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WHIPLASH in primary care

This Update provides guidance on the assessment and management of whiplash-associated disorders.

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Conflicts: nothing to declare

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Introduction

WHIPLASH is a condition widely recognised by clinicians but often poorly understood. It is a non-specific term applied to a range of clinical presentations with varying levels of severity. The clinical assessment and management of patients with whiplash may be associated with insurance and compensation issues, adding further complexity to a condition that most GPs will see only periodically in clinical practice.

The purpose of this Update is to provide GPs with information about contemporary approaches to the assessment, diagnosis and management of patients presenting with the clinical syndrome of whiplash, and with any degree of whiplash-associated disorders (WAD).

Definition

Whiplash is defined as "an acceleration-deceleration mechanism of energy transfer to the neck. It may result from motor vehicle collisions. The impact may result in bony or soft tissue injuries (whiplash injury), which in turn may lead to a variety of clinical manifestations (whiplash-associated disorders)".[1]

In general practice it is important to recognise that whiplash injuries and WAD may also be associated with other non-motor vehicle crash activities that can cause rapid acceleration-deceleration movements. Such activities include physical abuse or assault, contact sporting injuries, and falls.

While the injury is commonly associated with forced flexion-extension movements of the neck, the force can also be applied laterally and obliquely, leading to a diverse array of potential tissue injuries and clinical presentations.

Epidemiology

Whiplash is not a reportable condition, and the incidence of new whiplash injuries can only be estimated from other data sources.

The most recent General Practice Activity in Australia report says 0.6% of problems managed by GPs relate to musculoskeletal injuries other than back complaints, fractures, or sprains and strains.

In a separate data set from the same report, 0.5% of reasons for presentation to GPs are for neck symptoms/complaints.[2] It can therefore be estimated that the incidence of presentations for whiplash-associated conditions will be somewhat less than 0.5%, meaning each GP will see a case of whiplash every few weeks or months, depending on their patient load. However, of all claims lodged in the NSW motor accidents compulsory third party (CTP) insurance scheme since 2007, 46% had WAD as one of their reported injuries, indicating there is a high incidence of whiplash associated with motor vehicle crashes (MVCs).[3]

Patients with whiplash injuries may attend their GP as the first source of healthcare after an MVC, or alternatively may attend an emergency department or allied health provider.

However, regardless of their initial site of presentation, they will often attend a GP for follow-up, documentation and longer-term management.

Clinical presentation

The patient with a whiplash injury will usually have a number of other concerns when they first present to their GP. These include possible associated injuries, some degree of emotional trauma associated with the MVC or accidental injury, concerns about financial costs associated with the event (particularly if they are deemed liable for an MVC), potential loss of income, and the costs associated with treatment. Each of these areas will need to be addressed in order to undertake an effective assessment and to implement appropriate management.

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Assessment

PHYSICAL ASSESSMENT

As previously noted, the term whiplash essentially describes a mechanism of injury. This mechanism of injury may in turn lead to a variety of clinical manifestations, the most common of which is neck pain.

In 1995, the Quebec Task Force developed a classification system that was designed to improve the management of WAD by providing a guide to the signs and symptoms indicative of the seriousness of the injury.

Quebec Task Force Classification of Grades of WAD

This system has helped guide the assessment and diagnosis of WAD over the past 20 years. It is important that clinicians are able to identify signs and symptoms indicative of the various levels of severity of WAD so appropriate management can be implemented.

Canadian C-spine rule

The GP who is the initial point of contact should take a history of the injury and apply the Canadian C-spine rule to assess for any factors that mandate immediate radiological assessment and to allow for safe assessment of cervical spine range of movement (ROM).

Instructions for using the Canadian C-spine rule

1. Define whether any high-risk factors are present such as age (≥65 years) or dangerous mechanism (includes high speed or rollover or ejection, motorised recreation vehicle or bicycle crash). If this is the case, an x-ray of the cervical spine should be performed.

2. Define low-risk factors that allow safe assessment of neck ROM. If the low-risk factors shown in the flow chart 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 shown in the QTF Classification of Grades of WAD (Table 1). If people are able to rotate their neck to 45 degrees, they do not require an x-ray of the neck.

Imaging

Do not use specialised imaging techniques; for example, CT scan or MRI in WAD grades I and II.

Only use specialised imaging techniques for selected patients with WAD grade III; for example, suspected nerve root compression or spinal cord injury.

The full recommendations in the *MAA Guidelines for the Management of Acute Whiplash Associated Disorders for Health Professionals* can be found on page 18 (A5 and A6).

IDENTIFY PATIENTS AT RISK OF POOR RECOVERY

Visual Analogue Scale

Assess pain intensity using this scale. Patients who initially present to their GP with whiplash will usually have grade 0-II category symptoms or signs. If the patient has grade III (neurological signs) or grade IV (fracture or dislocation) WAD, they should be referred for assessment at an acute care facility, with appropriate measures including paramedic transport if fracture or dislocation is suspected.

A patient's history should include age, gender and education level, and any prior history of neck problems, including previous WAD. The GP is likely to have this information already if the patient has previously attended the practice.

The circumstances of injury, such as relevant crash factors that are related to the Canadian C-spine rule assessment, should be clarified. The history should also ask about the presence of any symptoms including pain intensity, stiffness, numbness, weakness and associated extra cervical symptoms.

The localisation, time of onset and profile of onset should also be recorded for all symptoms.

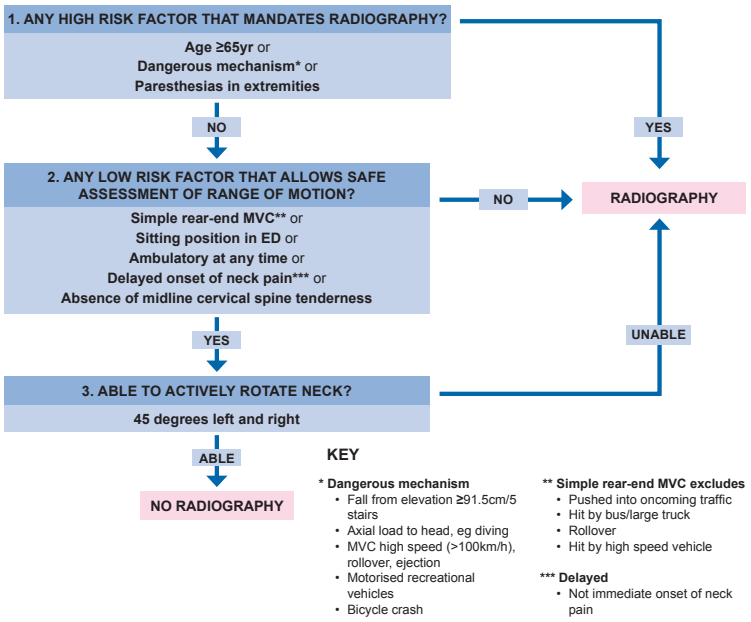
TABLE 1. QUEBEC TASK FORCE CLASSIFICATION OF GRADES OF WAD

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

Source: page 4 of the MAA 2014 Guidelines

The Canadian C-Spine Rule

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



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This rule has been validated across several different populations and has been shown to have a sensitivity of 99.4 per cent and a specificity of 42.5 per cent. Essentially, physicians who follow this rule can be assured that a fracture will not be missed (95% CI 98–100%).[1] Further a systematic review investigated the diagnostic accuracy of the Canadian C-Spine Rule and the National Emergency, X-Radiography Utilization Study (NEXUS) criteria and found that the Canadian C-Spine Rule had better accuracy.[2]

1 Stiell, I. G., C.M. Clement, R.D. McKnight, R. Brison, M.J. Schull, and B.H. Rowe, *The Canadian C-spine rule versus the NEXUS low-risk criteria in patients with trauma*. New England Journal of Medicine, 2003. **349**(26): p 2510-2518.
2 Michaleff, Z.A., C.G. Maher, A.P. Verhagen, and T. Rebbeck, *Accuracy of the Canadian C-spine rule and NEXUS to screen for clinically important cervical spine injury in patients following blunt trauma: a systematic review*. Canadian Medical Association Journal. 2012. 184(16): p. E867-E76.

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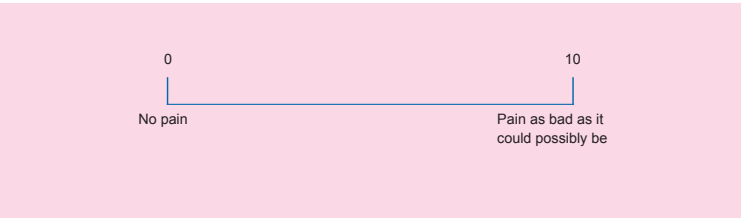
Visual Analogue Scale (VAS) for pain



The VAS[1] for pain consists of a 10cm line with two end-points representing 'no pain' and 'pain as bad as it could possibly be'. Patients with WAD are asked to rate their pain by placing a mark on the line corresponding to their current level of pain. The distance along the line from the 'no pain' marker is then measured with a ruler giving a pain score out of 10.

1 Scott, J. and E. Huskisson, *Graphic representation of pain*. Pain, 1976. 2(2): p. 175-184.

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Neck Disability Index

Name: INSERT NAME HERE Date: DD/MM/YYYY

This questionnaire has been designed to give your health professional information as to how your neck pain has affected your ability to manage in everyday life[1]. Please answer every section and mark only the ONE box in each section which applies to you. We realise you may consider that two of the statements in any one section relate to you, but please just mark the box which most closely describes your problem.

Section 1 – Pain intensity	☐ I have no pain at the moment. ☐ The pain is very mild at the moment. ☐ The pain is moderate at the moment. ☐ The pain is fairly severe at the moment. ☐ The pain is very severe at the moment. ☐ The pain is the worst imaginable at the moment.
Section 2 – Personal care (washing, dressing etc.)	☐ I can look after myself normally without causing extra pain. ☐ I can look after myself normally but it causes extra pain. ☐ It is painful to look after myself and I am slow and careful. ☐ I need some help but manage most of my personal care. ☐ I need help every day in most aspects of my self care. ☐ I do not get dressed, I wash with difficulty and stay in bed.
Section 3 – Lifting	☐ I can lift heavy weights without extra pain. ☐ I can lift heavy weights but it gives extra pain. ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, for example on a table. ☐ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned. ☐ I can lift very light weights. ☐ I cannot lift or carry anything at all.
Section 4 – Reading	☐ I can read as much as I want to with no pain in my neck. ☐ I can read as much as I want to with slight pain in my neck. ☐ I can read as much as I want to with moderate pain in my neck. ☐ I cannot read as much as I want because of moderate pain in my neck. ☐ I can hardly read at all because of severe pain in my neck. ☐ I cannot read at all.
Section 5 – Headaches	☐ I have no headaches at all. ☐ I have slight headaches, which come infrequently. ☐ I have moderate headaches which come infrequently. ☐ I have moderate headaches which come frequently. ☐ I have severe headaches which come frequently. ☐ I have headaches almost all the time.

1 Vernon, H. and S. Mior, *The Neck Disability Index: a study of reliability and validity*. J Manipulative Physiol Ther, 1991. 14(7): p. 409-15. Fairbank, J., et al., *The Oswestry low back pain disability questionnaire*. Physiotherapy, 1980. **66**(8): p. 271-273.

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Pain should ideally be assessed using the visual analogue scale (VAS).

PSYCHOSOCIAL ASSESSMENT

It may come as no surprise to GPs that the VAS, Neck Disability Index (NDI) and patient expectation of recovery are better predictors of recovery than the WAD grade assigned after objective assessment. The confidence and skill of the GP in explaining the pathology, the rationale for treatment and the prognosis for good recovery are critical factors in optimal patient care.

Assess expectation of recovery by asking the patient "do you think you are going to get better soon?",[4] and level of disability, which can be measured using the NDI.[5]

Neck Disability Index

The NDI is designed to measure neck-specific disability and is based on the Oswestry Disability Index.[6]

Such an assessment should be made at the initial consultation, since patients considered as having a poor expectation of recovery or a high expectation of ongoing disability may benefit from further assessment of psychological status at presentation.

GPs are very well positioned to undertake psychosocial assessments at the initial consultation, given their potentially long-term association with the patient and knowledge of how the patient has responded to illness or injury in the past.

ASSESSING THE PATIENT'S UNDERSTANDING OF FINANCIAL, INSURANCE AND LEGAL FACTORS

Associated with patient anxiety about recovery and potential ongoing disability are practical concerns about responsibility for healthcare costs and potential loss of income associated with their injuries.

The GP should use the first consultation to clarify these matters with the patient. In particular, patients can be informed that regardless of fault in the motor vehicle crash, they can still access up to $5000 for treatment costs and lost earnings through the NSW motor accidents CTP insurance scheme.

To access these payments, your patient should complete an accident notification form within 28 days of the crash.

As the treating doctor, you will need to complete the medical certificate. Visit the medical specialists page on the Motor Accidents Authority (MAA) website for more information about the CTP scheme.

Key Points

- Conduct a thorough assessment and physical examination to help direct treatment.
- Use the Canadian C-spine rule to determine if an x-ray is required.
- Classify the grade of whiplash to indicate severity of injury.
- Identify patients at risk of poor recovery at the initial assessment.
- Provide recommended treatments (including advice to stay active), provide neck exercises and prescribe first-line pain relief.
- Advise patients to attend follow-up appointments at regular intervals to review recovery.

Management

Following assessment and classification of the patient's signs and symptoms, provide them with appropriate treatment as part of a comprehensive management plan. First-line treatment should include reassurance and advice to remain active, appropriate exercises and analgesia. The level of evidence for the treatment modalities listed below can be found in the 2014 guidelines.

Reassurance and advice to remain active: GPs and other providers of primary care services should acknowledge that the patient has been hurt, but reassure that the symptoms are a normal physiological response to the injury. Emphasise that staying active and maintaining normal activities play an important role in the recovery process.

Exercise: GPs can prescribe and demonstrate specific exercises, including range of motion, low load isometric, postural endurance and strengthening exercises. Examples of appropriate exercises are provided in Appendix 3 of the 2014 guidelines.[6] These neck exercises are also demonstrated in YouTube clips and are available on the MAA website.

If the GP is not confident in prescribing these exercises, particularly for a patient with very acute symptoms, referral to an allied health practitioner such as a physiotherapist is indicated.

Doing the right exercise in the right way is important to maximise the chance of early and full recovery.

Analgesia: Offer simple analgesia (paracetamol) at the recommended regular doses to any patient reporting significant pain. If this is insufficient to control pain, NSAIDs can be added, particularly in the acute stages following injury. Oral opioids are not usually necessary to control pain for WAD grades I or II. They can be used for the management of severe, acute pain in these patients, but other contextual factors such as anxiety and fear of ongoing disability should be considered and managed concurrently.

The GP provides a critical role in assessing the patient's response to the symptoms of whiplash, and is well placed to provide supportive education and reassurance.

Other treatments: Some therapies that are commonly prescribed in the treatment of acute whiplash do not have a sufficiently strong evidence base to warrant their routine inclusion in management programs. However, studies do exist that may indicate improvement when used by skilled practitioners. Such therapies include manual therapy treatments, cervical or thoracic manipulation, acupuncture, Kinesio taping and trigger point needling.

There is a further long list of therapies where there is no evidence either for or against their efficacy, including a diverse range of treatments such as Pilates exercises, cervical traction, ultrasound, heat/ice and cervical pillows. The full list can be found in T10 Recommendation (page 32 of the guidelines). The 2014 guidelines indicate that these therapies should only be used for short periods in conjunction with other evidence-based therapies and "provided that there is evidence of continuing measurable improvement (at least 10% change on VAS and NDI)".[3]

While some experienced therapists may use these modalities and report improved outcomes, it can be difficult to separate the treatment effect from that of evidence-based modalities being used concurrently, such as exercise, education and psychological support.

Some treatments that may have been used widely in the past are contraindicated, including immobilisation of the neck using a cervical collar, the use of muscle relaxants such as diazepam, and advice to significantly reduce usual activities. These modalities have no evidence of beneficial outcomes if used for more than three or four days, and there is in fact a chance of increased disability associated with longer-term use. The use of other pharmacological agents, including anticonvulsants, tricyclic antidepressants, botulinum toxin and intra-articular or epidural steroid injections, are not indicated in the treatment of acute WAD.

Due to the complex interplay of physical and psychosocial factors in patients who have experienced a whiplash injury with associated symptoms or disability, it is important to review the patient regularly. Review effective symptom management, the efficacy of prescribed treatments, and any concerns relating to documentation and insurance. The 2014 guidelines recommend review at one week, three weeks, six weeks and 12 weeks unless symptoms are fully resolved earlier.

For patients who have significant symptoms at initial presentation, who have a high degree of reported disability, or who have a low expectation of recovery, review at 48 to 72 hours is indicated. While this may be too early to expect objective improvement in physical symptoms or signs, it is useful for reassessing the psychosocial concerns of the patient, who may be very anxious and who may have been provided with a range of advice from friends, family and neighbours.

As well as measuring physical examination parameters, it is recommended that the VAS and NDI are repeated at each review visit to provide a further objective measure of the patient's physical and psychological progress.

Prognosis

The literature relating to the prognosis for WAD can be confusing, which is related to the lack of consistency between study cohorts and retrospective reporting of outcomes. However, many patients will have ongoing symptoms after 12 weeks.

Significantly decreased cervical range of motion and cold hyperalgesia (increased sensitivity to cold stimuli applied to relevant cervical dermatomes) are predictive of longer duration of disability.

There is strong evidence to support more concerted treatment (such as the earlier review previously referred to) or early referral to a clinician with expertise in the management of WAD for these patients.

Similarly, patients with high scores on the pain or neck disability indices, or a low expectation of recovery, warrant consideration for early referral.

If you suspect that the patient may be developing a PTSD secondary to their injury, it is useful to screen for this using an appropriate tool such as the Impact of Events Scale between three and six weeks post-injury. This tool can be found in the 2014 guidelines, and patients with high scores should be referred for effective early management.

While the 2014 guidelines state that "the relevance of compensation-related factors in predicting outcome in WAD is inconclusive", the GP must be aware of the broad spectrum of psychosocial factors that may affect the physical and emotional wellbeing of the patient.

They may be experiencing pain, physical disability, loss of ability to work or to attend to routine domestic duties, and a degree of uncertainty about when their symptoms may resolve.

Add to this the likely need to deal with insurance issues and the possible effect of legal action associated with an accident, and even the most emotionally robust patient should routinely receive effective psychological support from their GP, with early referral for additional physical or psychological support if required. Age, gender, marital status and level of education are not predictive of outcome.

If patients have undergone imaging at any time since the injury it is important to reassure them that minor degenerative changes or other pathological changes identified on x-ray, CT or MRI have no significant correlation with the progress of their recovery, and are not associated with ongoing symptoms post WAD.

Impact of Event Scale (IES)

Name: INSERT NAME HERE Date: DD/MM/YYYY

On DD/MM/YYYY you experienced a motor vehicle accident.

Below is a list of comments made by people after stressful life events[1]. Please check each item, indicating how frequently these comments were true for you DURING THE PAST SEVEN DAYS. If they did not occur during that time please mark the 'NOT AT ALL' column.

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

Total score: 0 /75

1 Horowitz, M., N. Wilner, and W. Alvarez, *Impact of Event Scale: a measure of subjective stress.* Psychosom Med, 1979. **41**(3): p. 209-18.

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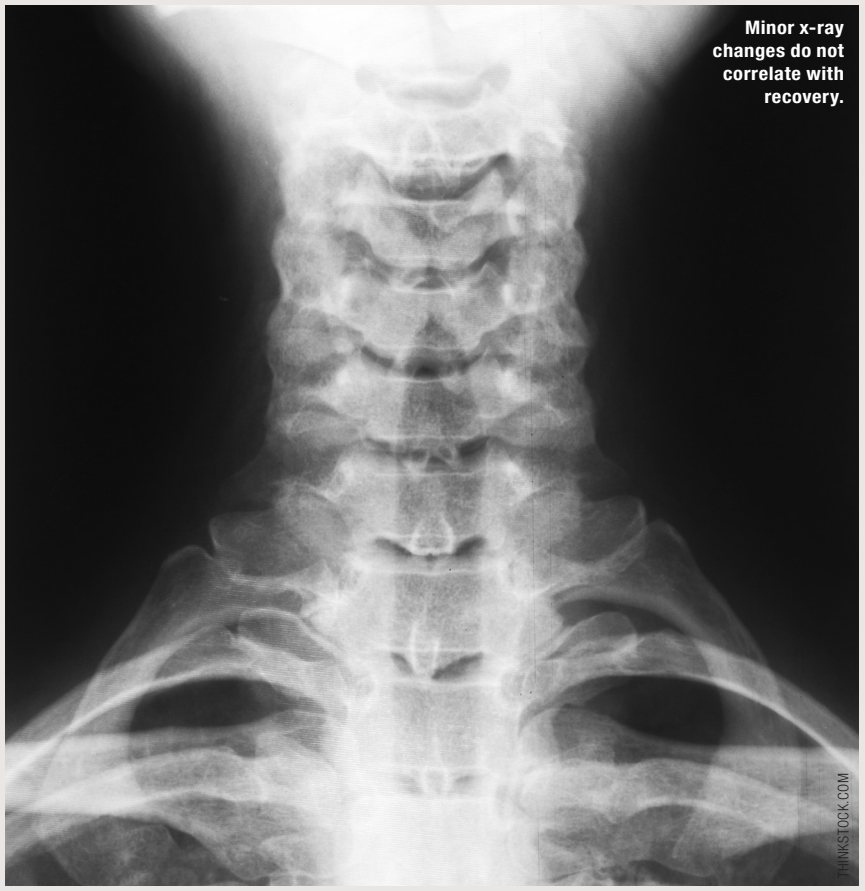

Minor x-ray changes do not correlate with recovery.

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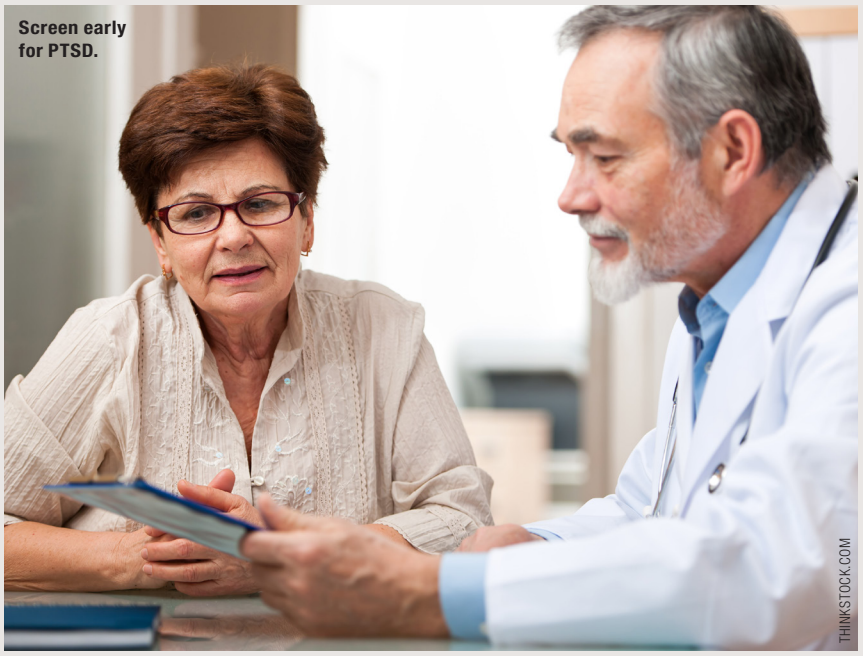

Screen early for PTSD.

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Outcomes

The MAA website contains a number of easily searchable patient resources, including one for whiplash that reassures accident victims that most people recover from the symptoms and disabilities associated with a whiplash injury "within days to weeks". However, many GPs will recognise that a significant number do not achieve complete resolution within a short time frame. The accompanying notes to the treatment flow chart contained in the 2014 guidelines state that "there should be complete resolution of symptoms (by the time of the 12-week assessment) in at least 40% of cases", acknowledging that there will be a significant number of patients in whom the symptoms and associated disability will last for an extended period. This should not be daunting for GPs, who are experts in the management of chronic conditions. If the patient has ongoing symptoms and/or disability at this time, the GP's role evolves into one of care coordinator and motivator. Many patients will continue to improve, with ultimate full resolution of their symptoms, and the GP should continue to assess, document and supervise any ongoing treatment.

Patients who are not showing or reporting significant improvement by 12 weeks after their injury, or whose subsequent progress falters, will need a comprehensive multidisciplinary approach to their care. The GP is ideally placed to coordinate this.

In summary, whiplash is one of many conditions encountered by GPs on an episodic basis. The application of an evidence-based assessment and treatment program, coupled with the GP's skills in comprehensive patient support and advocacy, should mean that patients with a whiplash injury can be confident of high quality care and a good outcome.

References at medicalobserver.com.au