplash Outcome Measure

Instructions for patient: Please answer questions 1 to 5

Date: _____

1. During the past week, how bothersome have your whiplash symptoms been?

- □ 1 Not at all bothersome
- □ 2 Slightly bothersome
- □ 3 Moderately bothersome
- □ 4 Very bothersome
- □ 5 Extremely bothersome

2. During the past week, how much did your whiplash injury interfere with your normal work (including both work outside the home and housework)?

- □ not at all
- □ a little bit
- □ moderately
- □ quite a bit
- □ extremely

3. If you had to spend the rest of your life with the whiplash symptoms you have right now, how would you feel about it?

- □ very dissatisfied
- □ somewhat dissatisfied
- □ neither satisfied nor dissatisfied
- □ somewhat satisfied
- □ very satisfied

4. During the past 4 weeks, about how many days did you cut down on the things you usually do for more than half the day because of your whiplash symptoms?

_____ number of days

5. During the past four weeks, how many days did your whiplash symptoms keep you from going to work or school?

_____ number of days

The Kessler Psychological Distress Scale

Ref: Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, et al. Screening for serious mental illness in the general population. Archives of general psychiatry 2003;60(2):184-189.

The Kessler Psychological Distress Scale (K10) is a simple measure of psychological distress. The K10 scale involves 10 questions about emotional states each with a five-level response scale. Each item is scored from 1 'none of the time' to 5 'All of the time'. Scores of the 10 items are then summed, yielding a minimum score of 10 and a maximum score of 50. Low scores indicate low levels of psychological distress and high scores indicate high levels of psychological distress (scoring appears overleaf)

Questions 3 and 6 do not need to be asked if the response to the preceding question was 'none of the time'. In such cases questions 3 and 6 should receive an automatic score of one.

Please tick the answer that is correct for you:	All of the time (score 5)	Most of the time (score 4)	Some of the time (score 3)	A little of the time (score 2)	None of the time (score 1)
1. In the past 4 weeks, about how often did you feel tired out for no good reason?					
2. In the past 4 weeks, about how often did you feel nervous?					
3. In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?					
4. In the past 4 weeks, about how often did you feel hopeless?					
5. In the past 4 weeks, about how often did you feel restless or fidgety?					
6. In the past 4 weeks, about how often did you feel so restless you could not sit still?					
7. In the past 4 weeks, about how often did you feel depressed?					
8. In the past 4 weeks, about how often did you feel that everything was an effort?					
9. In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?					
10. In the past 4 weeks, about how often did you feel worthless?					

Interpretation of scores

The 2001 Victorian population health survey have adopted a set of cut off scores that may be used as a guide for screening for psychological distress.

These are outlined below:

K10 Score	Likelihood of having a mental disorder (psychological distress)
10-19	Likely to be well
20-24	Likely to have a mild disorder
25-29	Likely to have a moderate disorder
30-50	Likely to have a severe disorder

The Impact of Event Scale

Ref: Horowitz M, Wilner N, Alvarez W. Impact of Event Scale: a measure of subjective stress. Psychosom Med 1979;41(3):209-218.

The Impact of Event Scale (IES) is a measure of current subjective distress related to a specific event.

Below is a list of comments made by people after stressful life events. Using the following scale, please indicate below how frequently each of these comments was true for you DURING THE PAST SEVEN DAYS.

Comments	Not at all	Rarely	Sometimes	Often
1. I thought about it when I didn't mean to				
2. I avoided letting myself get upset when I thought about it or was reminded of it				
3. I tried to remove it from memory				
4. I had trouble falling asleep or staying asleep because of pictures or thoughts about it that came into my mind				
5. I had waves of strong feelings about it				
6. I had dreams about it				
7. I stayed away from reminders of it				
8. I felt as if it hadn't happened or wasn't real				
9. I tried not to talk about it				
10. Pictures about it popped into my mind				
11. Other things kept making me think about it				
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them				
13. I tried not to think about it				
14. Any reminder brought back feelings about it				
15. My feelings about it were kind of numb				

Scoring:

Not at all = 0
Rarely = 1
Sometimes = 3
Often = 5

Total = total the scores

Scoring method:

Each item is scored 0, 1, 3 or 5, with the higher scores reflecting more stressful impact. The scores for the intrusive subscale range from 0 to 35, and is the sum of the scores for items 1, 4, 5, 6, 10, 11, and 14. The scores for the avoidance subscale range from 0 to 40, and is the sum of the scores for items 2, 3, 7, 8, 9, 12, 13, and 15. The sum of the two subscales is the total stress score.

It is suggested that the cut-off point is 26, above which a moderate or severe impact is indicated.

Information regarding the IES from: Devilly, G.J. (2004). Assessment Devices. Retrieved November 28, 2007, from Swinburne University, Clinical & Forensic Psychology website: http://www.swin.edu.au/victims/resources/assessment/assessment.html

Appendix 4: Example of patient advice

Advice to stay active and live as normally as possible is the most important intervention in the management of neck pain following whiplash.

Effective education is necessary to manage expectations regarding recovery, and particularly to prevent the development of fear avoidance (*"pain means I have re-injured my neck and I should therefore avoid activity"*), and passive coping strategies.

Practitioners should also identify and address unhelpful belief systems where appropriate (eg, beliefs that pain represents an underlying pathology; an expectation that passive treatment rather than active participation will help; or misunderstanding about the nature of the compensation and rehabilitation system).

Based on what we know about whiplash, practitioners can give advice or respond to questions in a manner suggested below.

Communicating results of imaging

Degenerative findings on X-Ray are **not** associated with poor prognosis in whiplash. Degenerative changes are largely a normal age-related finding. Incidental findings identified as the result of imaging, and 'throw away' comments by practitioners can be misinterpreted by a patient as evidence of a serious condition, leading to distress or the development of unhelpful beliefs about their injury[25] (ie, misattribution of common degenerative changes to the whiplash injury).

Where no relevant pathology has been identified as a result of imaging (eg, no fracture or dislocation), results should be expressed positively: *"I have good news, there is no serious damage to your neck and spine as a result of your accident. There are only some common changes consistent with your age group."* [25]

What is the cause of my pain?

Based upon my examination, you do not have anything seriously wrong with your neck. The problem you have is a simple sprain (of one of the discs or ligaments) in your neck. This injury produces inflammation, which may in turn lead to muscle spasm. The muscle spasm experienced can lead to further neck pain and stiffness and may be quite severe.

The muscle spasm or cramping that you get in your neck is much the same as what might happen in other parts of your body (for example your calf) and just as movement would help a leg cramp, so neck movement will help this pain.

When patients have neck pain, or anticipation of neck pain, this can make people want to hold their neck still but this is one of the worst things to do as this will lead to increased muscle spasm and more pain.

As it is now some time since your whiplash injury, it is quite safe to start returning to your normal activities. Light activity will not further damage the disc, ligament, joint or any other structure that could be involved in the process. Further, we know that light activity enhances the recovery process. Being overly cautious and avoiding activity may lead to secondary complications, which will delay recovery.

What you need to do is start light activity and set your own goals for increasing activity until you have returned to your normal (pre-injury) activities.

Many people are scared by their neck pain and this is natural. In most cases, however, this fear is unjustified. Fear of pain (emotional stress) can lead to increasing muscle tension in your neck, and this may increase your neck pain. This can lead to a cycle of even more fear and more pain. Again, an increase in pain does not mean you have re-injured your neck.

What will help?

You should try to gently move and stretch your neck as much as possible. Try to avoid holding your neck stiffly, and instead try to be as flexible as possible with the range of movement in your neck. Try to avoid holding your neck in the one position for extended periods, for example when studying.

Starting light activity and setting goals for increasing activity, moving and stretching are the best things to do for your neck.

What will make things worse and what does an increase in symptoms mean?

If you experience acute neck pain, this does not mean you have re-injured your neck- it is usually an acute muscle spasm and you should treat this with stretching and light activity. Remember that it is normal to have good days and bad days.

The great majority of patients with whiplash-associated disorders recover. You can increase your chances of making a good recovery by changing how you view your neck pain.

Patients who take on a sick role by resting, taking time off work and avoiding jobs are less likely to recover. Being overly careful and avoiding activity is the worst thing you can do and will delay recovery. As discussed above, the best thing you can do is mobilise your neck with gentle activity and set your own goals for returning to work and other activities.

What self-management strategies can be used?

- Set your own goals for resuming activity.
- Do not be afraid.
- Do not be overcautious.
- Try to adopt a flexible attitude.
- Focus upon what you can do, rather than what you can’t.

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