tracsa Trauma and Injury Recovery

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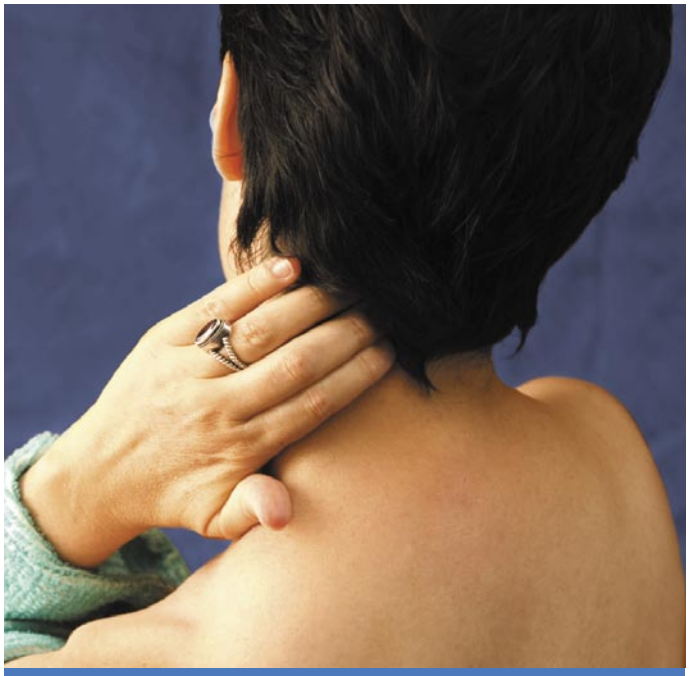
Management pathway: **whiplash-associated disorders** (WAD)

This management tool is a guide intended to assist general practitioners and health professionals delivering primary care to adults with acute or chronic neck pain following a motor vehicle collision.

The recommendations are a guide to best practice, however each case should be assessed and treated individually. Clinical management should be tailored to meet each patient's presenting symptoms, with the practitioner exercising their professional judgement in each case.



Key points
for managing patients with whiplash-associated disorders

- Acknowledge the problem is real and provide reassurance that a full recovery is anticipated.
- Provide educational material (for instance, provide a copy of the TRACsa consumer guide *Recovering after whiplash*).
- Encourage your patient to remain active and undertake as many routine activities as possible.
- Adopt a patient-focused, positive and empathetic approach.

Summary

- Undertake a thorough assessment and physical examination.
- Use the Canadian C Spine Rule to determine whether an X-ray of the cervical spine is required to confirm the diagnosis of a fracture or dislocation (see page 5).
- Classify the Grade of whiplash-associated disorder (WAD) according to Table 1 below.
- Identify factors associated with poor prognosis. For instance, high pain intensity or high disability at initial assessment may indicate poor prognosis. Patients with these or other risk factors should be closely monitored.
- Assess baseline level(s) of functioning to inform the selection of treatment components and enable the evaluation of treatment effectiveness (outcome) (see page 5).
- Follow the **acute WAD pathway** where the patient presents between 0 to 12 weeks following the onset of symptoms.
- Follow the **chronic WAD pathway** where the patient continues to have symptoms more than 12 weeks after onset, or where the patient presents for the first time more than 12 weeks after the onset of symptoms.

Table 1

Quebec Taskforce Classification of Grades of WAD

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

Information in this pathway is based on the *Clinical guidelines for the best practice management of acute and chronic whiplash-associated disorders*. The full guidelines, a consumer guide *Recovering after whiplash*, a practice guide for health professionals – the *WAD clinical resource guide*, and copies of assessment instruments are available from www.tracsa.org.au.

Initial assessment of whiplash – 0 to 12 weeks

Assessment

History and physical examination ☑

- Date of birth, gender, education level
- Prior medical history, general medical condition, and pre-existing psychological conditions
- Circumstances of, and time since, injury (these details inform the use of Canadian C-Spine Rule)
- Symptoms including stiffness, numbness, weakness, localisation (include onset of symptoms)
- Prior history of whiplash symptoms, neck injury, neck pain, or chronic pain symptoms
- Self-rated injury severity
- Observation of head position and posture
- Palpation for tenderness in the neck region
- Cervical range of motion
- Neurological testing of sensation, reflexes and muscle strength
- Assess associated injuries and co-morbidities

Baseline assessment

- Disability using the Neck Disability Index (NDI)[1]
- Pain intensity using Visual Analogue Scale (VAS)[2]

(see page 5 for a description of these tools)

Diagnosis

Apply Canadian C-Spine Rule [Grade B]
Determine if X-ray is required (see page 5).

No X-ray required → **Classify as WAD Grade I-III**

X-ray required → No Fracture → **Classify as WAD Grade I-III**

X-ray required → Fracture → **WAD IV**

Initial Management

Identify poor prognostic indicators [Grade A]

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

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

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

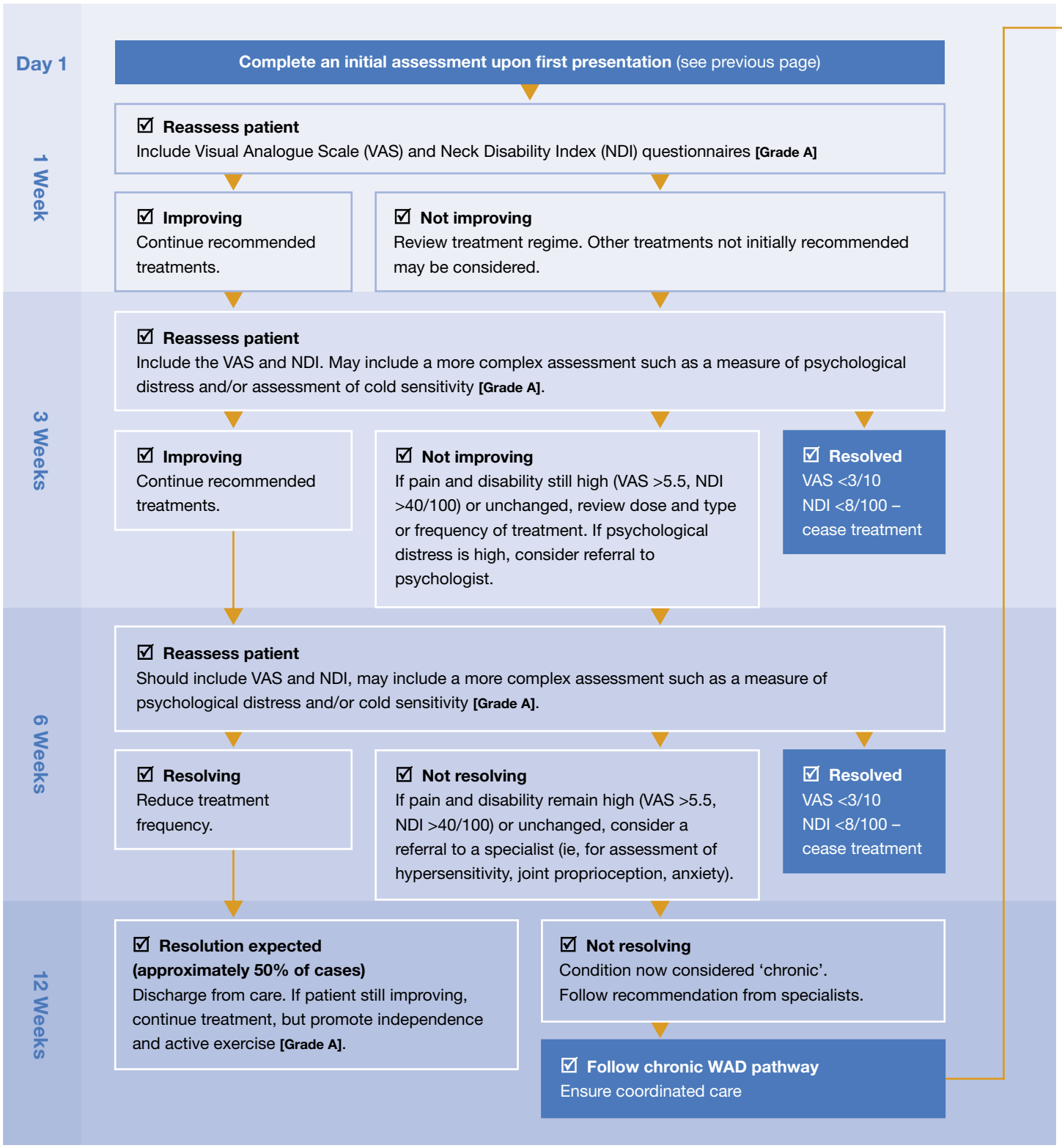
Good practice point

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

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

The practitioner should remain mindful that psycho-social and other health and non-health issues may impact on recovery.

Acute WAD pathway – up to 12 weeks



KEY

Where recommendations are evidence based, they appear with a grade according to National Health and Medical Research Council (NHMRC) grades of evidence [Grade A], [Grade B], etc. See page 6.

Where recommendations are based on a consensus of expert opinion, they appear with the symbol ☑.

Chronic WAD pathway > 12 weeks

Complete a full initial assessment (see page 2) where patient presents for the first time in the chronic phase

OR

Where patient has progressed through the acute phase and requires ongoing treatment, reassessment using the NDI, VAS and measures of psychological functioning should be undertaken where appropriate.

Specialised assessment (ie, motor assessment, joint position error, hypersensitivity, psychological distress, and range of motion) should be considered where these have not already been conducted.

Assess functional abilities (for instance, in the home and/or at work) and general conditioning.

Additional radiological investigations are not routinely recommended. In a small percentage of cases diagnosis and the need for further investigations may need to be reconsidered.

Identify/reassess poor prognostic indicators [Grade A]

- NDI >30/100
- Pain VAS >7/10
- Cold sensitivity
- Education level
- Low self-efficacy
- Catastrophising

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

14 weeks (2 weeks in chronic phase)

☑ **Reassess patient** – should include VAS and NDI.

Improving
Continue recommended treatments.

Not improving — Review treatment regime. Other treatments not initially recommended may be considered in combination with active treatment **[Grade B]**. Passive treatment in isolation should be avoided. ☑

20 weeks (6 weeks in chronic phase)

☑ **Reassess patient** – should include VAS, NDI and reassessment of psychological status.

Improving
Continue recommended treatments.

Not improving — Refer to specialist or consider type and dose of current treatment (eg, continue exercise with the addition of formal CBT if not previously implemented). ☑

☑ **Resolved**
VAS <3/10
NDI <8/100 –
cease treatment

26 weeks (12 weeks in chronic phase)

☑ **Reassess patient** – should include VAS, NDI and reassessment of psychological status.

Resolving
Reduce frequency of treatment.
Promote independence in program.

Not resolving
If pain and disability remain high (VAS >5.5, NDI >40/100) or unchanged – refer to specialist.

☑ **Resolved**
VAS <3/10
NDI <8/100 –
cease treatment

39 weeks (26 weeks in chronic phase)

Resolving
Continue treatment with periodic review (suggested three-monthly).

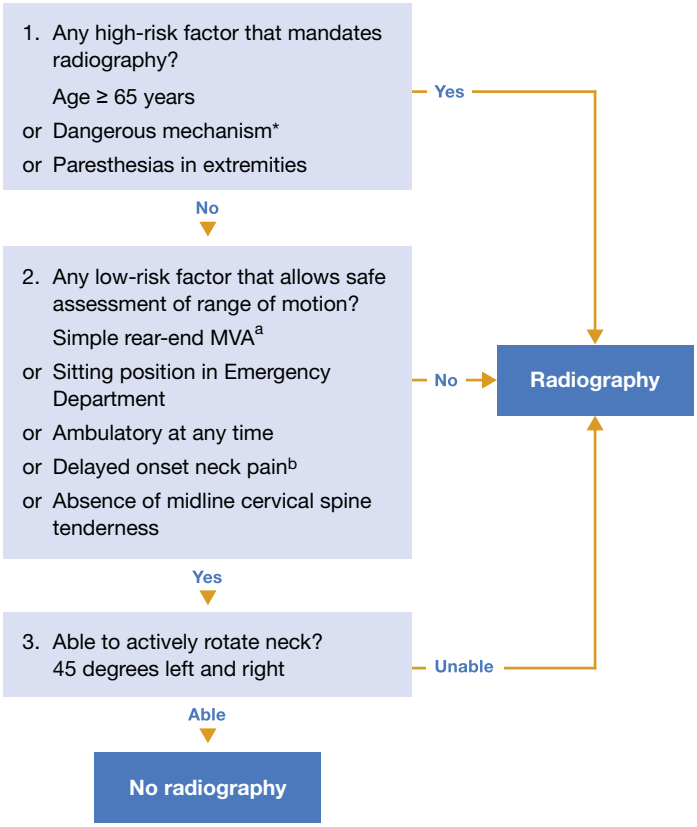
Not resolving
Consider other therapy.
Follow specialist recommendation.

Periodic review from primary practitioner (as required) who should encourage and emphasise continued **active self-directed** management. ☑ Continue active exercise program **[Grade B]**.
Alternatively, discharge from your treatment and refer back to your primary practitioner.

Determining when to X-ray

The Canadian C-Spine Rule[3]

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



Instructions for using the Canadian C-Spine Rule

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

*** Dangerous mechanism**

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

[a] Simple rear-end MVA excludes:

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

[b] Delayed

- ie, not immediate onset of neck pain

Assessment tools

Baseline assessment is linked to treatment goals, enables the assessment outcome over time, and together with regular re-assessment, provides clinical justification for the provision, maintenance or cessation of treatment components. Baseline measurement of pain and disability should be undertaken at the initial interview and regularly reviewed. Functional ability and psychological distress should also be evaluated where appropriate.

Neck Disability Index (NDI)[1]

The NDI is designed to measure neck-specific disability. The questionnaire has 10 items concerning pain and activities of daily living including personal care, lifting, reading, headaches, concentration, work status, driving, sleeping and recreation. Each item is scored out of 5 (with the 'no disability' response given a score of 0) giving a total score for the questionnaire out of 50. Higher scores represent greater disability. The result can be expressed as a percentage (score out of 100). In these guidelines the percentage score is used (double the raw score).

Visual Analogue Scale (VAS)[2]

No pain — Worst pain imaginable

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

To access copies of these and other assessment/outcome evaluation instruments visit www.tracsa.org.au.

1. Huskisson EC. Measurement of Pain. Lancet 1974;2(7889):1127-1131.2.
2. Vernon H, Mior S. The Neck Disability Index: a study of reliability and validity. J Manipulative Physiol Ther 1991;14(7):409-415.
3. Stiell IG, Wells GA, Vandemh
JAMA 2001;286(15):1841-1848.

Acute whiplash (0-12 weeks) Summary of recommendations

Treatments that *should* be routinely undertaken:

- Active exercise (involving range of movement and mobilising exercises, strengthening of the neck and scapular muscles) **[Grade A]**
- Advice to 'act as usual' / reassurance / education **[Grade B]**

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

- Passive joint mobilisation / manipulation **[Grade C]**
- Heat, ice, massage ☑
- Electrotherapies (including TENS, pulsed electromagnetic therapy, electrical stimulation, ultrasound and shortwave diathermy) **[Grade C]**
- Pharmacology – simple analgesics and NSAIDs ☑
- Multimodal therapy (multimodal therapy utilises a range of individual treatment modalities such as joint mobilisation, relaxation techniques, electrotherapies and exercises as part of a package to address individual patient deficits such as pain, loss of range of movement and loss of strength) **[Grade B]**

Treatments that generally should NOT be undertaken:

- Collar immobilisation and/or prescribed rest **[Grade A]**
- Surgery (except in WAD IV) ☑
- Cervical pillows ☑
- Intrathecal and intra-articular injections ☑

Chronic whiplash (>12 weeks since onset) Summary of recommendations

Treatments that *should* be routinely undertaken:

- Advice to 'act as usual' / reassurance **[Grade B]**
- Active exercise (in combination with advice) [involving functional exercises, range of motion exercises, strengthening of neck and scapular muscles, specific strengthening of deep neck flexors] **[Grade A]**

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

- A cognitive behavioural approach to treatment **[Grade C]**
- Passive joint mobilisation / manipulation in combination with active therapy ☑
- Vestibular rehabilitation **[Grade C]**
- Multimodal therapy ☑
- Radiofrequency neurotomy (in carefully selected cases) **[Grade B]**

Treatments that generally should NOT be undertaken:

- Collar immobilisation **[Grade A]**
- Prescribed rest ☑
- Surgery (other than radiofrequency neurotomy) ☑
- Cervical pillows ☑
- Intrathecal and intra-articular injections ☑
- Botox injections ☑
- Electrotherapy ☑

KEY

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NHMRC Grades of evidence for recommendations

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

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