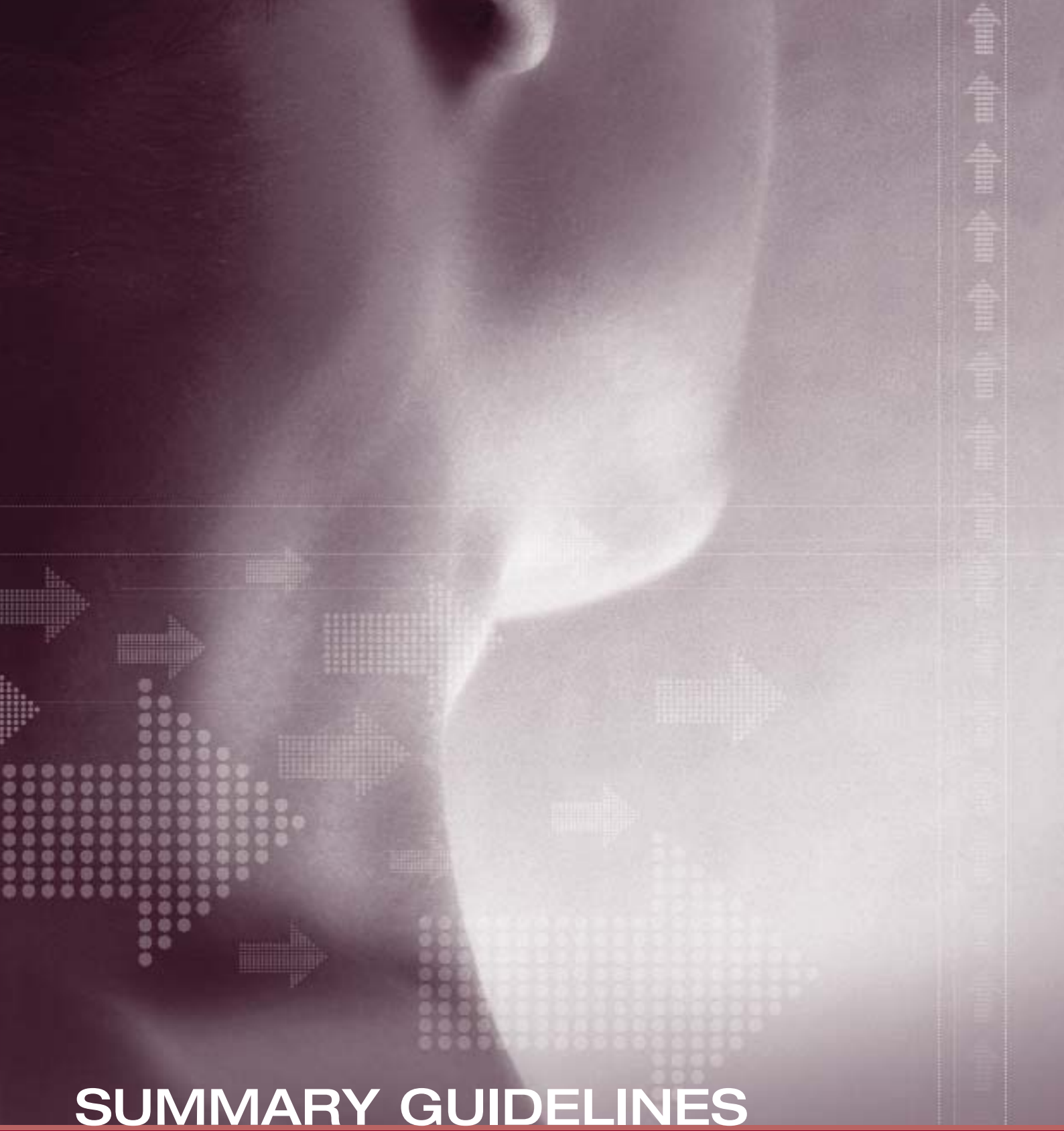


SUMMARY GUIDELINES

for the Management of Acute Whiplash-Associated Disorders for Health Professionals

2nd Edition 2007

MOTOR ACCIDENTS AUTHORITY

Contents

Preface

The Motor Accidents Authority (MAA) has developed new guidelines for the management of Whiplash-Associated Disorders (WAD), the single most frequently recorded injury among Compulsory Third Party (CTP) claimants in NSW. These guidelines provide recommendations to health practitioners, insurers and patients alike for the best possible management of adults with acute WAD in the first 12 weeks following a motor vehicle accident (MVA).

In 2001, the MAA developed the first edition of the WAD guidelines. They were based on an update of the Quebec Task Force (QTF) guidelines, released in 1995 that reviewed 10,000 publications and focused on clinical issues, specifically the risk, diagnosis, prognosis and treatment of whiplash. The QTF guidelines were largely developed by consensus and the expert knowledge of members of the QTF who were drawn from many clinical fields.

This second edition of the guidelines significantly builds on the first edition. A comprehensive review was undertaken using the MAA 2001 WAD guidelines as a starting point. The aim was to systematically review and summarise relevant literature from 1999 to November 2005 on the assessment and diagnosis of WAD, the prognosis of WAD and the effectiveness of treatment in subjects with acute and subacute (less than 12 weeks duration) whiplash. A concerted attempt was also made to objectively assess the quality of the collected studies so the best possible decisions regarding management could be made. A complete guide to the methodology used can be found in the Technical Report.

The review of prognostic factors identified studies showing pain and disability persist in a majority of people with WAD at three months post injury and remain in a significant number of people at six and twelve months after injury. Hence, the aim of assessment and treatment is to relieve pain and restore function and to identify factors that may be associated with a slower recovery. A positive approach is needed, but for many people with whiplash it is not possible to abolish all symptoms in the 12-week time frame covered by these guidelines.

This review found that despite recent advances in understanding the natural history and presentation of WAD, there remain some areas where the guidelines rely on a consensus of informed clinical opinion.

These guidelines cover the first 12 weeks following a MVA; however, they recognise the natural course of the condition can go beyond the acute phase addressed here. Clinical utility has been uppermost in the minds of the team working on this project. The MAA hopes the guidelines will be useful to primary care practitioners, consumers and the insurance industry.

This publication summarises the recommendations of the Working Party which are published in full in the *Guidelines for the Management of Acute Whiplash-Associated Disorders for Health Professionals – 2nd Edition 2007*. This publication can be downloaded from www.maa.nsw.gov.au

Purpose, scope and methodology

These guidelines are intended to assist health professionals delivering primary care to adults with acute or sub-acute simple neck pain after MVA, in the context of CTP insurance compensation.

Definition

The QTF[1] definition of Whiplash-Associated Disorders (WAD) has been adopted for the purposes of these guidelines.

> *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 (whiplash injury), which in turn may lead to a variety of clinical manifestations (Whiplash-Associated Disorders).*

Grades of WAD

The following clinical classification provided by the QTF is shown in the table below. Symptoms and disorders that can be manifest in all grades include deafness, dizziness, tinnitus, headache, memory loss, dysphagia and temporomandibular joint pain.

Scope

The scope of the guidelines covers WAD Grades I, II and III following a MVA. Grade IV is only considered to the extent of diagnosis of the condition and immediate referral to an Emergency Department or appropriate medical specialist. These guidelines are applicable in the first twelve weeks when WAD is the only injury or when it has occurred concurrently with other injuries.

Table 1. Quebec Task Force Classification of Grades of WAD

Grade	Classification
0	No complaint about the neck. No physical sign(s).
I	Complaint of neck pain, stiffness or tenderness only. No physical sign(s).
II	Neck complaint AND musculoskeletal sign(s). Musculoskeletal signs include decreased range of movement 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.

1. Scientific Monograph of the Quebec Task Force on Whiplash-Associated Disorders, Redefining Whiplash and its Management, Spine 1995 Supplement vol 20 No.85.

Methodology

The methodology was guided by National Health and Medical Research Council (NHMRC) recommendations for the development of clinical practice guidelines and broadly followed the approach described here.

- Recommendations contained in the MAA WAD guidelines published in 2001 were used as the starting point for the current review.
- A literature review collected information on new evidence regarding management of whiplash since the 2001 review. The quality of new evidence was examined and the necessary refinements made to existing guidelines. The Working Party identified three key areas for review: assessment and diagnosis, prognosis and evidence of treatment efficacy. Each of these areas was reviewed separately.
- The draft developed by the Technical Working Group was reviewed by the broader steering Working Party and then sent to a range of medical and health organisations and individuals for comment.
- Reviews were requested from two experts, one in Australia and one overseas, and as a result of their comments further changes were made before final drafts were sent to the MAA Advisory Council for approval.

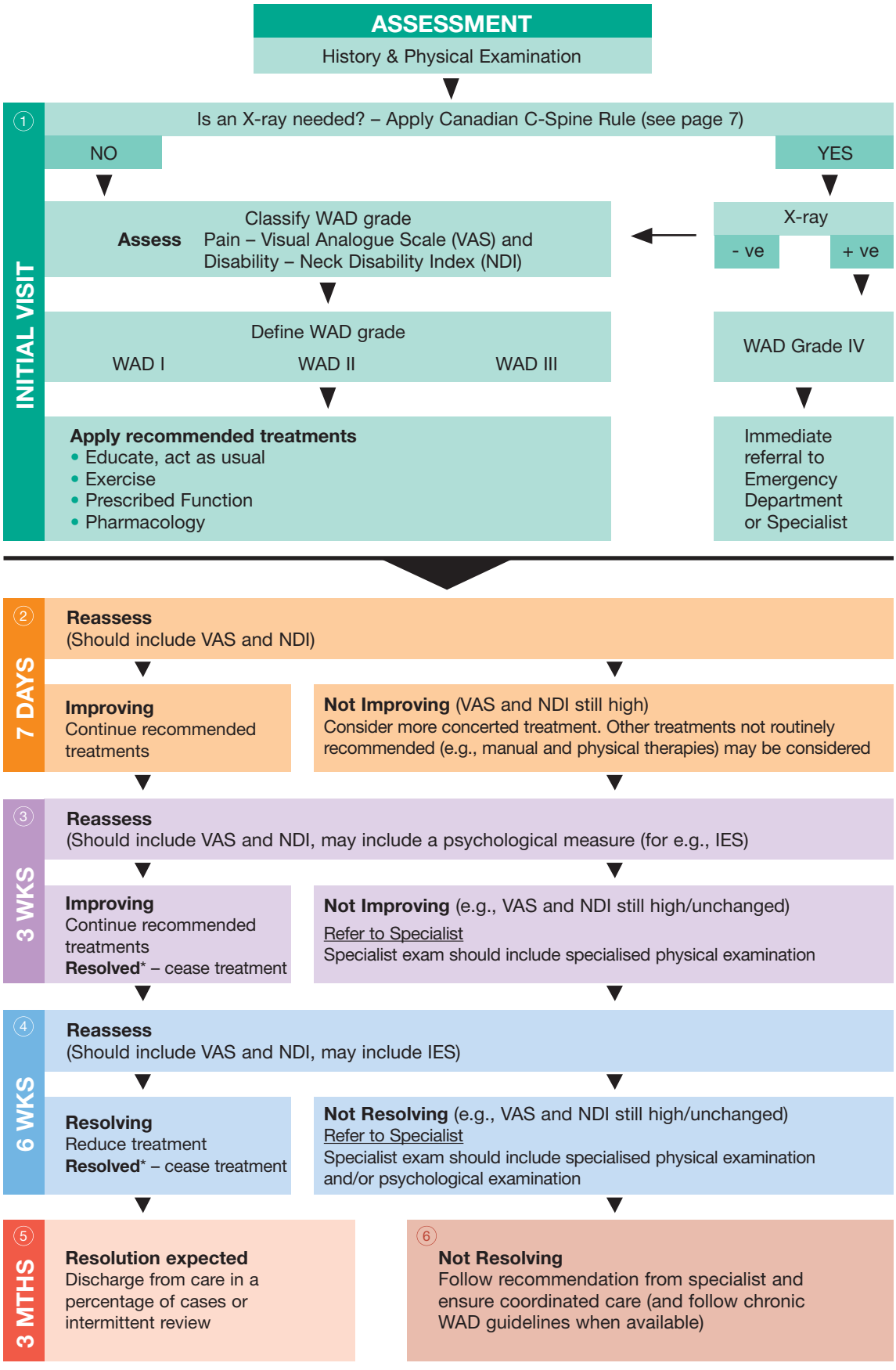
For the treatment section, the NHMRC rating scale for quality of evidence is used, which is consistent with the 2001 Guidelines, because randomised controlled trials (RCTs) are possible in the study of treatment efficacy.

This rating scale is as follows:

Grade I
Evidence obtained from a systematic review of all relevant RCTs.
Grade II
Evidence obtained from at least one properly designed RCT.
Grade III-1
Evidence obtained from well-designed pseudo-RCTs.
Grade III-2
Evidence obtained from comparative studies with concurrent controls and where allocation is not randomised (cohort studies), case-control studies, or interrupted time series with a control group.
Grade III-3
Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group.
Grade IV
Evidence obtained from a case series, either post-test or pre-test and post-test.

Early management flowchart

Early management of Whiplash-Associated Disorders



*Resolution is defined as VAS <= 3/10 and NDI < 8/50

Notes to the flowchart

The flowchart provides a structure for the assessment and treatment of people with WAD during the first 12 weeks following injury. A glossary is available on page 17 to assist with interpretation of technical terms and abbreviations. The flowchart offers a summary of how to apply the recommendations in the guidelines. **It is a guide only and there will always be individual variations.**

Initial assessment (1)

Classify the WAD grade according to the QTF definition. Although higher WAD grades indicate greater severity, poor prognosis is most likely associated with a high Visual Analogue Scale (VAS) pain score (>7/10) or high Neck Disability Index (NDI) score (>20/50). Copies of the VAS and NDI and how to score them accompany this guide (Appendix 3). The Working Party recommends assessing the VAS scale and NDI at the initial assessment (preferred) and at the seven day review (see below) in order to identify WAD patients at risk of non-recovery.

Apply recommended treatments.

Review

Primary care practitioners should review patients regularly, at least at the following intervals: seven days, three weeks, six weeks and three months. Reviews should include reassessment of the VAS and the NDI. Improvement is considered to be at least a 10% change on these scales.

Seven day reassessment (2)

Reassess, including the VAS and NDI. If the VAS and NDI are high or unchanged, treatment type and intensity should be reviewed. Other treatments listed in this guide as 'not routinely recommended' may be considered. This may involve referral for physical or manual therapy. 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).

Three week reassessment (3)

Reassess, including the VAS and NDI. If the VAS and NDI are unchanged, a more complex assessment may need to be considered and treatment type and intensity should again be reviewed. The Impact of Event Scale (IES) may be used as a baseline for psychological assessment (see Appendix 3). However, other recommended scales in these guidelines can be used. If the VAS and NDI are unchanged, consider referral to a specialist in WAD.

A specialist is considered a practitioner with specialised expertise in the management of WAD. These may include rehabilitation physicians, pain medicine specialists and occupational physicians who specialise in WAD. Equally, specialist physiotherapists or musculoskeletal medicine practitioners who specialise in WAD can be considered. Amongst other things, if the VAS and NDI are unchanged, the specialist should undertake a more complex physical and/or psychological examination. They should direct more appropriate care and liaise with the treating practitioner to ensure this is implemented. If symptoms are resolving treatment should be reduced.

Six week reassessment (4)

Reassess again at this point. In at least 40% of cases resolution should be occurring, and the process of reducing treatment in these cases should commence or continue. If resolution is not occurring and the VAS and NDI have not changed by at least 10% from the last review, specialist care should still be followed, or a specialist should be referred to if this has not already been done. At this point, referral to a clinical psychologist should also be considered if the psychological assessment data is markedly below norms (for the IES this means a score of >26 at six weeks after injury).

Three month reassessment (5)

Resolution should have occurred in at least 40% of cases. In these cases treatment should be ceased. If the patient is still improving, continue treatment; however, independence should be promoted (e.g., focus on active exercise). In these resolving cases, the patient should be reviewed intermittently over the next six to 12 months until resolution, to ensure home programs are maintaining improvement.

Coordinated care (6)

Patients whose VAS and/or NDI scores are not improving at this point are likely to require coordinated care that is multidisciplinary. It is likely that a combination of physical, psychological and medical care is required. The primary practitioner should facilitate this process.

This section summarises the Working Party recommendations for clinical practice in the management of WAD. Complete details of recommendations are published in *Guidelines for the Management of Acute Whiplash-Associated Disorders for Health Professionals – 2nd Edition 2007*.

Assessment and diagnosis

Taking patient history

Taking a patient's history is important during all visits for the treatment of patients with WAD of all grades. A patient's history should include information about:

- date of birth, gender and education level;
- circumstances of injury such as relevant crash factors which are related to the Canadian C-Spine Rule (see page 7);
- symptoms, particularly including pain intensity (ideally, using the Visual Analogue Scale (VAS) or similar). Stiffness, numbness, weakness and associated extra cervical symptoms; localisation, time of onset and profile of onset should also be recorded for all symptoms;
- disability level, preferably using the Neck Disability Index (NDI). Other scales such as the Functional Rating Index, Patient-Specific Functional Scale or similar may also be used (see Appendix 3). Such an assessment should be conducted on a patient's second visit at seven days, if not initially; and
- prior history of neck problems including previous whiplash injury.

Where appropriate, further assessment to determine psychological status may be undertaken at three or six week review. The preferred tool is the Impact of Event Scale (IES), which is a validated tool. Other scales may be useful in some circumstances (see Technical Report for details).

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

Physical examination

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

- observation (particularly of head position / posture);
- palpation for tender points;
- assessment of range of movement (ROM) including flexion (chin to chest), extension, rotation and lateral flexion;
- neurological testing;
- assessment of associated injuries; and
- an assessment of general medical condition(s), including psychological state (as appropriate).

A further, more specialised, physical examination assessment might include:

- assessment of joint position error;
- assessment of superficial neck flexor muscle activity; and
- an assessment of widespread sensitivity (which may include cold sensitivity, pressure pain threshold and / or the brachial plexus provocation test).

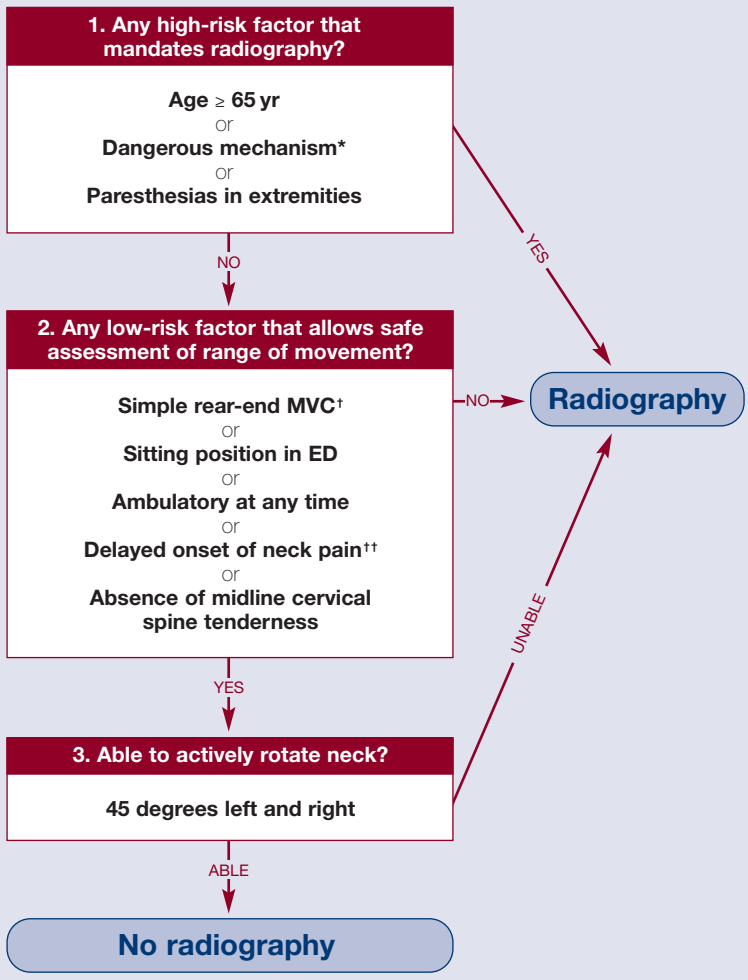
Tools, such as a universal goniometer or inclinometer, can be used to measure neck ROM, and are more reliable than observation. A standardised form may be used.

Plain radiographs

The Canadian C-Spine Rule shown in the flowchart below should be used to decide whether X-ray of the cervical spine is required. If there is concern about trauma to the cervical spine and the patient is alert (Glasgow Coma Score 15/15) and stable the following flowchart should be used.

The Canadian C-Spine Rule

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



Key

*** Dangerous mechanism**

- Fall from elevation ≥ 91.5 cm / 5 stairs
- Axial load to head, e.g., diving
- MVC (Motor Vehicle Collision) high speed (>100 km/h), rollover, ejection
- Motorised recreational vehicles
- Bicycle crash

† Simple rear-end MVC excludes

- Pushed into oncoming traffic
- Hit by bus/large truck
- Rollover
- Hit by high-speed vehicle

†† Delayed

- i.e., 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 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 the low risk factors shown in the QTF Classification of Grades of WAD (Table 1). If people are able to rotate to 45 degrees they do not require an X-ray of the neck.

This rule has been validated across several different populations and has been shown to have a sensitivity of 99.4% and specificity of 42.5%. Essentially physicians who follow this rule can be assured that a fracture will not be missed (95%CI 98-100%).

Investigations

Specialised imaging techniques

WAD Grades I and II	WAD Grade III
There is no role for specialised imaging techniques (e.g., tomography, computed scan (CT), magnetic resonance imaging (MRI), myelography, discography etc.) in WAD Grades I and II.	Specialised imaging techniques might be used in selected patients with WAD Grade III; e.g., nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

Specialised examinations

Examples of such examinations include electroencephalography (EEG), electromyographic (EMG) and specialised peripheral neurological tests.

WAD Grades I and II	WAD Grade III
There is no role for specialised examination techniques (e.g., EEG, EMG and specialised peripheral neurological tests) in case of WAD Grade I or II.	Specialised examinations may be used in selected patients with WAD Grade III, e.g., patients with nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

Prognosis

Symptoms

Poor outcomes[1] following whiplash are associated with high initial:

- pain intensity (e.g., pain > 7/10 on VAS scale); and
- disability (e.g., NDI > 20/50).

The presence of either of these two factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

Radiological findings

There is strong evidence that degenerative changes shown on X-ray are not associated with ongoing pain symptoms following whiplash.

Psychosocial factors

The relevance of psychosocial factors in predicting outcome in whiplash is inconclusive. Poor prognosis is most likely to be associated with high initial pain intensity and high initial disability. However, where appropriate, psychosocial health may be assessed (preferably using the IES; see Appendix 3). If the IES score is greater than 26 (at six weeks after injury) psychological referral may be indicated.

Socio-demographic factors

There is strong evidence that poor outcome (ongoing disability) is associated with a limited educational level.

There is strong evidence that poor outcome (ongoing pain) is **not** associated with age (to 65 years), sex or marital status.

The evidence associating employment status with poor outcomes (ongoing pain symptoms) is inconclusive.

Crash-related factors

The relevance of crash-related factors in predicting outcome in whiplash is inconclusive.

Physical impairment

Factors related to poor outcome (ongoing disability) include:

- hypersensitivity to specific cold sensitivity testing; and
- poor cervical ROM.

Prior history/previous symptoms

There is moderate evidence that previous neck pain is not associated with poor outcomes in patients with WAD in terms of ongoing pain symptoms.

However, previous neck pain may be associated with poor outcome in terms of ongoing disability.

Compensation

The relevance of compensation factors in predicting outcome in whiplash is inconclusive.

High utilisation of treatment

The evidence that high utilisation of treatment predicts ongoing (pain) symptoms in patients with WAD is inconclusive, and evidence that high utilisation of treatment predicts ongoing disability in patients with WAD is limited.

1. Outcomes are defined as
   - ongoing pain symptoms
   - or ongoing disability. Ongoing disability is defined differently in different studies, and may include high scores on disability questionnaires, or non-participation at work.

Table 2 below summarises the prognostic indicators that are relevant to acute and sub-acute WAD (see Technical Report for further details).

Table 2. Summary of Prognostic Indicators for Acute and Sub-Acute Whiplash

Strength of evidence*	Ongoing pain symptoms	Ongoing disability
Factors associated with poor prognosis		
Strong evidence	• High initial pain intensity • High initial disability	• High initial disability • Limited education • Cold sensitivity • Reduced cervical range of movement
Moderate evidence		• High initial pain intensity
Limited evidence		• Previous pain symptoms • Compensation factors • High utilisation of treatment
Inconclusive evidence	• Psychosocial factors • Educational level • Crash factors • Compensation factors • Employment status • High utilisation of treatment	• Psychosocial factors
Factors found not to be associated with poor prognosis		
Strong evidence	• X-ray changes • Age (< 65 years) • Sex • Marital status	• Age (< 65 years) • Marital status • Crash factors • Increased EMG activity on superficial muscles
Moderate evidence	• Previous pain symptoms	• Sex
Limited evidence		• Pressure Pain Threshold • Body Mass Index

*Strength of evidence is defined in the Technical Report (Table 5.2).

Treatment

Treatment of Acute Whiplash-Associated Disorders

Treatment – Recommended

Reassure, act as usual

The practitioner should acknowledge that the patient is hurt and has symptoms, and advise that:

- symptoms are a normal reaction to being hurt;
- maintaining normal life activities is an important factor in getting better;
- staying active is important in the recovery process;
- voluntary restriction of activity may cause delayed recovery; and
- it is important to focus on improvements in function.

Prescribed function, work alteration

Prescribed function (i.e., return to usual activity as soon as possible) is recommended. Rehabilitation programs, which may include alteration to an individual's work schedule, may assist recovery depending on symptoms (e.g., pain, ability to concentrate) and psychosocial factors.

Exercise

ROM and muscle re-education exercises to restore appropriate muscle control and support to the cervical region in patients with WAD should be implemented immediately, if necessary in combination with intermittent rest when pain is severe. Clinical judgement is crucial if symptoms are aggravated by exercise.

Pharmacology

- Only simple analgesics should be prescribed for WAD Grade I.
- NSAIDs and non-opioid analgesics may be used for short term pain relief in WAD Grade II and III.
- Opioid analgesics may be prescribed for short term pain relief of severe pain (VAS > 8) in acute WAD Grade II and III.

continued over

Treatment – Not Routinely Recommended

Evidence for efficacy of interventions/treatment modalities listed in this section is either limited or does not exist. Therefore, treatments described in the 'recommended' section on page 11 are preferred. Practitioners who choose to use the 'not routinely recommended' treatments described below should closely monitor the effectiveness of these treatments in each patient. Treatment should only be continued if there is evidence of benefit (at least 10% change on VAS and NDI).

Pharmacology

Pharmacology includes simple analgesics/non steroidal anti-inflammatory drugs (NSAIDs).

WAD Grade I – no medication other than simple analgesics should be prescribed.

WAD Grades II and III – non-opioid analgesics and NSAIDs can be used to alleviate pain in the short term. Their use should be limited to three weeks and should be weighed up against known side-effects, which appear to be dose related.

Opioid analgesics are not recommended for patients with WAD Grade I. They may be prescribed for pain relief in patients with acute WAD Grades II and III experiencing severe pain (VAS > 8) for a limited period of time.

Muscle relaxants should not be generally used in patients with acute or subacute phase WAD.

Psychopharmacologic drugs are not recommended in patients with acute and subacute WAD of any grade. However, they can be used occasionally for symptoms such as insomnia or tension or as an adjunct to activating interventions in the acute phase.

Use of high dose intravenous methylprednisolone infusion for acute management of WAD Grades II and III is not recommended.

Postural advice

Postural advice should only be given in combination with manual and physical therapies and exercise, provided there is evidence of continuing measurable improvement.

Passive joint mobilisation

Passive joint mobilisation should only be given in combination with manual and physical therapies and exercise, provided there is evidence of continuing measurable improvement. This technique should be restricted to registered health practitioners trained in the specific methods and in accordance with current professional standards.

Manipulation

A regime of manipulation should only be given to patients with WAD in combination with manual and physical therapies and exercise, provided there is evidence of continuing measurable improvement. This technique should be restricted to registered health practitioners trained in the specific methods and in accordance with current professional standards. WAD Grade III (decreased or absent tendon reflexes and/or weakness and sensory deficit) is a relative contraindication for manipulation.

Treatment – Not Routinely Recommended (CONTINUED)

Traction

A regime of traction should only be given to patients with WAD in combination with manual and physical therapies and exercise, provided there is evidence of continuing measurable improvement.

Multimodal treatment

A multimodal treatment program (combination of exercise and manual therapy, see Glossary for definition) can be used for patients with WAD where scores on the appropriate outcome measure have not shown significant improvement within four to six weeks post-injury, providing there is evidence of continuing improvement with the treatment.

Acupuncture

A regime of acupuncture should only be given to patients with WAD in combination with manual and physical therapies and exercise, provided there is evidence of continuing measurable improvement.

Passive modalities

Passive modalities/electrotherapies include heat, ice, massage, transcutaneous electrical nerve stimulation (TENS), pulsed electromagnetic treatment (PEMT), electrical stimulation, ultrasound, laser, and shortwave diathermy.

WAD Grade I – PEMT is not recommended because it involves wearing a soft collar eight hours per day for 12 weeks.

WAD Grades II and III – During the first three weeks the other professionally administered passive modalities/electrotherapies are optional adjuncts to manual and physical therapies and exercise, with emphasis on return to usual activity as soon as possible.

Surgical treatment

There are no indications for surgical intervention in almost all patients with WAD Grades I to III. Surgery should be restricted to the rare patients with WAD Grade III with persistent arm pain consistent with cervical radiculopathy (supported by appropriate investigations) that does not respond to conservative management, or with rapidly progressing neurological deficit.

Treatment – Not Recommended

Cervical pillows

Cervical pillows are not recommended.

Immobilisation – prescribed rest

Prescribed rest for more than four days is not recommended.

Immobilisation – collars

Collars should not be prescribed for patients with WAD. If they are prescribed, they should not be used for more than 48 hours.

Spray and stretch

Spray and Stretch is not recommended for the treatment of patients with WAD.

Injections – steroid injections

Intra-articular steroid injections are not recommended for patients with WAD. Epidural steroid injections should not be used for patients with WAD Grades I or II. Occasionally, patients with WAD Grade III who have unresolved radicular pain that has persisted for more than one month might benefit from epidural steroid injections.

There is no indication for steroid trigger point injection in the acute phase. Intrathecal steroid injections should be avoided in all patients with WAD.

Magnetic necklaces

Magnetic necklaces are not recommended for the treatment of patients with WAD.

Other interventions e.g., Pilates, Feldenkrais, Alexander Technique, massage and homeopathy.

Pilates, Feldenkrais, Alexander Technique, massage and homeopathy are not recommended for the treatment of patients with WAD.

Table 3. Summary of Changes to Recommended Treatments Since Previous Guidelines

Previous Guidelines (2001)	Recommendations for New Guidelines (2007)
Recommended Treatment	
Reassure / Act as usual	**Reassure / Act as usual**
Prescribed functional exercises – return to usual activity, work alteration, relaxation techniques	**Prescribed functional exercises** – return to usual activity, work alteration
Exercise – ROM exercises, muscle re-education, low-load isometric exercises	**Exercise** – ROM exercises, muscle re-education
Pharmacology – simple analgesics, NSAIDs	**Pharmacology** – simple analgesics
Treatments Not Routinely Recommended	
Postural advice	**Postural advice**
Passive joint mobilisation	**Passive joint mobilisation**
Manipulation	**Manipulation**
Traction	**Traction**
Acupuncture	**Acupuncture**
Multimodal treatment	**Multimodal treatment**
Passive modalities / electrotherapies	**Passive modalities / electrotherapies**
Immobilisation – prescribed rest	**Surgical treatment**
Immobilisation – collars	**Pharmacology** – NSAIDs and strong analgesics
Surgical treatment	
Treatments Not Recommended	
Cervical pillows	**Cervical pillows**
Spray and stretch	**Spray and stretch**
Intra-articular and intrathecal steroid injections	**Intra-articular and intrathecal steroid injections**
Magnetic necklaces	**Magnetic necklaces**
Other interventions e.g., Pilates, massage, etc	**Other interventions** e.g., Pilates, massage, etc
	Immobilisation – prescribed rest for > 4 days
	Immobilisation – collars for > 48 hours
	Pharmacology – Psychopharmacological agents

NSAIDs – nonsteroidal anti-inflammatory drugs; ROM – range of movement.

Appendix 1. The Working Party

Thanks go to the Research Consultants and the Working Party who guided this project.

In establishing this Working Party the MAA was aware that primary care health professionals, especially general practitioners, physiotherapists and chiropractors, manage most of the treatment arising from WAD.

Research Consultants

Professor Ian Cameron*	University of Sydney / Rehabilitation Physician
Dr Trudy Rebbeck*	University of Sydney / Specialist Musculoskeletal Physiotherapist
Dr Jim Stewart*	Consultant / Chairperson
Dr Mark Stewart*	Consultant / Physiotherapist
Dr Lyndal Trevena	University of Sydney / General Practitioner

Working Party

Peter Bull*	Chiropractic Association of Australia (NSW)
Lee Davids	Insurance Council of Australia
Ros Everett	Law Society of NSW
Dr Alex Ganora*	Australasian Faculty of Rehabilitation Medicine
Dr Michael Gliksman	Australian Medical Association
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Jan Smith	Insurance Council of Australia
Dr Michele Sterling*	University of Queensland
Kathy Hayes	NSW Motor Accidents Authority
Tina Bidese	NSW Motor Accidents Authority
Darnel Murgatroyd	NSW Motor Accidents Authority

*Also a member of the Technical Working Party

Appendix 2. Glossary

Adverse prognostic indicators	Factors that have been associated with adverse outcomes.
Cervical pillows	Commercially made contoured pillows.
Consensus	Majority view of all members of the Working Party. The basis for recommendations in the absence of evidence.
Exercise	May be either a direction to increase activity or a prescription for a specific set of exercises.
IES	Impact of Event Scale.
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 (e.g., 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.
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 limit of its available range.
Multidisciplinary pain team	A group of health care providers capable of assessing and treating the physical, psychosocial, medical, vocational and social aspects of patients with chronic pain. The healthcare team should hold regular meetings concerning individual treatment outcomes and evaluate overall program effectiveness.
Multimodal treatment	Management that includes simultaneous application of several different treatment modalities, including relaxation training, manual and physical therapies, exercise, postural training and psychological support.
MVA	Motor vehicle accident.
NDI	Neck Disability Index.
NSAIDs	Nonsteroidal anti-inflammatory drug(s).

Appendix 2. Glossary (CONTINUED)

Passive modalities	Electrotherapeutic agents that are applied for 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, e.g., 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, a non-invasive low frequency electrical stimulation that 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.
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 of which 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

Pain Visual Analogue Scale (VAS)

Scott J, Huskisson E, 'Graphic Representation of Pain'. *Pain* 1976; 2: 175 –184

The VAS consists of a 10cm line with two end-points representing 'no pain' and 'pain as bad as it could possibly be'. Patients with WAD 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.

The Neck Disability Index (NDI)

Vernon H, Mior S, 'The Neck Disability Index: A Study of Reliability and Validity'. *J. Manip. and Physiological Therapeutics* 1991; 14: 409-415

The NDI is designed to measure neck-specific disability and is based on the Oswestry Disability Questionnaire. 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 or as raw scores (out of 50). The NDI is translated into over 20 languages. If required in a language other than English please contact the MAA at: rehab@maa.nsw.gov.au

In these guidelines use of the raw score is recommended.

continued over

The Neck Disability Index

Instructions

This questionnaire has been designed to give your health professional 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

Feise RJ, Menke JM, 'Functional Rating Index: A New Valid and Reliable Instrument to Measure the Magnitude of Clinical Change in Spinal Conditions'. *Spine* 2001; 26: 78-87.

The Functional Rating Index combines concepts of the Oswestry Low Back Pain Disability Questionnaire and the NDI 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 NDI. 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.

Solo practitioners or groups of up to 9 practitioners may copy and use The Functional Rating Index subject to the terms of the Limited Licence Agreement available at www.chiroevidence.com

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.

Functional Rating Index

For use with **Neck and/or Back Problems** only.

Patient Name _____ Date _____

In order to properly assess your condition, we must understand how much your **neck and/or back problems** have affected your ability to manage everyday activities. For each item below, **please circle the number which most closely describes your condition right now**.

1. Pain Intensity

0	1	2	3	4
No pain	Mild pain	Moderate pain	Severe pain	Worst pain possible

2. Sleeping

0	1	2	3	4
Perfect sleep	Mildly disturbed sleep	Moderately disturbed sleep	Greatly disturbed sleep	Totally disturbed sleep

3. Personal Care (washing, dressing, etc)

0	1	2	3	4
No pain; no restrictions	Mild pain; no restrictions	Moderate pain; need to go slowly	Moderate pain; need some assistance	Severe pain; need 100% assistance

4. Travel (driving etc)

0	1	2	3	4
No pain on long trips	Mild pain on long trips	Moderate pain on long trips	Moderate pain on short trips	Severe pain on short trips

5. Work

0	1	2	3	4
Can do usual work plus unlimited extra work	Can do usual work; no extra work	Can do 50% of usual work	Can do 25% of usual work	Can not work

6. Recreation

0	1	2	3	4
Can do all activities	Can do most activities	Can do some activities	Can do a few activities	Can not do any activities

7. Frequency of Pain

0	1	2	3	4
No pain	Occasional pain; 25% of the day	Intermittent pain; 50% of the day	Frequent pain; 75% of the day	Constant pain; 100% of the day

8. Lifting

0	1	2	3	4
No pain with heavy weight	Increased pain with heavy weight	Increased pain with moderate weight	Increased pain with light weight	Increased pain with any weight

9. Walking

0	1	2	3	4
No pain; any distance	Increased pain after 1.6 kilometres	Increased pain after .8 kilometres	Increased pain after .4 kilometres	Increased pain with all walking

10. Standing

0	1	2	3	4
No pain after several hours	Increased pain after several hours	Increased pain after 1 hour	Increased pain after 1/2 hour	Increased pain with any standing

Examiner

Patient Signature

Patient-Specific Functional Scale (1998 version)

Westaway M, Stratford P, Binkley J. 'The Patient Specific Functional Scale: Validation of its Use in Persons with Neck Dysfunction'. *Journal of Orthopaedic and Sports Physical Therapy* 1998; 27: 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. When conducting 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.

Read at baseline assessment

I'm going to ask you to identify up to 3 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).

Patient-Specific Functional Scale

Scoring scheme (show patient scale):

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

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

Core Whiplash Outcome Measure

Rebbeck T, Refshauge K, Maher C. 'Evaluation of the Core Outcome Measure in Whiplash'. *Spine* 2007; 32 (6):696-702

The Core Whiplash Outcome Measure (CWOM) is a five-item scale that is brief and user friendly for clinicians. It helps clinicians measure several constructs of health including pain symptoms, function and well-being. In addition, it enables the number of days taken off work to be measured, which is a useful measure for CTP insurers. The CWOM has high construct validity with the Functional Rating Index and the NDI, and equal responsiveness in the short-term and long-term as these lengthier measures.

Instructions

Score as follows:

Questions 1 and 2: Score from 1-5

Question 3: Score from 5-1

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.

Impact of Event Scale

Horowitz, M., Wilner, M., and Alvarez, W, 'Impact of Event Scale: A measure of subjective stress'. *Psychosom. Med.* 1979; 41: 209–218

The Impact of Event Scale (IES) was developed by Horowitz, Wilner, and Alvarez to measure current subjective distress related to a specific event. The IES is a self-report measure of post traumatic disturbance and is very widely used. The scale is reproduced with permission of the author.

Scoring Method

Each item is scored:

Not at all = 0

Rarely = 1

Sometimes = 3

Often = 5

The item scores are summed. A total score of 26 or more, at 6 weeks after injury is in the "moderate" range. A score of > 43 is "severe".

See page 28.

Core Whiplash Outcome Measure

Instructions

Please answer questions 1 to 5

Date: _____

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

- ☐ not at all bothersome
- ☐ slightly bothersome
- ☐ moderately bothersome
- ☐ very bothersome
- ☐ 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 four weeks, about how many days did you cut down on the things you usually do for more that 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

Impact of Event Scale – Initial

On _____ you experienced a motor vehicle accident.

Below is a list of comments made by people after stressful life events. Using the following scale, please indicate with an 'x' how frequently each of these comments were true for you DURING THE PAST SEVEN DAYS. If they did not occur during that time please mark the 'NOT AT ALL' column.

	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 pictures or thoughts about it 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 about it.				
8. I felt as if it hadn't happened or it 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 were kind of numb.				

IP10606

Other whiplash publications

Guidelines for the Management of Acute Whiplash-Associated Disorders for Health Professionals – 2nd Edition 2007

Your Guide to Whiplash Recovery in the first 12 weeks after the accident – for Consumers 2nd Edition 2007

Compulsory Third Party Claims Guide for the Management of Acute Whiplash-Associated Disorders – An Insurer's Guide 2nd Edition 2007

Technical Report: Guidelines for the Management of Acute Whiplash-Associated Disorders – 2nd Edition 2007

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