



Guidelines for the Management of Whiplash-Associated Disorders

January 2001



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January 2001



**MOTOR ACCIDENTS
AUTHORITY**

Preface

There is potentially great benefit in agreeing on effective ways to manage acute Whiplash-Associated Disorders. Consequently, the MAA decided to take on the task of developing guidelines for the management of Whiplash-Associated Disorders.

In October 1999 new legislation was enacted governing the operations of the New South Wales Motor Accidents Authority (MAA) and the Compulsory Third Party (CTP) insurance scheme it administers.

One aim of the legislative change under the *Motor Accidents Compensation Act 1999* is to improve the capacity of the scheme to ensure that “reasonable and necessary” care is delivered to people with injuries and illness following motor vehicle accidents.

Changes made to the scheme are intended to improve the quality of medical assessments and ensure that care provided is consistent with the best available knowledge of appropriate and effective diagnosis, treatment, rehabilitation and ongoing support.

The legislation introduces these changes:

- New procedures for resolving disputes about medical and rehabilitation issues, where possible based on the principles of evidence-based medicine.
- Medical assessors from a range of health backgrounds to resolve ‘medical’ disputes.
- New guidelines for the assessment of permanent impairment.
- New guidelines for the appropriate treatment, rehabilitation and care of injured persons.

Whiplash-Associated Disorders (WAD) is the single most frequently recorded injury amongst CTP claimants in NSW. It was a factor in 38.9% of claims and responsible for 25% of costs in 1998.

As an interim measure, the MAA accepted a proposal to update the Quebec Task Force (QTF) guidelines. This method offered a practical, cost-effective and immediate way to move ahead on the issue. Looking ahead, the National Musculoskeletal Initiative is expected

to deliver more comprehensively evidence-based recommendations for the management of this condition in the future.

The Quebec Task Force on Whiplash-Associated Disorders¹ was convened as a result of the Quebec Automobile Insurance Society request for an “in-depth analysis of clinical, public health, social and financial determinants of the whiplash problem”. The QTF focused on clinical issues, specifically risk, diagnosis, treatment and prognosis of whiplash. During development of the guidelines, the QTF reviewed 10,000 publications. In addition, a cohort of whiplash subjects from the injury claim files of the Quebec Automobile Insurance Society was identified and prognostic factors in the recovery process were examined. The QTF released its findings in a scientific monograph in April 1995.

In general, the available evidence was found to be sparse and of poor quality. While the QTF would have preferred to base the recommendations on research findings, it was necessary to develop the guidelines largely on consensus and the expert knowledge of members of the QTF who were drawn from many clinical fields. Despite uncovering some new evidence, the same problem has faced the Working Party preparing these guidelines five years later.

In these guidelines, changes to the recommendations of the QTF have been based on available new evidence published since the QTF literature review. Where published evidence is lacking or inconsistent, a consensus of the Working Party (i.e. majority view of all members) is given. When making its recommendations, the Working Party also took into account comment received during a broader consultation and reviews by three experts.

¹ See Notes, page 43

The MAA is aware that the work of the QTF has been criticised,² with major criticisms being:

- the work is largely consensus based rather than evidence based (due to lack of evidence)
- selection criteria for the literature review were not clear and some evidence, which indicated that studies demonstrating WAD to be other than a self-limiting condition of temporary discomfort and no permanent harm, was excluded (i.e. selection bias).

The criticism of a bias towards viewing WAD as a self-limiting condition was noted and does not affect the recommendations on diagnosis and treatment which form the substance of these guidelines. The guidelines recognise that the natural course of the condition can go beyond the acute phase addressed here.

While acknowledging these criticisms, the MAA accepted that other experts in this area view the QTF guidelines as “the first ever systematic

review of the world literature on whiplash” which “established the baseline scientific knowledge in this subject area and created the first evidence-based patient care guidelines”.³

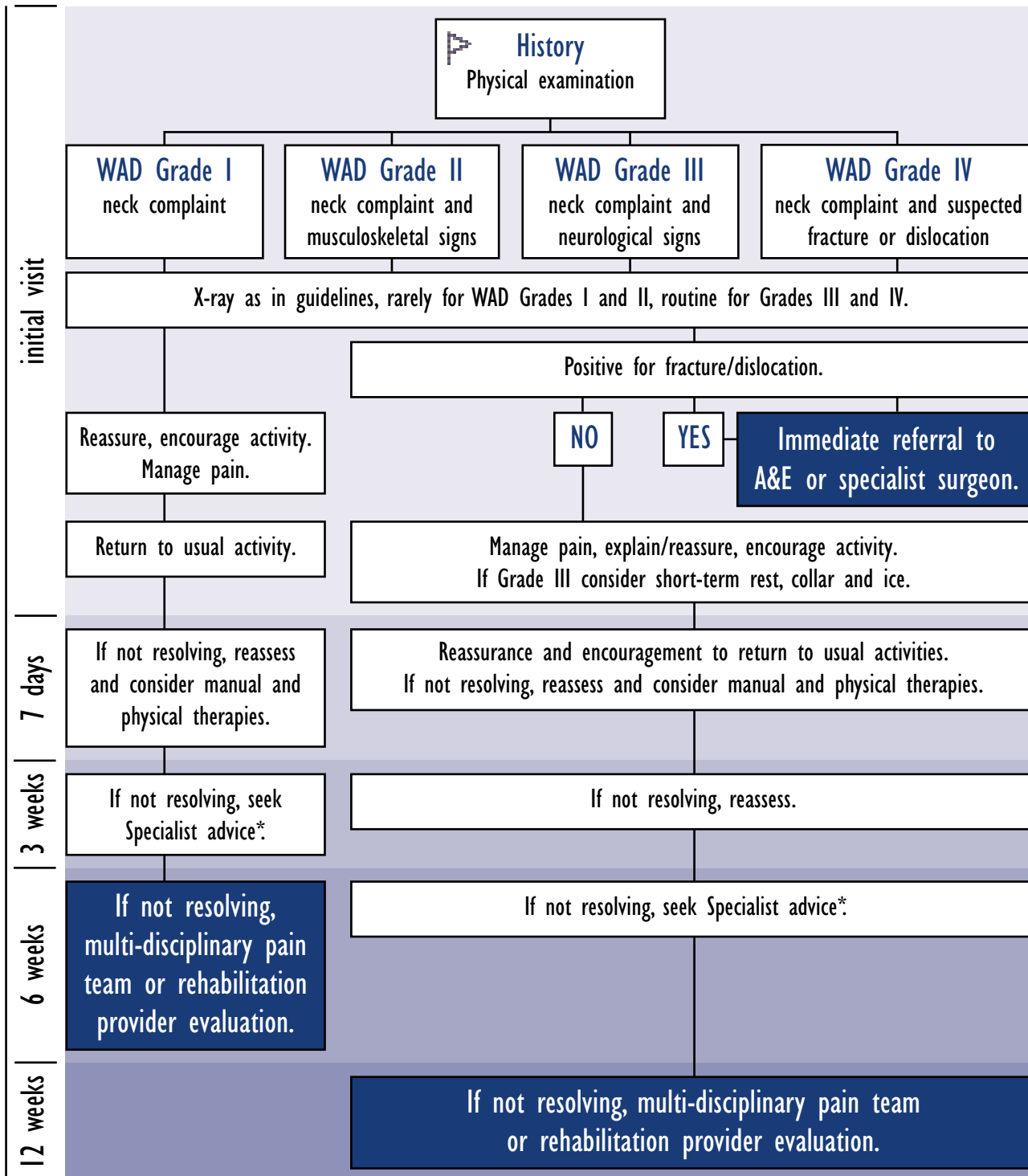
Clinical utility has been uppermost in the minds of the team working on this project. The MAA hopes that the guidelines will be useful to primary care practitioners, consumers and the insurance industry.

These guidelines are to cover the first 12 weeks following the motor vehicle accident.

Of course, these guidelines only offer a starting point. It is important to encourage practitioners to consult the guidelines and to ask for their feedback. Rather than perfecting the guidelines in theory, the MAA has planned a strategy to publish, distribute and test these guidelines in New South Wales.

^{2, 3} See Notes, page 43

Guidelines for early management of Whiplash-Associated Disorders



*Specialist advice – consultation with a health professional with specialist expertise in managing WAD.
‘Resolving’ – refers to both functional and symptomatic improvement.

▶ **Yellow Flags⁴**

If one or more of the following adverse prognostic indicators are present, more intensive treatment and/or earlier referral may be required.

- ▶ Severity of neck symptoms and radicular irritation
- ▶ Presence of specific symptoms such as headache; muscle pain; pain or numbness radiating from neck to arms, hands or shoulders

▶ More initial subjective complaints and concern regarding long-term prognosis

▶ Multiple initial symptoms

▶ Older age

▶ Female gender

▶ Not in full-time employment

▶ Having dependants

▶ Presence of osteoarthritis on X-ray

Notes to accompany flow chart

These are guidelines only.

There will be individual variations.

GPs should reassess patients regularly, at least at the intervals on the flow chart.

Consultations should include an assessment as to whether patients are gaining improvement from therapy programs, including those being delivered elsewhere, e.g. physical or manual therapy. If improvement is not evident, GPs should consider liaising with the therapist or curtailing that treatment.

Usually, referral for physical therapy or manual therapy is not required for the first few days, but if required, should commence within seven days.

Whole person treatment includes managing any accompanying anxiety and/or depression that may be associated with WAD or with other stressful life events.

WAD Grade I has been considered separately from WAD Grades II and III as more expedient resolution is expected. Also, referral is recommended earlier for unresolving cases, especially if psychosocial factors appear to be delaying recovery.

If the patient presents with any known adverse prognostic indicators (yellow flags), the

potential for more intensive treatment and/or referral should be considered.

An ever-present problem in managing Whiplash-Associated Disorders as recommended in this flow chart is possible delay between the time of requesting an appointment with a specialist, multi-disciplinary pain or rehabilitation team and the subsequent date of the appointment. One solution, especially for cases with adverse prognostic indicators (yellow flags), would be to make a provisional appointment before the need is urgent. GPs and specialists could negotiate an arrangement that enables the appointment to be cancelled if not required.

These guidelines cover the management of WAD Grades I to III in the acute and sub-acute phases, up to around three months from injury. The exit points from here are indicated in the flow chart by a dark blue box. These are:

- referral to a multi-disciplinary pain team or rehabilitation provider for WAD Grade I for a case which is not resolving after six weeks
- referral to a multi-disciplinary pain team or rehabilitation provider for WAD Grades II and III for a case which is not resolving at 12 weeks
- referral to A&E or a specialist surgeon for WAD Grade IV.

⁴ See Notes, page 43

Summary of recommendations for clinical practice

This section summarises the recommendations for clinical practice. For information about how these recommendations were made, see **Methodology, page 16**, and **Recommendations for Clinical Practice, page 18**.

Diagnosis of Whiplash-Associated Disorders

History taking

History taking is important during all visits for the treatment of WAD patients of all grades.

The history should include information about:

- date of birth, gender, occupation, number of dependants, marital status
- prior history of neck problems including previous whiplash injury
- prior history of psychological disturbance
- prior history of long-term problems in adjusting to symptoms of an injury or illness
- current psychosocial problems, e.g. family, job-related, financial problems
- symptoms including pain, stiffness, numbness, weakness and associated extracervical symptoms – localisation, time of onset and profile of onset should be recorded for all symptoms
- circumstances of injury (sport, motor vehicle...); mechanism of injury, e.g. if the head moved forwards, backwards, sideways or all of these; how the accident occurred; the position of the person in the car, i.e. passenger or driver; body position; type of vehicle involved
- results of assessments conducted using tools to measure general psychological state and pain and disability outcomes, e.g., the General Health Questionnaire (GHQ), a visual analogue pain scale or a neck disability index – examples of these are available from the MAA.

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

Physical examination

A focused physical examination is necessary for all patient visits. The physical examination should include at least:

- inspection
- palpation for tender points
- ROM in flexion-extension, rotation and lateral flexion
- neurological examination to assess sensorimotor function and tendon reflexes of upper and lower limbs
- assessment of associated injuries
- assessment of general medical condition as needed, including mood, affect and psychological state.

A universal goniometer can be used to measure neck ROM, and/or a hand-held dynamometer can be used to measure strength.

Both positive and negative findings should be recorded. A standardised form may be used.

Plain radiographs

WAD Grade I

WAD Grade I patients do not require a plain radiograph on presentation if they:

- are conscious
- show no signs of alcohol-related impairment
- are not obtunded by narcotics or other drugs
- show no physical signs on examination, have not been involved in a high speed or high impact injury, or in a collision where another occupant has been killed.

WAD Grade II

In patients presenting as WAD Grade II, plain X-rays of the cervical spine should be taken if:

- the severity of the signs on examination suggest the possibility of a bony injury
- their level of consciousness or pain sensation is impaired by brain injury or alcohol or other drugs
- they have been involved in high speed or high impact injury, or in a collision where another occupant has been killed.

Flexion and extension views may occasionally be indicated.

WAD Grade III

All patients who present with WAD Grade III should have baseline radiological investigation of the cervical spine including anterior-posterior, lateral and open-mouthed views. All seven cervical vertebral and the C7-T1 disc should be well visualised. Flexion-extension views may occasionally be indicated.

Specialised imaging techniques

WAD Grades I and II

There is no role for specialised imaging techniques (e.g. tomography, CAT scan, 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, e.g. nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

Specialised examinations

Specialised examinations were considered by the Working Party as not relevant to management of WAD Grades I to III. Examples include EEG, EMG and specialised peripheral neural tests.

Prognosis of Whiplash-Associated Disorders

Symptoms

Poor outcome has been associated with:

- severity of neck symptoms and radicular irritation at initial assessment
- presence of specific symptoms such as headache; muscle pain; pain or numbness radiating from neck to arms, hands or shoulders
- history of pre-traumatic headaches
- previous history of head injury
- initial injury reaction (sleep disturbance, nervousness)
- more initial subjective complaints and concern regarding long-term prognosis
- pre-existing osteoarthritis
- head rotated or inclined at time of impact; occupancy in truck/bus; being in head-on or perpendicular collision.

Identification of these yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

Radiological findings

Poor outcome may be associated with pre-existing osteoarthritis on the initial cervical radiograph.

This yellow flag factor should alert the practitioner to the potential need for more intensive treatment or earlier referral.

Psychosocial factors

Poor outcome may be associated with:

- prior history of psychological disturbance – these disturbances may be indicative of a proneness to emotional/affective problems and somatisation reactions, which are frequently based on affective disorders; somatisation reaction in the course of WAD may establish a basis for symptom augmentation; without early identification and proper treatment, this condition may lead to delayed recovery
- prior history of long-term problems in adjusting to symptoms of an injury or illness, e.g. coping mechanisms
- current psychosocial problems, e.g. family, job-related, financial problems.

These yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

Socio-demographic factors

In addition to the fact that management of this condition, by definition, is taking place in the context of compensation (recognised as an adverse prognostic indicator), other socio-demographic indicators associated with poor outcome are:

- older age
- female gender
- not in full-time employment
- having dependants.

These yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

Treatment of Whiplash-Associated Disorders

Recommended

Reassure

The practitioner should reassure the patient – by acknowledging that the patient is hurt and has symptoms, and advising that:

- symptoms are a normal reaction to being hurt
- it is important to focus on improvements in function
- maintaining life activities is an important factor in getting better.

Act as usual

Act as usual – should be used as a treatment for WAD with or without pain relief as per recommendations regarding pharmacology.

Miscellaneous interventions - prescribed function, work alteration and relaxation techniques

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

Manual and physical therapies

- exercise

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

Pharmacology

WAD Grade I

No medication should be prescribed other than simple analgesics.

WAD Grades II and III

Non-opioid analgesics and NSAIDs can be used to alleviate pain for the short term. Their use should be limited to three weeks and weighed against possible side effects.

Opioid analgesics are not recommended for WAD Grades I and II. They may be prescribed for pain relief in acute severe WAD Grade III for a limited period of time.

Generally, muscle relaxants should not be used in acute phase WAD.

Psychopharmacologic drugs are not recommended in WAD of any duration or grade; however, they may be used occasionally for symptoms such as insomnia or tension, or as an adjunct to activating interventions in the acute phase (less than three months' duration).

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

Summary of recommendations (continued)

Recommended under certain circumstances

Manual and physical therapies

- postural advice

Postural advice can be given in combination with manual and physical therapies and exercise in WAD.

- mobilisation

Mobilisation can be used for WAD, providing there is evidence of continuing improvement with the treatment. If mobilisation is used it should be commenced early, within the first seven days. This technique should be restricted to registered health practitioners⁵ trained in the specific methods and according to current professional standards.

- manipulation

A regime of manipulation can be used for WAD, providing there is evidence of continuing improvement with the treatment. This technique should be restricted to registered health practitioners trained in the specific methods and according to current professional standards.⁵ Complications from manipulation are rare, but include stroke and death. WAD Grade III (decreased or absent deep tendon reflexes and/or weakness and sensory deficit) is a relative contra-indication for manipulation.

- traction

A regime of traction can be used in combination with other mobilising modalities in WAD providing there is evidence of continuing improvement with the treatment.

Multimodal

A multimodal treatment program can be used for WAD that has not settled within four to six weeks providing there is evidence of continuing improvement with the treatment.

Acupuncture

A regime for acupuncture can be used in WAD providing there is evidence of continuing improvement with the treatment.

Passive modalities/electrotherapies - heat, ice, massage, TENS, PENT, electrical stimulation, ultrasound, laser, short-wave diathermy

WAD Grade I

Although active PENT in a soft collar is better than sham PENT in a soft collar, PENT is not recommended because it involves wearing a soft collar eight hours/day for 12 weeks.

WAD Grades II and III

During the first three weeks, other professionally administered passive modalities/electrotherapies are optional adjuncts to manual and physical therapies and exercise. Emphasis should be placed on return to usual activity as soon as possible.

Immobilisation - prescribed rest

WAD Grade I

Rest is not recommended for WAD Grade I.

WAD Grades II and III

Rest for more than four days is not recommended for WAD Grades II and III.

Immobilisation - collars

WAD Grade I

Collars are not recommended for WAD Grade I.

WAD Grades II and III

If prescribed for WAD Grade II or III, they should not be used for more than 72 hours.

⁵ See Notes, page 43

Surgical treatment

There are no indications for surgical intervention in almost all cases of WAD Grades I to III. Surgery should be restricted to the rare

WAD Grade III with persistent arm pain that does not respond to conservative management, or with rapidly progressing neurological deficit, e.g. cervical radiculopathy supported by appropriate investigations.

Not recommended

Immobilisation - cervical pillows

Cervical pillows are not recommended.

Manual and physical therapies - spray and stretch

Spray and stretch is not recommended.

Injections - steroid injections

Intra-articular steroid injections can not be recommended for WAD. Epidural steroid injections are not recommended for WAD Grade I or WAD Grade II. Occasionally, WAD Grade III with unresolved radicular pain of more than one month might benefit from epidural steroid injections.

There is no indication for steroid trigger point injection in the 'acute' phase (less than three weeks). Because harmful side effects of

repeated steroid use have been reported, steroid trigger point injections should not be used unless their benefit in WAD is shown in valid RCTs. Intrathecal steroid injections carry such risk of serious morbidity that they should be avoided in all grades of WAD.

Miscellaneous interventions - magnetic necklaces

Magnetic necklaces are not recommended.

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

Pilates, Feldenkrais, Alexander Technique, massage and homeopathy are not recommended.

Not relevant to acute WAD Grades I, II or III

Injections - sterile water injections

Not included. Not relevant to management of acute WAD Grades I to III.

Injections - local anaesthetic nerve blocks

Not included. Not relevant to management of acute WAD Grades I to III.

Purpose of the guidelines

The guidelines are intended to assist health professionals delivering primary care to adults with acute or sub-acute simple neck pain after motor vehicle collisions, in the context of third party insurance compensation.

Definition of condition and scope of the guidelines

Definition

The QTF⁶ definition of Whiplash-Associated Disorders (WAD) has been adopted as the definition of acute or sub-acute simple neck pain 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,⁷ which in turn may lead to a variety of clinical manifestations (Whiplash-Associated Disorders).

Scope

The scope of the guidelines covers WAD Grades I, II and III following a motor vehicle collision.

These guidelines are applicable in the first twelve weeks when WAD is the only injury or when it has occurred concurrently with other injuries.

Grades of WAD

The following clinical classification provided by the QTF is noted.

Symptoms and disorders that can be manifest in all grades include deafness, dizziness, tinnitus, headache, memory loss, dysphagia and temporomandibular joint pain.

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 deep tendon reflexes, weakness and sensory deficits. ⁸
IV	Neck complaint AND fracture or dislocation.

^{6, 7, 8} See Notes, page 43

When to consult the guidelines

An example of appropriate use of the guidelines is a situation in which an adult who is experiencing neck pain after a recent motor vehicle collision consults his or her general practitioner. The guidelines would be relevant during the period when the doctor:

- takes a history
- conducts an examination
- determines what, if any, investigations are required, and
- treats or refers for treatment from other health professionals such as physiotherapists and chiropractors.

In many cases, recovery from WAD occurs quickly; however, it is recognised that some people with WAD will require treatment and support beyond 12 weeks.

To deal with more complex cases the guidelines offer ways to take action, by:

- alerting primary health care professionals to adverse prognostic indicators (yellow flags) which may indicate the need for more intensive treatment or early referral.
- confirming that the diagnosis of a fracture or dislocation warrants immediate referral to an Accident and Emergency Department or a specialist surgeon.
- providing indications of durations when referral to specialists or multi-disciplinary pain team or rehabilitation providers should be considered.

Target audience and products

The primary target audience for the clinical practice guidelines is general practitioners in New South Wales. The guidelines will be relevant to other health professionals involved in primary care in New South Wales, e.g. physiotherapists, chiropractors and osteopaths.

Companion documents have also been developed for consumers, and for claims officers in the compulsory third party insurance industry in New South Wales.

A technical report containing the tables of evidence and a detailed description of the methodology used to adapt the QTF guidelines for use in New South Wales has also been prepared.

Titles of the five documents are as follows:

- *Guidelines for the Management of Whiplash-Associated Disorders* – for health professionals.
- *SUMMARY Guidelines for the Management of Whiplash-Associated Disorders*.
- *Your Guide to Whiplash Recovery* – for consumers.
- *Compulsory Third Party Claims Guide to the Management of Whiplash-Associated Disorders* – for the compulsory third party insurance industry.
- *TECHNICAL REPORT Update of QTF Guidelines for the Management of Whiplash-Associated Disorders*.

Copies are available from the Motor Accidents Authority.

Methodology

A detailed account of the process by which these consensus guidelines were developed is described separately in *Technical Report: Update of Quebec Task Force Guidelines for the Management of Whiplash-Associated Disorders*.

The methodology was guided by National Health and Medical Research Council recommendations⁹ for the development of clinical practice guidelines. The following approach was taken:

- Recommendations contained in the guidelines developed by the QTF and published in 1995 were taken as the starting point.
- A literature review was undertaken to collect information on additional evidence which was both relevant to the scope of these guidelines and which had been published after the evidence was collected by the QTF (i.e. after 1993). The NHMRC recommendations for the review of evidence are summarised on the next page.
- Tables of evidence were prepared which:
 - summarise the literature identified, and
 - rate the new evidence provided by the review: from I, the highest quality, to IV, the lowest quality. In rating the evidence the Working Party was guided by NHMRC recommendations, summarised on the next page.
- QTF recommendations were reviewed in the light of this evidence, and in the absence of any further evidence, the opinion of the Technical Group, a sub-set of the Working Party. Criteria taken into account in making these recommendations were: opinion on efficacy and safety.
- The draft developed by the Technical Group was reviewed by the broader Working Party.
- The draft clinical guidelines were then sent out to a range of medical and health organisations and individuals for comment.
- Consultations on the draft clinical guidelines were undertaken with industry representatives and consumers in order to develop companion documents for claims managers in the compulsory third party insurance industry and for consumers.
- The clinical guidelines were substantially reworked in the light of public comment. Changes included:
 - providing more information about the standing of the QTF guidelines, including criticisms
 - providing more information on the basis for changes made to the QTF recommendations
 - improving the layout of the document to make it easier for primary health care practitioners to use
 - modifying some recommendations.
- The four documents were then sent to three experts for review – two reviewers overseas and one in Australia.
- Overall the comments of the reviewers were positive. Further changes made to incorporate reviewers' comments were:
 - providing more information about the limitations of the QTF guidelines
 - adding a recommendation that patients should be reassured as part of their treatment
 - recommending that psychological and psychosocial factors should be recorded as part of history taking and added as prognostic indicators
 - recommending rehabilitation programs for those unable to return immediately to their usual activities.

⁹ See Notes, page 43

- The four documents were then sent as final drafts to the MAA Advisory Council for approval.
- During the period of public comment and expert review an implementation and evaluation strategy was developed.

NHMRC methodology for review of evidence

Key characteristics of this approach:

- Clearly stated title and objectives for the review.
- Comprehensive strategy to search for studies that address the objectives of the review (relevant studies) to include unpublished as well as published studies.
- Explicit and justified criteria for the inclusion or exclusion of any study.
- Comprehensive list of all studies identified.
- Clear presentation of the characteristics of each study included and an analysis of methodological quality.
- Comprehensive list of all studies excluded and justification for exclusion.
- Clear analysis of the results of the eligible studies using statistical synthesis of data (meta-analysis), if appropriate and possible.
- Sensitivity analyses of the synthesised data if appropriate and possible.
- Structured report of the review clearly stating the aims, describing the methods and materials and reporting the results.

NHMRC rating scale for quality of evidence

Grade I

Evidence obtained from a systematic review of all relevant randomised controlled trials.

Grade II

Evidence obtained from at least one properly designed randomised controlled trial.

Grade III-1

Evidence obtained from well-designed pseudo-randomised controlled trials.

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.

Recommendations for clinical practice

The Working Party recommendations for clinical practice are presented by subject, with the original Quebec Task Force recommendation, its basis, and an explanation of any change to that recommendation.

Additional evidence located by the literature review covering 1993 to 1999 in relation to this subject is then summarised and the level of evidence provided by this research is rated.

The Technical Report, also published by the MAA, provides titles and further details of these studies.

Finally there is a justification for any changes made to the QTF recommendation.

Diagnosis of Whiplash-Associated Disorders

History taking

Working Party recommendations for clinical practice

History taking is important during all visits for the treatment of WAD patients of all Grades.

The history should include information about:

- date of birth, gender, occupation, number of dependants, marital status
- prior history of neck problems including previous whiplash
- prior history of psychological disturbance
- prior history of long-term problems in adjusting to symptoms
- current psychosocial problems, e.g. family, job-related, financial problems
- symptoms including pain, stiffness, numbness, weakness and associated extracervical symptoms — localisation, time of onset and profile of onset should be recorded for all symptoms

- circumstances of injury (sport, motor vehicle); mechanism of injury, e.g. if the head moved forwards, backwards, sideways or all of these; how the accident occurred; the position of the person in the car, i.e. passenger or driver; body position; type of vehicle involved
- results of assessments conducted using tools to measure general psychological state and pain and disability outcomes, e.g. the General Health Questionnaire (GHQ), a visual analogue pain scale or a neck disability index; examples of these are available from the MAA.

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

Quebec Task Force (QTF) recommendations for clinical practice

History taking is important during all visits for the treatment of WAD patients of all Grades.

The history should include information about:

- date of birth, gender, occupation, number of dependants and marital status
- prior history of neck problems, including previous whiplash
- symptoms including pain, stiffness, numbness, weakness and associated extracervical symptoms
- circumstances of injury (e.g. sport, motor vehicle) and
- mechanism of injury.

This minimal history should be recorded on a standard form.

Basis of QTF recommendations

Twenty studies dealing with aspects of the patient history in diagnosis of WAD were reviewed. No accepted study dealt with the value of history taking for the positive diagnosis of WAD.

These recommendations are based on the consensus of the Task Force.

Additional evidence

No additional study was identified that dealt with the value of history taking for positive diagnosis of WAD.

There are cohort studies considering prognostic indicators of WAD that are relevant to history taking (see below for details of studies). Poor outcome/delayed recovery has been associated with several variables including:

- severity of neck symptoms and radicular irritation at initial assessment (Radanov BP, 1994 and 1995)
- presence of specific symptoms such as headache; muscle pain; pain or numbness radiating from neck to arms, hands or shoulders (Radanov BP, 1994)
- history of pre-traumatic headaches or past head injury (Radanov BP, 1994 and 1995)
- initial injury reaction (sleep disturbance, nervousness) (Radanov BP, 1994)
- more initial subjective complaints and concern regarding long-term prognosis (Radanov BP, 1995)
- pre-existing osteoarthritis (Radanov BP, 1995)

- older age (Harden S et al., 1998; Hartling L et al., 1999; Smed A, 1997; Radanov BP, 1994 and 1995)
- female gender (Harden S et al., 1998; Smed A, 1997)
- not in full-time employment (Harden S et al., 1998)
- having dependants (Harden S et al., 1998)
- insurance/compensation – presence of; type of system (Cassidy D et al., 1999)¹⁰
- head rotated or inclined at time of impact (Radanov BP, 1995; Haden S et al., 1998); occupancy in truck/bus; being in head-on or perpendicular collision (Radanov BP 1995)
- pre-traumatic headaches (Radanov B P, 1994 and 1995)
- previous history of head injury (Radanov BP, 1994).

Evidence of psychosocial factors was conflicting (Radanov BP 1994 and 1995; Karlsbourg et al., 1997; Heikkila H et al., 1998). Cassidy (1999) found that the incidence rate of claims was less in a no fault scheme compared to a tort scheme.

Rating of additional evidence: III–2 for adverse prognostic indicators.

Noted that for research on prognosis a well-designed cohort study is the highest possible level of evidence.

Basis for changes to QTF recommendations

By consensus of the Working Party, reference to validated tools for measuring pain and neck disability was added in response to public comment. By consensus of the Working Party psychosocial factors (prior history of psychological disturbance, prior history of long-term problems in adjusting to symptoms and current psychosocial problems, e.g. family, job-related, financial problems) and examples of mechanism of injury were included in response to comment from an expert reviewer. As well it was stated that a standardised form “may be” used rather than “should be” used.

¹⁰ See Notes, page 43

Physical examination

Working Party recommendations for clinical practice

A focused physical examination is necessary for all patient visits. The physical examination should include at least:

- inspection
- palpation for tender points
- ROM in flexion-extension, rotation and lateral flexion
- neurological examination to assess sensorimotor function and tendon reflexes of upper and lower limbs
- assessment of associated injuries
- assessment of general medical condition as needed, including mood, affect and psychological state.
- a universal goniometer can be used to measure neck ROM, and/or a hand-held dynamometer can be used to measure strength.

Both positive and negative findings should be recorded. A standard form may be used.

QTF recommendations for clinical practice

A focused physical examination is necessary during all patient visits. The physical examination should include at least:

- inspection
- palpation for tender points
- assessment of range of motion in flexion-extension, rotation and lateral flexion
- neurological examination to assess sensorimotor function and tendon reflexes of upper and lower limbs
- assessment of associated injuries
- assessment of general medical condition, as needed.

Results of the minimal physical examination should be recorded on a standard form.

Basis of QTF recommendations

Eighteen studies dealing with aspects of physical examination of WAD patients were reviewed. No accepted study dealt with the value of physical examination for the positive diagnosis of WAD.

These recommendations are based on the consensus of the Task Force.

Additional evidence

No accepted additional study was identified that dealt with the value of physical examination for the positive diagnosis of WAD.

There are cohort studies considering prognostic indicators of WAD that are relevant to physical examination. One cohort study of 50 patients presenting to an accident and emergency department found that a diminished range of neck movements and poor psychological state, as measured by the General Health Questionnaire (GHQ 28), at three months was predictive of intrusive or disability symptoms at two years (Gargan M et al., 1997). In one seven-year cohort study of 2,627 subjects, authors concluded that patients presenting with several specific musculoskeletal (neck pain on palpation) and neurological signs and symptoms may have a longer recovery period (Suissa S, 1999).

Rating of additional evidence: IV for tenderness to palpation, neurological signs, ROM and psychological state.

Basis for changes to QTF recommendations

“Mood, affect and psychological state” was added to physical examination on the basis of level IV evidence. In response to public comment the Working Party agreed to include reference to the use of goniometers and dynamometers. As well it was stated that a standard form “may be” used rather than “should be” used.

The addition of the phrase “both positive and negative findings” before “should be recorded” was based on the comments of an external reviewer and Working Party consensus.

Plain radiographs

Working Party recommendations for clinical practice

WAD Grade I

WAD Grade I patients who are conscious, show no signs of alcohol-related impairment, are not obtunded by narcotics or other drugs, who show no physical signs on examination, have not been involved in a high speed or high impact injury, or in a collision where another occupant has been killed, require no plain radiograph on presentation.

WAD Grade II

In patients presenting as WAD Grade II, plain X-rays of the cervical spine should be taken if the severity of the signs on examination suggest the possibility of a bony injury, or if their level of consciousness, or pain sensation is impaired by brain injury or alcohol or other drugs, or if they have been involved in high speed or high impact injury, or in a collision where another occupant has been killed. Flexion and extension views may occasionally be indicated.

WAD Grade III

All patients who present with WAD Grade III should have baseline radiological investigation of the cervical spine including anterior-posterior, lateral and open-mouthed views. All seven cervical vertebral and the C7-T1 disc should be well visualised. Flexion-extension views may occasionally be indicated.

QTF recommendations for clinical practice

All patients who present with WAD Grades II and III should have baseline radiological examination of the cervical spine. This examination should include anteroposterior, lateral and open-mouth views. All seven cervical vertebral and the C7-T1 disc space should be well visualised.

In patients with WAD Grades II or III, flexion-extension views may occasionally be indicated.

WAD Grade I patients who are conscious, show no evidence of alcohol-related impairment, are not obtunded by narcotics or other drugs, and who show no physical signs on examination, require no plain radiographs on presentation.

Basis of QTF recommendations

Sixty-one studies dealing with plain radiographs in WAD patients were reviewed. No accepted study dealt with the value of plain radiographs for the diagnosis of WAD.

Plain radiographs are not useful for the diagnosis of WAD Grades I, II and III. Radiographs are needed to diagnose bony lesions of WAD Grade IV. There is suggestion in the literature that patients with WAD Grade I and no other injury, with no midline cervical pain, with normal alertness and attention, and who are not obtunded by narcotics, alcohol, or other drugs, may not need radiographs. The small sample size of these studies and the resulting uncertainty around estimates of false negative and positive rates made it impossible to make recommendations about plain radiographs on the basis of scientific data.

Recommendations regarding plain radiographs in diagnosis of WAD are based on the consensus of the Task Force.

Additional evidence

No accepted additional study was identified that dealt with the value of plain radiographs for the positive diagnosis of WAD.

With regard to usefulness of plain radiographs, there was one observational study of 669 subjects where authors concluded that in the absence of very high force/speed impacts, clinicians should feel safe in assessing patients involved in rear-end MVCs without the use of X-rays (Brison R et al., 1999). A cohort study of 117 subjects identified that poor outcome was associated with more signs of pre-existing cervical spine osteoarthritis on initial X-ray (Radanov BP 1995). In another cohort study of 100 subjects authors concluded that kyphotic angle seen on functional views does not indicate soft tissue injury (Ronnen HR et al., 1996).

Recommendations for clinical practice (continued)

Plain radiographs (continued)

Rating of additional evidence: IV for a conservative approach to radiological investigation.

Basis for changes to QTF recommendations

The recommendation was re-organised for clarity. The requirement for plain X-rays of the cervical spine for WAD Grade II was downgraded to specifying the circumstances in which this would be required. The basis for this was level IV evidence. The requirements for radiological investigation for high speed, high impact collisions, or those where another occupant has been killed, were added for consistency with the Royal Australasian College of Surgeons guidelines for trauma management.

Specialised imaging techniques

Working Party recommendations for clinical practice

WAD Grades I and II

There is no role for specialised imaging techniques (e.g. tomography, CAT scan, 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, e.g. nerve root compression or suspected spinal cord injury, on the advice of a medical or surgical specialist.

QTF recommendations for clinical practice

There is no role for specialised imaging techniques (tomography, CT scan, MRI, myelography, discography, scinigraphy, angiography...) in WAD Grades I and II patients. Specialised imaging techniques might be used in selected WAD Grade III patients based on the advice of an accredited medical or surgical specialist.

Basis of QTF recommendations

One study dealing with tomograms, 10 studies of CT scan, five studies of MRI, one study of myelography, one study of discography, three studies of scintigraphy, and no studies of anigraphy were reviewed.

No accepted studies dealt with CT scans in WAD patients; one study dealt with MRI, but did not provide any evidence that this technique might be useful for the diagnosis of WAD.

Specialised imaging techniques are not useful for the positive diagnosis of WAD Grades I to III.

Specialised imaging techniques might be necessary, in some instances, to make the positive diagnosis of WAD Grade IV.

Therefore, these recommendations are based on Task Force consensus.

Additional evidence

One two-year cohort study of 52 subjects suggested no benefit in using MRI for common neck hyperextension-flexion injuries (Borchgrevink GE et al., 1995). A cohort study of 43 subjects over seven months reported correlation between MRI and clinical findings was poor (Karlsborg et al., 1997). In an observational study of 39 subjects authors concluded that relationship between MRI findings and the clinical symptoms and signs is poor (Pettersson K et al., 1998). An observational study of 100 acute whiplash injury patients suggested that there is no role for MRI in routine work-up of acute whiplash injury when patients have normal radiographs and/or no evidence of a neurological deficit (Ronnen HR et al., 1996).

In conclusion there is evidence (Level IV) to indicate that MRIs are not useful in predicting outcomes in WAD Grades I to III.

Rating of additional evidence: IV

Basis for changes to QTF recommendations

The recommendations were reorganised for clarity. Additional information was provided on when special imaging techniques might be appropriate to improve usefulness to clinicians. Examples given were based on consensus of the Working Party.

Specialised examinations

Working Party recommendations for clinical practice

Considered by Working Party as not relevant to management of WAD Grades I to III. Examples include EEG, EMG and specialised peripheral neural tests.

QTF recommendations for clinical practice

Indications for evoked potentials (SSEP) in WAD Grade III patients should be based on the advice of an accredited medical or surgical specialist.

Indications for selective nerve root blocks and of EMG in WAD Grades II and III patients should be based on the advice of a medical or surgical specialist.

Indications for other specialised examinations in WAD patients should be based on the advice of an accredited medical or surgical specialist.

Basis of QTF recommendations

The QTF examined one study dealing with evoked potentials (SSEP). No accepted study dealt with evoked potential in WAD.

The QTF examined four studies of selective nerve root blocks and two studies of EMG. There were no accepted studies of these examinations in WAD patients.

The QTF examined five studies of neurobehavioural tests, six studies of EEG, one study of ENG, two studies of other special audiology or visual examinations. There were no accepted studies of any of these special examinations in patients with WAD.

Therefore all recommendations regarding these specialised examinations are based on the consensus of the Task Force.

Additional evidence

Not included. Not relevant to management of WAD Grades I–III.

Basis for changes to QTF recommendations

Considered by Working Party as not relevant to management of WAD Grades I–III. It was agreed to provide examples of specialised examinations – EEG, EMG, and specialised peripheral neural tests.

Prognosis of Whiplash-Associated Disorders

Symptoms

Working Party recommendations for clinical practice

Poor outcome has been associated with:

- severity of neck symptoms and radicular irritation at initial assessment
- presence of specific symptoms such as headache; muscle pain; pain or numbness radiating from neck to arms, hands or shoulders
- history of pre-traumatic headaches
- previous history of head injury
- initial injury reaction (sleep disturbance, nervousness)
- more initial subjective complaints and concern regarding long-term prognosis
- pre-existing osteoarthritis
- head rotated or inclined at time of impact; occupancy in truck/bus; being in head-on or perpendicular collision.

These yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

QTF findings

Three accepted studies provide information on symptoms that are useful for predicting recovery. These studies did not cover similar symptoms and outcome measures. Similarly, only one accepted study provided useful information about signs of prognostic value. Therefore, the QTF recommendations are based on both evidence and the Task Force consensus.

Additional evidence

See 'History taking' page 18.

Basis for changes to QTF recommendation

Level III-2 evidence for adverse prognostic indicators (yellow flags). Working Party consensus was the basis for adding action following identification of yellow flag/s.

Radiological findings

Working Party recommendations for clinical practice

Poor outcome may be associated with pre-existing osteoarthritis on the initial cervical radiograph.

This yellow flag factor should alert the practitioner to the potential need for more intensive treatment or earlier referral.

QTF findings

Although several accepted studies addressed radiological findings, none of the results are definitive.

Additional evidence

One study showed that presence of pre-existing osteoarthritis on the initial cervical radiograph was a poor prognostic indicator (Radanov BP, 1995).

Rating of additional evidence: IV

Basis for changes to QTF recommendations

Level IV evidence for adverse prognostic indicator (yellow flag). Consensus of Working Party for action following identification of yellow flag.

Psychosocial factors

Working Party recommendations for clinical practice

Poor outcome may be associated with:

- prior history of psychological disturbance – these disturbances may be indicative of a proneness to emotional/affective problems and somatisation reactions, which are frequently based on affective disorders. Somatisation reaction in the course of WAD may establish a basis for symptom augmentation, if not identified early, this is frequently not treated properly and may lead to delayed recovery
- prior history of long-term problems in adjusting to symptoms of an injury or illness, e.g. coping mechanisms
- current psychosocial problems, e.g. family, job-related, financial problems.

These yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

QTF recommendations for clinical practice

Not included.

Basis of QTF recommendations

Not included.

Additional evidence

No additional evidence was found concerning the independent effect of reassurance on WAD.

Basis for changes to QTF recommendations

Consensus of the Working Party members based on comments of expert reviewer.

Socio-demographic factors

Working Party recommendations for clinical practice

In addition to the fact that management of this condition, by definition, is taking place in the context of compensation (recognised as an adverse prognostic indicator), other socio-demographic indicators associated with poor outcome are:

- older age
- female gender
- not in full-time employment
- having dependants

These yellow flag factors should alert the practitioner to the potential need for more intensive treatment or earlier referral.

QTF findings

Of the 11 studies accepted, two provided data on potential predictive factors.

QTF recommendation is based on both evidence and the Task Force consensus.

Additional evidence

See 'History taking' page 18.

Basis for changes to QTF recommendations

Level III-2 evidence for adverse prognostic indicators (yellow flags). Consensus by Working Party for action following identification of yellow flag/s.

Treatment of Whiplash-Associated Disorders

Recommended

Reassure

Working Party recommendations for clinical practice

The practitioner should reassure the patient — by acknowledging that the patient is hurt and has symptoms, and advising that:

- symptoms are a normal reaction to being hurt,
- it is important to focus on improvements in function, and
- maintaining life activities is an important factor in getting better.

QTF recommendations for clinical practice

Not included.

Basis of QTF recommendations

Not included.

Additional evidence

No additional evidence was found concerning the independent effect of reassurance on WAD.

Basis for changes to QTF recommendations

Consensus of the Working Party members.

Act as usual

Working Party recommendations for clinical practice

Act as usual — should be used as a treatment for WAD with or without pain relief as per recommendations regarding pharmacology — see page 28.

QTF recommendations for clinical practice

Not included.

Basis of QTF recommendations

Not included.

Additional evidence

One RCT of 201 WAD subjects suggested a significantly better outcome for the 'act as usual group' (self-training and a five-day prescription for NSAIDs) in terms of subjective symptoms in comparison to the other group who wore a collar and were put on sick leave for 14 days (Borchgrevink GE et al., 1995).

Rating of additional evidence: II for act as usual advice plus self-training and NSAIDs.

Basis for changes to QTF recommendations

Level II evidence.

Miscellaneous interventions

- prescribed function, work alteration, acupuncture and relaxation techniques

Working Party recommendations for clinical practice

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

QTF recommendations for clinical practice

Consensus basis:

- WAD Grade I – prescribed function, i.e. immediate return to usual activity, is recommended. Neck school, work alteration, acupuncture and relaxation techniques are not indicated for Grade I.
- WAD Grades II and III – prescribed function, i.e. return to usual activity, is encouraged as soon as possible. Neck school, temporary work alteration, acupuncture and relaxation techniques are optional adjuncts for symptom duration more than three weeks.

Basis of QTF recommendations

No additional evidence was found concerning these treatments.

Additional evidence

No additional evidence was found regarding use of these treatments in acute WAD.

One expert reviewer referred to a study of patients with minor head injuries (many of whom have similar problems to whiplash patients)¹¹ which describes the importance of gradual return to regular activities. The strategy described in the study was ‘individually tailored’ and mainly considered the patients’ effective level of functioning. It showed considerable advantages in long-term outcome when compared to arbitrary schemes.

¹¹ See Notes, page 43

Basis for changes to QTF recommendations

Consensus of the Working Party members was based on comments of expert reviewer. Acupuncture is addressed in separate recommendation on page 32.

Manual and physical therapies

- exercise

Working Party recommendations for clinical practice

ROM (range of movement) exercises, muscle re-education and low load isometric exercise to restore appropriate muscle control and support to the cervical region, should be implemented immediately, if necessary in combination with intermittent rest when pain is severe. Clinical judgment is crucial if symptoms are aggravated.

QTF recommendations for clinical practice

Evidence based – there is insufficient evidence assessing the independent contribution of exercise.

Consensus based – ROM exercises should be implemented immediately, in combination if necessary with intermittent rest, when pain is severe. Clinical judgment is crucial if symptoms are aggravated.

Basis of QTF recommendations

No evidence was found regarding independent benefit of exercise in WAD.

Prescription of home exercise combined with activation advice, was found to have short- and long-term benefit for WAD presenting within four days of injury.

Additional evidence

No additional evidence was found regarding independent benefit of exercise in WAD.

Manual and physical therapies - exercise (continued)

A Cochrane Review (1998) on physical medicine modalities for management of mechanical neck disorders concluded there was lack of scientific evidence to determine the efficacy of exercise (Gross AR et al., 1998).

Basis for changes to QTF recommendations

“Muscle re-education and low load isometric exercise” were added to the QTF recommendation relating to ROM exercise by consensus of the Working Party.

Pharmacology

Working Party recommendations for clinical practice

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 for the short term. Their use should be limited to three weeks and should be weighed against possible side effects.

Opioid analgesics are not recommended for WAD Grades I and II. They may be prescribed for pain relief in acute severe WAD Grade III for a limited period of time.

Muscle relaxants should not generally be used in acute phase WAD.

Psychopharmacologic drugs are not recommended in WAD of any duration or grade; however, they may be used occasionally for symptoms such as insomnia or tension or as an adjunct to activating interventions in the acute phase (less than three months' duration).

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

QTF recommendations for clinical practice

Consensus based – no medications should be prescribed for WAD Grade I. Non-narcotic analgesics and NSAIDs can be used to alleviate pain for the short term in WAD Grades II and III. Their use should not be continued for more than three weeks, and should be weighed against possible side effects. Narcotic analgesics should not be prescribed for WAD Grades I and II. Occasionally they may be prescribed for pain relief in acute severe WAD Grade III, but only for a limited period of time. Although commonly prescribed, muscle relaxants should not generally be used in the acute phase of WAD.

The psychopharmacologic drugs are not recommended for use on a general basis in WAD of any duration or Grade, but they may be used occasionally for symptoms such as insomnia or tension, as an adjunct to activating interventions in the acute phase (less than three months duration).

For chronic pain in WAD (more than three months' duration), the minor tranquillisers and antidepressants may be used.

Basis of QTF recommendations

No evidence was found regarding the benefit of narcotic analgesics or psychopharmacologics in WAD. No studies were accepted regarding the benefit of muscle relaxants in WAD.

Analgesics or NSAIDs in combination with other treatment modalities were found to be of short-term benefit in WAD Grades I and II presenting within three days of injury (see activation, passive modalities).

Additional evidence

A RCT of WAD Grades I and II given Tenoxicam 20 mg within 72 hours of injury had better ROM and less pain at 15 days compared to control (Gunzburg R, 1999).

A small RCT of WAD Grades II and III subjects suggested those treated with high dose 24-hour methylprednisolone infusion (as per acute spinal cord trauma protocol) had less sick leave compared to controls (Pettersson K & Toolanen G, 1998).

Rating of additional evidence: II for use of Tenoxicam and for methylprednisolone infusion.

Basis for changes to QTF recommendations

WAD Grade I – prescription of simple analgesics was included by consensus of the Working Party.

WAD Grades II and III – unchanged but reorganised. Working Party preferred the term “opioid” to “narcotic”.

“Occasionally” was deleted for consistency with NHMRC Guidelines for the management of pain.¹²

The Working Party did not consider the use of high dose IV methylprednisilone infusion, given the potential adverse effects, could be justified on the basis of a small RCT.

Recommendations regarding the pharmacological management of chronic pain are not included as this is outside the scope of the guidelines.

¹² See Notes, page 43

Treatment of Whiplash-Associated Disorders

Recommended under certain circumstances

Manual and physical therapies - postural advice

Working Party recommendations for clinical practice

Postural advice can be given in combination with manual and physical therapies and exercise in WAD.

QTF recommendations for clinical practice

Consensus based – postural advice can be given in combination with activation in WAD.

Basis of QTF recommendations

No evidence was found concerning the independent therapeutic effect of postural alignment in WAD.

Advice on posture, combined with advice on activation for WAD presenting within four days of injury, has short- and long-term benefit. When combined with physiotherapy, soft collar and analgesics, there was only short-term benefit.

Additional evidence

No additional evidence was found concerning the independent therapeutic effect of postural alignment in WAD.

In one RCT, Mealy et al., divided subjects into three groups:

- Group 1 = analgesics plus rest;
- Group 2 = analgesics plus physical modalities, ROM exercises and mobilisation;
- Group 3 = analgesics plus collar plus physiotherapy advice on mobilisation, posture and ROM exercises.

At two years, Group 3 had fewer symptoms. At two years, Group 3 had less pain than Groups 1 and 2 (in Hurwitz ET et al., 1996).

Rating of additional evidence: II for the effect of physical modalities, ROM exercise, mobilisation; and physiotherapist advice on posture and ROM exercise.

Basis for changes to QTF recommendations

Recommendation unchanged other than replacing the term “activation” with “manual and physical therapies and exercise”.

Manual and physical therapies - mobilisation

Working Party recommendations for clinical practice

Mobilisation can be used for WAD, providing there is evidence of continuing improvement with the treatment. If mobilisation is used it should be commenced early, within the first seven days. This technique should be restricted to registered health practitioners trained in the specific methods and according to current professional standards.

QTF recommendations for clinical practice

Evidence based – there is weak cumulative evidence to support their combined use in WAD.

Consensus based – a regimen of mobilisation can be used for WAD.

Basis of QTF recommendations

No evidence was found concerning the independent effect of mobilisation on WAD.

Manual mobilisation combined with other physiotherapeutic interventions in WAD presenting within four days of injury and in neck pain syndromes of indeterminate duration, was shown to have short-term benefit; long-term results are no better than those for combined collar, rest and analgesics.

Additional evidence

No additional evidence was found concerning the independent effect of mobilisation on WAD.

A major systematic review of manipulation and mobilisation of cervical spine for treatment of mechanical neck pain and headache published in 1996 concluded that these modalities provide short-term benefit and that more high quality research is required (Hurwitz ET et al., 1996). Three RCTs reviewed found that mobilisation for acute neck pain provided short-term benefit (McKinney LA, 1989; McKinney LA et al., 1989; Mealy K et al., 1986).

Mealy K et al., divided subjects into three groups:

- Group 1 = analgesics plus rest;
- Group 2 = analgesics plus physical modalities, ROM exercises and mobilisation;
- Group 3 = analgesics plus collar plus physiotherapy advice on mobilisation, posture and ROM exercises.

At two years, Group 3 had fewer symptoms. At two years, Group 3 had less pain than Groups 1 and 2.

Rating of additional evidence: II for short-term benefit of mobilisation.

Basis for changes to QTF recommendations

Level II evidence to support short-term benefit of mobilisation for acute neck pain.

- manipulation

Working Party recommendations for clinical practice

A regime of manipulation can be used for WAD, providing there is evidence of continuing improvement with the treatment. This technique should be restricted to registered health practitioners trained in the specific methods and according to current professional standards. Complications from manipulation are rare, but include stroke and death. WAD Grade III (decreased or absent deep tendon reflexes and/or weakness and sensory deficit) is a relative contra-indication for manipulation.

QTF recommendations for clinical practice

Consensus based – a short-term regime of manipulation can be used for WAD. This technique should be restricted to registered health practitioners trained in the specific methods and according to current professional standards.

Basis of QTF recommendations

No evidence was found addressing the short- or long-term benefits of a complete course of manipulative therapy on WAD.

The immediate effect on pain and ROM of a single manipulation is similar to that of a single mobilisation in neck pain of varying duration. There is insufficient evidence assessing the independent contribution of this technique.

Additional evidence

No additional evidence was found concerning the independent effect of manipulation on WAD.

A major systematic review of manipulation and mobilisation of cervical spine for treatment of mechanical neck pain and headache published in 1996 concluded that these modalities provide short-term benefit and that more high quality research is required (Hurwitz ET et al., 1996). No RCTs were found examining manipulation for acute neck pain.

Basis for changes to QTF recommendations

Consensus of Working Party members.

- traction

Working Party recommendations for clinical practice

A regime of traction can be used in combination with other mobilising modalities in WAD providing there is evidence of continuing improvement with the treatment.

- traction (continued)

QTF recommendations for clinical practice

Evidence based – there is weak evidence that traction is of short-term benefit.

Consensus based – a regime of traction can be used in combination with other mobilising interventions in WAD.

Basis of QTF recommendations

No evidence was found addressing independent effects of traction in WAD.

Traction in combination with other physiotherapeutic interventions was found to be of short-term benefit in WAD presenting within four days of injury, and in neck pain syndromes of indeterminate duration; there was no long-term (two year) benefit for WAD presenting within four days of injury.

In a small RCT, there were no statistically significant differences between static, intermittent and manual traction in combination with other physiotherapeutic interventions in neck pain syndromes of indeterminate duration.

Additional evidence

No additional evidence was found addressing independent effects of traction in WAD.

A Cochrane Review (1998) on physical medicine modalities for mechanical neck disorders concluded that lack of scientific testing prevented determination of efficacy of traction (Gross AR et al., 1998). An earlier systematic review on traction for neck and back pain reported there was no conclusive evidence that traction was an effective therapy for mechanical neck and back pain (Van der Heijden et al., 1995).

Basis for changes to QTF recommendations

Given the lack of evidence on the effectiveness of traction, by consensus the Working Party agreed that evidence of improvement in individual cases would be required to justify ongoing use of traction.

Multimodal

Working Party recommendations for clinical practice

A multimodal treatment program can be used for WAD which has not settled within four to six weeks providing there is evidence of continuing improvement with the treatment.

QTF recommendations for clinical practice

Not included.

Basis of QTF recommendations

Not included.

Additional evidence

One RCT of 60 WAD patients suggested improved pain, disability and return to work for multimodal treatment group compared to control group that received physical modalities alone (Provenciali L et al., 1996).

Rating of additional evidence: II for multimodal treatment.

Basis for changes to QTF recommendations

Level II evidence to support use of this treatment. Recommendations regarding appropriate time to commence and the need for monitoring were based on Working Party consensus.

Acupuncture

Working Party recommendations for clinical practice

A regime for acupuncture can be used in WAD providing there is evidence of continuing improvement with the treatment.

QTF recommendations for clinical practice

WAD Grade I

Acupuncture is not recommended for WAD Grade I (see also page 27 Miscellaneous interventions).

WAD Grade II and III

Prescribed function, i.e. return to usual activity, is encouraged as soon as possible, temporary work alteration, relaxation techniques and **acupuncture** are optional adjuncts for symptom duration greater than three weeks.

Basis of QTF recommendations

One accepted RCT was found for chronic neck pain (daily neck pain with or without radiation more than six months). The study suggested that acupuncture and NSAIDs or analgesics were not better than sham TENS with NSAIDs or analgesics for relief of pain.

Additional evidence

No additional evidence was found independently examining use of acupuncture in acute WAD.

A Cochrane Review (1998) on use of acupuncture in neck disorders concluded there was insufficient quality research to comment on effectiveness of acupuncture (Gross AR et al., 1998).

Basis for changes to QTF recommendations

Given the lack of evidence on the effectiveness of acupuncture for WAD, by consensus the Working Party agreed that acupuncture should only be continued if there was evidence of improvement in individual cases.

Passive modalities/electrotherapies

- heat, ice, massage, TENS, PEMT, electrical stimulation, ultrasound, laser, short-wave diathermy

Working Party recommendations for clinical practice

WAD Grade I

Although active PEMT in a soft collar was better than sham PEMT in a soft collar, PEMT is not recommended because it involves wearing a soft collar eight hours a 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.

QTF recommendations for clinical practice

Consensus based:

- WAD Grade I: although active PEMT in a soft collar was better than sham PEMT in a soft collar, PEMT is not recommended because it involves wearing a soft collar eight hours a day for 12 weeks.
- WAD Grades II and III: the other professionally administered passive modalities/electrotherapies are optional adjuncts during the first three weeks to activating interventions with emphasis on return as soon as possible to usual activity.

Basis of QTF recommendations

There were virtually no accepted studies addressing the benefit of these modalities.

Two small RCTs in WAD Grades I and II presenting less than 72 hours, and in neck pain not related to WAD more than eight weeks' duration, suggest a benefit from PEMT compared with sham PEMT in pain control

Recommendations for clinical practice (continued)

Passive modalities/electrotherapies (continued)

when combined with NSAIDs, activating advice and soft collar.

All modalities except laser were possible adjuncts to mobilising interventions, which had short-term benefit equivalent to activation advice.

There were no accepted studies in which the benefits of laser were addressed.

Additional evidence

No additional accepted studies independently assessing the use of these modalities in acute WAD Grade I to III were found.

Basis for changes to QTF recommendations

The only change is the use of the terms “manual and physical therapies and exercise” instead of “activating interventions”.

Immobilisation - prescribed rest

Working Party recommendations for clinical practice

WAD Grade I

Rest should not be prescribed for WAD Grade I.

WAD Grades II and III

Rest for more than four days should not be prescribed for WAD Grades II and III.

QTF recommendations for clinical practice

Evidence based – there is weak cumulative evidence to restrict prescribed rest to short periods of time.

Consensus based – rest should not be prescribed for WAD Grade I. Rest for more than four days should not be prescribed for WAD Grades II and III.

Basis of QTF recommendations

No evidence was found concerning independent benefit of prescribed rest in WAD.

Prescribed rest for 10 to 14 days in combination with soft collars and analgesia in WAD was associated with delayed recovery.

Additional evidence

In a RCT of 201 acute whiplash subjects it was demonstrated that an ‘act as usual’ group had better outcomes in terms of subjective symptoms compared to subjects managed with 14 days’ sick leave and immobilisation with soft neck collar (Borchgrevink GE, 1998).

Rating of additional evidence: II

Basis for changes to QTF recommendations

Recommendation unchanged.

Comment: the additional evidence referred to above would suggest that for many cases “act as usual” should be recommended, and therefore an additional recommendation has been added to this effect, see page 26.

- collars

Working Party recommendations for clinical practice

WAD Grade I

Collars should not be prescribed.

WAD Grades II and III

If prescribed for WAD Grades II or III, they should not be used for more than 72 hours.

QTF recommendations for clinical practice

Evidence based – there is weak cumulative evidence to restrict their use to short periods of time.

Consensus based – collars should not be prescribed for WAD Grade I. If prescribed for WAD Grades II or III, they should be restricted to no more than 72 hours.

Basis of QTF recommendations

No evidence was found addressing independent benefit of collars in WAD.

Soft collars in combination with prescribed rest and analgesics are associated with delayed recovery (pain and ROM) in WAD presenting within four days of injury.

Soft collars do not restrict ROM in non-injured subjects.

Additional evidence

A RCT of 196 acute whiplash subjects indicated that use of soft collars did not alter the duration or pain in whiplash patients (Gennis P et al., 1996).

In a RCT of 201 acute whiplash subjects it was demonstrated that an 'act as usual' group had better outcomes in terms of subjective symptoms compared to subjects managed with 14 days' sick leave and immobilisation with soft neck collar (Borchgrevink GE, 1998). A RCT of 220 acute whiplash subjects suggested that subjects immobilised in collar for four weeks followed up by a defined exercise period did better than controls and better than a group managed with early defined exercise (Gurumoorthy D, 1999).

Rating of additional evidence: II

Basis for changes to QTF recommendations

Recommendation unchanged.

Surgical treatment

Working Party recommendations for clinical practice

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

QTF recommendations for clinical practice

Consensus based – There are no indications for surgical intervention in WAD Grades I and II. Surgery is to be restricted to the rare WAD Grade III with persistent arm pain that does not respond to conservative management or with rapidly progressing neurologic deficit.

Basis of QTF recommendations

No studies were accepted concerning the benefit of disc surgery, nerve block or rhizolysis for any Grade or duration in WAD.

Additional evidence

No additional accepted study was identified regarding the benefits of surgery, nerve block or rhizolysis in acute management of WAD Grades I to III.

Basis for changes to QTF recommendations

The recommendation has been changed by providing an example of a case which may benefit from surgery.

Treatment of Whiplash-Associated Disorders

Not recommended

Immobilisation - cervical pillows

Working Party recommendations for clinical practice

Cervical pillows are not recommended.

QTF recommendations for clinical practice

Consensus based – cervical pillows are not required.

Basis of QTF recommendations

No evidence was found addressing the therapeutic effects of cervical pillows in WAD.

Additional evidence

No additional evidence was found.

Basis for changes to QTF recommendations

Recommendation unchanged.

Manual and physical therapies - spray and stretch

Working Party recommendations for clinical practice

Spray and stretch is not recommended.

QTF recommendations for clinical practice

Consensus based – Spray and stretch is not recommended.

Basis of QTF recommendations

No evidence was found concerning the independent therapeutic effect of spray and stretch in WAD.

Additional evidence

No additional evidence was found concerning the independent therapeutic effect of spray and stretch in WAD.

Basis for changes to QTF recommendations

Recommendation unchanged.

Injections - steroid injections

Working Party recommendations for clinical practice

Intra-articular steroid injection cannot be recommended for WAD. Epidural steroid injections should not be used for WAD Grades I or II. Occasionally, WAD Grade III with unresolved radicular pain of more than one month might benefit from epidural steroid injections.

There is no indication for steroid trigger point injection in the 'acute' phase (less than three weeks). Because harmful side effects of repeated steroid use have been reported, steroid trigger point injections should not be used unless their benefit in WAD is shown in valid RCTs. Intrathecal steroid injections carry such risk of serious morbidity that they should be avoided in all grades of WAD.

QTF recommendations for clinical practice

Consensus based – intra-articular steroid injections are not recommended for WAD. Epidural steroid injections are not recommended for WAD Grades I or II. Occasionally, WAD Grade III with unresolved radicular pain of more than one month might benefit from epidural steroid injections.

There is no indication for steroid trigger point injection in the ‘acute’ phase (less than three weeks). Because harmful side effects of repeated steroid use have been reported, steroid trigger point injections should not be used unless their benefit in WAD is shown in valid RCTs. Intrathecal steroid injections carry such risk of serious morbidity that they should be avoided in all Grades of WAD.

Basis of QTF recommendations

One accepted study showed no benefit of intra-articular steroid injections in WAD greater than three months.

No accepted studies were found concerning the benefit of epidural or intrathecal steroid injections in WAD. No additional evidence was found concerning trigger point steroid injections in WAD.

Additional evidence

No accepted studies were found concerning the acute treatment of WAD Grades I to III with epidural or intrathecal steroid injections or concerning injection of trigger points.

Basis for changes to QTF recommendations

Recommendation unchanged.

Miscellaneous interventions - magnetic necklaces

Working Party recommendations for clinical practice

Magnetic necklaces are not recommended.

QTF recommendations for clinical practice

Consensus based – magnetic necklaces are not recommended.

Basis of QTF recommendations

An accepted RCT indicated that the magnetic necklace is no better than placebo for neck pain of duration greater than one year. No other

evidence was found concerning the effectiveness of the magnetic necklace.

Additional evidence

No additional evidence assessing the use of magnetic necklaces in treatment of acute WAD Grades I to III was identified.

Basis for changes to QTF recommendations

Recommendation unchanged.

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

Working Party recommendations for clinical practice

Pilates, Feldenkrais, Alexander Technique, massage and homeopathy are not recommended.

QTF recommendations for clinical practice

Consensus based – there is no reason for a practitioner to prescribe any of these treatments.

Basis of QTF recommendations

No evidence was found concerning these treatments.

Additional evidence

No additional evidence independently assessing use of any of these modalities in acute WAD was identified.

Basis for changes to QTF recommendations

The wording of the recommendation was changed for consistency. The Working Party could not justify recommending any of these in the treatment of acute WAD.

Treatment of Whiplash-Associated Disorders

Considered not relevant to treatment of acute WAD Grades I, II or III

Injections **- sterile water injections**

Working Party recommendations for clinical practice

Not included. Not relevant to management of acute WAD Grades I to III.

QTF recommendations for clinical practice

Consensus based – sterile water subcutaneous trigger point injections can be used for WAD Grade II where trigger points are present as an optional adjunct to activating interventions with emphasis on return to usual activities.

Basis of QTF recommendations

This recommendation was based on one accepted RCT from a WAD Grade II patient with neck and shoulder pain four to six years after injury that suggested a sustained small benefit of subcutaneous sterile water injections.

Additional evidence

Not included. Not relevant to management of acute WAD Grades I to III.

Basis for changes to QTF recommendations

Not included. Not relevant to management of acute WAD Grade I to III.

Injections **- local anaesthetic nerve blocks**

Working Party recommendations for clinical practice

Not included. Not relevant to management of acute WAD Grades I to III.

QTF recommendations for clinical practice

Not included.

Basis of QTF recommendations

Not included.

Additional evidence

Not included. Not relevant to management of acute WAD Grades I to III.

Basis of change to QTF recommendations

Not included. Not relevant to management of acute WAD Grades I to III.

The Working Party

Thanks go to 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 much of the health burden from Whiplash-Associated Disorders.

Name	Occupation	Association
Tina Bidese	Senior Rehabilitation Advisor	Allianz General Insurance Insurance Council of Australia
Dr Stephen Buckley (Chair)	Rehabilitation Physician	Australasian Faculty of Rehabilitation Medicine Motor Accidents Council
A/Prof. Dr Ian Cameron*	Rehabilitation Physician	Faculty of Medicine, University of Sydney
Dr Louise Crowle*/ Sarah Evans	Researcher/Consultant	NE&A Pty Ltd/PWC
Dr Michael Eagleton	General Surgeon	Australasian Association of Surgeons
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Mary Hawkins/Anna Bray	Workplace Injury Management Branch	WorkCover Authority NSW
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The Working Party (continued)

Name	Occupation	Association
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Maz Thompson (one meeting only)	Consumer Representative	Consumer Representative
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The MAA is also grateful to those who provided comment on the draft guidelines, some of which was quite critical, and led to a significant re-working of the clinical guidelines. The organisations and individuals from whom comment was received are listed in the Technical Report.

Thanks also to three expert reviewers who made final comments.

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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.

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.

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.

Multi-disciplinary 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 health care team should hold regular meetings concerning individual treatment outcomes and evaluate overall program effectiveness.

Multimodal treatment

Management that includes simultaneous application of treatment modalities including relaxation training, manual and physical therapies, exercise, postural training and psychological support.

MVA

Motor vehicle accident.

MVC

Motor vehicle collision.

NSAIDs

Non-steroidal anti-inflammatory drug(s).

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, e.g. walking.

Prescribed rest

Recommendation of 'rest' that may include avoidance of some activities of daily living.

QTF

Quebec Task Force.

Glossary (continued)

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.

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.

Yellow flags

Condition in which adverse prognostic indicators have been identified. 'Yellow flags' is a term developed in the area of musculoskeletal medicine to describe adverse prognostic indicators. The presence of yellow flag factors indicates the potential need for more complex management.

Notes

- 1 Scientific Monograph of the QTF on Whiplash-Associated Disorders, *Redefining “Whiplash” and Its Management*, Spine, 1995, Supplement Vol 20 Num 85.
- 2 See for example Teasall, RW et al., *Limitations of the QTF on Whiplash-Associated Disorders*, AAPM&R 61st Annual Assembly and 13th World Congress of the International Federation of Physical Medicine and Rehabilitation, November 1999; and Freeman M, Croft A, and Rossignol A, “*Whiplash-associated Disorders: Redefining whiplash and its management*” by the QTF. Spine; 1998, 23(9): 1043–1049.
- 3 See for example Cassidy, D et al., *The QTF on Whiplash-Associated Disorders – Impact and Update*, AAPM&R 61st Annual Assembly and 13th World Congress of the International Federation of Physical Medicine and Rehabilitation, November 1999.
- 4 ‘Yellow flags’ is a term developed in the area of musculoskeletal medicine to describe adverse prognostic indicators. The identification of yellow flags indicates the potential need for more complex management.
- 5 To find out more about practitioner registration visit the NSW Department of Health web site: <http://www.health.nsw.gov.au>.
- 6 Scientific Monograph of the QTF on Whiplash-Associated Disorders, *Redefining “Whiplash” and Its Management*, Spine, 1995, Supplement Vol 20 Num 85.
- 7 Although the term ‘whiplash injury’ was included in the QTF definition, this has been excluded as it is not concise and confuses cause and effect.
- 8 Arm pain on its own is not sufficient for a diagnosis of WAD Grade III.
- 9 National Health and Medical Research Council, *A guide to the development, implementation and evaluation of clinical practice guidelines*, Ausinfo, Canberra, 1999.
- 10 Now published: Cassidy DJ et al., *Effect of Eliminating Compensation for Pain and Suffering on the Outcomes of Insurance Claims for Whiplash Injury*, New England Journal of Medicine, April 20, 2000, Vol. 342, No 16, p 1179–1186.
- 11 Wrightson P, Gronwall D, *Time off work and symptoms after minor head injury*, Injury 1981; 12:445–54.
- 12 NHMRC, *Acute pain Management: information for general practitioners*, Commonwealth of Australia, 1999.



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