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Expert Guidelines: Diagnosis and treatment of post-traumatic stress disorder in emergency service workers

Developed by:



In partnership with:



Important note

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This document is a general guide to appropriate practice and should be followed only subject to the practitioner's judgement in each individual case.

The guidelines are designed to provide information to assist with decision making; however, they do not override the individual responsibility of health professionals to make decisions appropriate to the circumstances of the individual patient.

These guidelines contain and use the most up-to-date information at the time of publication, but health professionals must also be mindful of new evidence as it becomes available.

The development of these Guidelines was made possible by the funding from Employers Mutual Limited (Employers Mutual), part of the EML Group, which offers workers' compensation insurance and claims management services across multiple states and schemes.

The authors of these guidelines were granted full editorial and academic independence throughout the development of these guidelines. Employers Mutual have had no influence on the content, conclusions, or recommendations presented within these guidelines. This independence was ensured through formal agreements with both the University of New South Wales and the Black Dog Institute, governing the funding and development process.

*For more information on Employers Mutual or the EML Group, please visit: www.eml.com.au

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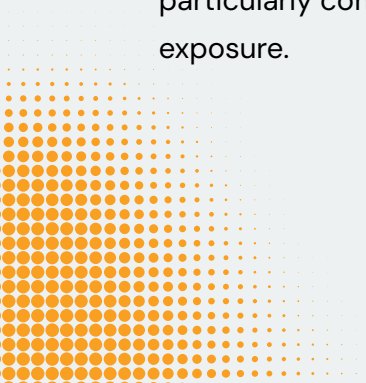
Foreword

Emergency workers perform a vital role in our society. They protect the rule of law, ensure our safety and provide assistance in emergencies. Surveys consistently show that emergency workers are one of the most valued and trusted occupational groups. However, there is increasing realisation that emergency work can come at a cost. Large numbers of emergency workers report ongoing psychological consequences from exposure to trauma, most notably post-traumatic stress disorder (PTSD).

Over recent decades, a substantial body of evidence has accumulated regarding how PTSD should be treated. There are now several psychological and pharmacological treatments that are known to be effective at both reducing symptoms and improving functioning. There have also been numerous proposed treatments that have been found not to be beneficial. However, the scope of available literature on PTSD has made it difficult for both clinicians and organisations to remain up to date with best practice approaches.

The Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder were published in 2007¹ and were updated in 2013 and again in 2021.² The Australian Guidelines were developed using best practice methods and involved a combination of a detailed systematic review of the literature and use of multidisciplinary expert committees. The final recommendations from these guidelines have been approved by the National Health and Medical Research Council (NHMRC), which highlights their integrity.

However, from the point of view of those managing emergency service personnel with symptoms of PTSD, the previously available guidance has two main limitations. Firstly, while the Australian Guidelines make recommendations about specific groups, such as emergency workers, the bulk of the document deals with the management of PTSD more generally without consideration of many of the specific issues that may relate to emergency workers. Secondly, like much of the research in this field, most of the currently available guidance is focused on symptomatic improvement. While a reduction in symptoms is often a necessary first step towards functional recovery, in cases of work-related trauma exposure, it is often not enough. Managing the return to work of an emergency worker who has suffered PTSD is particularly complicated due to issues of public safety and the likelihood of further trauma exposure.



Experts in psychiatry and clinical psychology from Black Dog Institute and the University of New South Wales were commissioned by Employers Mutual to prepare treatment guidelines designed to assist those providing mental health care for emergency workers with PTSD. This resulted in a RANZCP–endorsed set of guidelines that were consistent with, but extended, the NHMRC–approved Australian Guidelines. Specifically, much more detailed attention was given to how clinicians and rehabilitation managers should assess, treat and organise rehabilitation of emergency workers with PTSD.

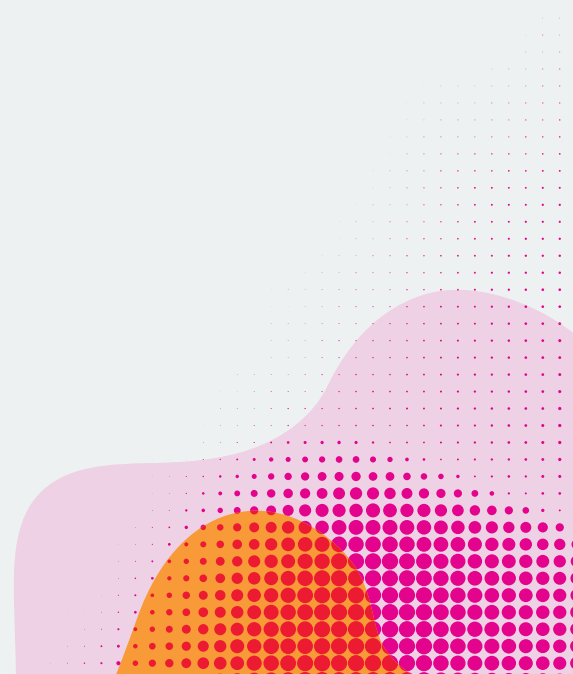
Since the publication of these guidelines in 2015, there has been further research attention given to PTSD and its management; hence, it is timely to update these guidelines to be consistent with best available evidence. To the best of our knowledge, these guidelines remain the only PTSD assessment and treatment guidelines written specifically for emergency workers anywhere in the world. Given the ongoing burden of trauma–related mental health problems amongst emergency workers, up–to–date guidance is essential. We hope these guidelines help emergency workers and their clinicians as they work together towards recovery.

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Abbreviations

ASD

Acute stress disorder

CBT

Cognitive behavioural therapy

DSM

Diagnostic and Statistical Manual of Mental Disorders

ISTSS

International Society for Traumatic Stress Studies

EMDR

Eye movement desensitisation and reprocessing

MAOI

Monoamine oxidase inhibitor

M-FAST

Miller Forensic Assessment of Symptoms Test

MMPI

Minnesota Multiphasic Personality Inventory

NICE

UK National Institute of Clinical Excellence

NHMRC

National Health and Medical Research Council

NaSSA

Noradrenergic and specific serotonergic antidepressant

PAI

Personality Assessment Inventory

PTSD

Post-traumatic stress disorder

RCT

Randomised controlled trial

SNRI

Serotonin-norepinephrine reuptake inhibitor

SSRI

Selective serotonin reuptake inhibitor

TCA

Tricyclic anti-depressions

TF-CBT

Trauma-focused cognitive behavioural therapy

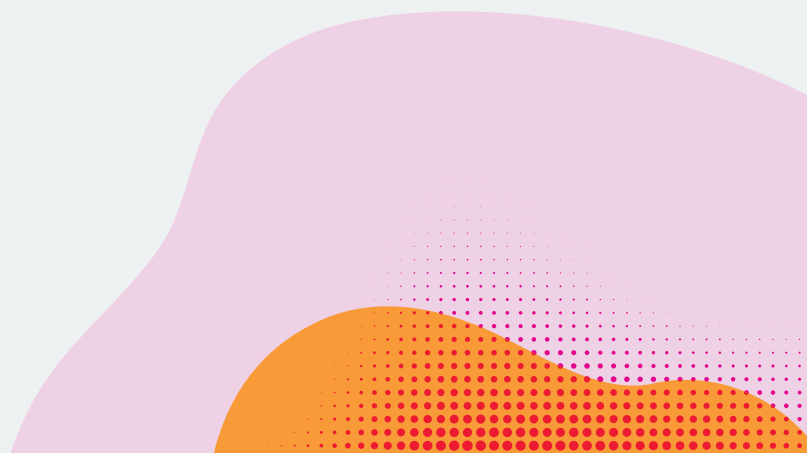
Executive Summary

In Australia, there are more than 300,000 full time and volunteer emergency workers. They perform a vital role in protecting citizens and providing assistance during emergencies. As a result of their duties, emergency workers are regularly exposed to potentially traumatic experiences. There is increasing awareness of, and concern regarding, the possible psychological consequences of trauma exposure amongst emergency workers.

Post-traumatic stress disorder (PTSD) is a severe and persistent mental health impairment that can occur following exposure to a single or multiple traumatic events. An individual with PTSD typically has four clusters of symptoms: re-experiencing symptoms; avoidance symptoms; negative cognitions and mood associated with the traumatic event; and arousal symptoms, including insomnia and irritability. The most up-to-date literature estimates that around one in 10 emergency workers are currently suffering from PTSD, although rates are likely to be even higher if retired emergency workers are considered. Over recent years, a substantial body of evidence has revealed best practice approaches to treating PTSD.

There are now several psychological and pharmacological treatments known to be effective at both reducing PTSD symptoms and improving functioning. PTSD regularly presents with co-morbid conditions such as major depressive disorder and substance use disorder. The guidelines presented in this report aim to utilise a combination of expert opinion and the best available research evidence to produce succinct, focused guidelines on the diagnosis and treatment of emergency workers with PTSD.

A panel of six of Australia's leading experts in PTSD with expertise in psychiatry, clinical psychology, general practice, epidemiology and occupational medicine was assembled to develop the guidelines summarised in this document.



Guidance recommendations

Diagnosis and assessment

1. Practitioners should be sensitive to confidentiality issues with emergency workers and establish the parameters of confidentiality and information disclosure management prior to assessment.
2. PTSD should only be diagnosed following a thorough clinical assessment that covers the history of presentation, trauma history, symptom profile, general psychiatric assessment, physical health, substance use, personal history, family history, and social and occupational functioning.
3. Other potential post-traumatic mental health conditions, such as depression, anxiety disorders or substance misuse, should be considered, both as alternative primary diagnoses and as co-morbid conditions.
4. Primary care clinicians and other health care providers may be able to assist in identifying potential cases of PTSD. However, where possible, health professionals trained in psychopathology and experienced in mental health assessments should conduct a mental health assessment of any emergency worker suspected of suffering PTSD.
5. While clinician assessment should form the main basis of a diagnosis of PTSD, consideration should be given to combining clinician assessment with validated self-report and structured clinical interview measures. Clinicians should also not rely solely on self-report scales or purely directive questions. Emphasis should be placed on detailed analysis of patients' experiential reports and objectively verified evidence.
6. Clinicians assessing emergency workers with possible PTSD should be aware of the different ways in which PTSD may present in this group given the cumulative exposure to trauma in the course of employment. They should focus on the lifetime exposure to trauma as well as the immediate antecedent event that may have prompted presentation for treatment.
7. Clinicians should be aware of the risk of symptom minimisation and symptom exaggeration and assess for these as a regular part of their diagnostic assessment.
8. Clinicians should be sensitive to the tendency for emergency workers to present with emotional numbing and detachment, which can contribute to poor functioning.
9. A functional assessment, including both occupational and non-occupational functioning, should be part of any diagnostic assessment.

10. Co-morbid mental health conditions, including complex PTSD, should be identified and treated with evidence-based interventions.
11. Co-morbid physical health problems, particularly chronic pain, should be enquired about and addressed as part of the routine assessment of emergency workers suspected of suffering PTSD.
12. Subsyndromal symptoms of PTSD are relatively common amongst emergency workers and associated with a range of adverse outcomes. Early intervention should be considered in emergency workers with persistent or distressing subsyndromal symptoms.
13. Assessments should recognise that emergency workers can experience a range of PTSD symptoms but still function at a high level – that is, the presence of symptoms does not necessarily result in occupational impairment.
14. Clinicians should also be aware that many emergency workers have suffered adverse experiences during medico-legal and compensation-related assessments. All assessments, whatever the reason, should be conducted in a supportive and objective manner.
15. Clinicians should be cognizant of ongoing stressors and organisational pressures that many emergency workers experience as part of their work. These stressors can exacerbate PTSD and other psychological problems.

Treatment

16. Once a diagnosis of PTSD has been established, evidence-based treatments should be commenced without delay.
17. While only evidence-based treatments are recommended, a range of other factors, including patient choice, should be considered when deciding which treatments to commence.
18. Practitioners who provide mental health care to emergency workers with PTSD, regardless of professional background, must be appropriately trained to ensure adequate knowledge and competencies to deliver the recommended treatments. This requires specialist training over and above basic mental health or counselling qualifications.
19. Even if treatment is being provided by psychiatrists, clinical psychologists or other mental health professionals, an emergency worker's general practitioner should remain an active member of the treating team. When treatment is shared between different clinicians or between primary and secondary care, it is essential that practitioners agree on who has primary responsibility for coordinating care and monitoring progress.
20. A safe environment is necessary for the delivery of trauma-focused therapy. Emergency workers may require their duties to be temporarily modified to prevent further exposure to potentially traumatic events while undertaking treatment. However, in many cases,

workers may engage with treatment while continuing to work. These decisions should be made jointly between the treating clinician, the patient and the occupational rehabilitation case manager.

21. To facilitate safety for the emergency worker, treatment should respect the worker's rights to privacy and confidentiality, especially in relation to their employer. Whilst at times the employer will be familiar with details of treatment progress, the extent to which confidentiality can be maintained should be openly clarified at the outset of treatment.
22. The risk of self-harm, aggression and violence must be regularly assessed throughout each stage of treatment of any emergency worker with PTSD. The risk of these behaviours recurring requires reassessment when returning a worker to frontline duties.
23. In general, emergency workers with PTSD can be treated as outpatients. Inpatient care should only be required when there are severe co-morbid psychiatric diagnoses, serious threat of harm to themselves or others, or for severely ill patients who lack adequate social support outside a hospital setting.
24. Prior to commencing treatment for PTSD, patients and clinicians should agree on a set of treatment goals that consider symptom levels, functional improvement, quality of life and occupational and social recovery.
25. Assessment and monitoring should be undertaken throughout treatment. If adequate progress towards the agreed goals is not being made, the treatment provider should revisit the case formulation, reassess potential treatment obstacles, and implement appropriate strategies, or refer to another practitioner.
26. All emergency workers suffering from PTSD should be offered a variant of trauma-focused cognitive behavioural therapy (TF-CBT), including prolonged exposure, cognitive processing therapy and trauma-focused cognitive therapy, or eye movement desensitisation and reprocessing (EMDR). As outlined below, there are some circumstances in which an emergency worker's presentation or co-morbidities may require a delay before these therapies can be safely offered.
27. Emergency workers will usually require 8 to 12 sessions of trauma-focused psychological treatment (either TF-CBT or EMDR), each lasting between 60 and 90 minutes. Many emergency workers will require additional treatment sessions, especially if they have severe symptoms, have experienced multiple traumatic events or have co-morbid mental health problems.
28. Trauma-focused therapy normally includes prolonged exposure therapy that systematically exposes the patient/worker to the traumatic memories associated with their PTSD symptoms. If appropriate, feared or avoided situations, including those in the workplace, should

- be systematically addressed through in vivo exposure to optimise functioning.
29. The development of a therapeutic alliance is necessary for undertaking specific psychological interventions. The establishment of a suitable therapeutic alliance may require extra time for emergency workers who have experienced prolonged and/or repeated traumatic exposure.
 30. Emergency workers' responses to psychological therapy should be reviewed regularly. If an adequate response to one type of trauma-focused psychological therapy (TF-CBT or EMDR) is not observed after 12 trauma-focused sessions, the practitioner should revisit the case formulation; assess potential treatment obstacles; and consider further sessions, alternative trauma-focused treatments or augmentation with pharmacological treatment (see Guidelines 34-40 below).
 31. Empathic support can be an important step in preparing emergency workers for PTSD-specific treatment. However, non-trauma-focused psychological interventions, such as relaxation or supportive counselling, should not be used for treatment of PTSD. If trauma-focused interventions are not available or cannot be tolerated by the worker, second-line psychological interventions should be considered. These include narrative exposure therapy, present-centred therapy and stress inoculation training.
 32. Where possible, clinicians should offer the prolonged exposure components of trauma-focused psychological therapies in an individual, face-to-face setting, even if other components are delivered in a group setting. However, when this is not possible, or if the patient refuses, other delivery methods, including internet-delivered or group cognitive behavioural therapy (CBT), can be offered.
 33. When appropriately trained clinicians are not available for in-person sessions, evidence-based treatments can be effectively delivered via videoconferencing platforms
 34. Clinicians should consider medication for the treatment of PTSD amongst emergency workers when:
 - a. the emergency worker has a co-morbid mental health condition or symptoms where medication may be indicated (for example depression)
 - b. the emergency worker's circumstances are not sufficiently stable to commence trauma-focused psychological therapy
 - c. the emergency worker has not gained sufficient benefit from trauma-focused psychological therapy
 - d. the emergency worker is unable or unwilling to engage in trauma-focused psychological therapy
 - e. there is no immediate access to a trained professional who can deliver trauma-focused psychological therapy.

35. When medication is trialed for the treatment of PTSD, selective serotonin reuptake inhibitor (SSRI) antidepressants should be used initially.
36. When treating PTSD, clinicians should prescribe SSRI antidepressants at half the usual starting dose used for treating depression (to reduce transient increases in anxiety symptoms); however, titration to higher doses is often needed to achieve the full effect.
37. If the required treatment response does not occur after 12 weeks of an adequate dose of a SSRI antidepressant, the treating clinician should revisit the case formulation and consider raising the dose (if the current dosage is well tolerated); swapping to an alternative antidepressant, including the serotonin-norepinephrine reuptake inhibitor (SNRI) venlafaxine; combining pharmacological and psychological treatments; or augmenting the SSRI with another type of medication (as outlined in Guideline 39 below).
38. When an emergency worker responds to a drug treatment with no unacceptable side effects, the medication should be continued for at least 12 months from the time of symptom response.
39. Alpha-adrenergic antagonists, atypical antipsychotics, benzodiazepines and anti-convulsant medication should not be routinely used as initial treatment for emergency workers with PTSD.
40. When symptoms have not responded adequately to antidepressant medication, practitioners should consider the addition of an alpha-adrenergic (prazosin) or an atypical antipsychotic as an augmenting agent. Prazosin may help in reducing the frequency of nightmares and sleep disturbance. Algorithms are available to assist clinicians to make decisions about the use of augmenting medications. Those prescribed atypical antipsychotics will require an ECG and regular blood tests to monitor for possible side effects.
41. Benzodiazepines can be prescribed for short-term relief of severe anxiety or insomnia in cases of PTSD or to assist with a planned alcohol withdrawal. These medications should be prescribed at the lowest possible dose and for less than four weeks.
42. Appropriate medication should be used to treat any diagnosed co-morbid mental illness, such as depression, in line with disorder-specific treatment guidelines.
- ## Treatment sequencing in the setting of co-morbidity
43. When an emergency worker presents with both PTSD and mild to moderate depression, clinicians should consider either treating the PTSD first or providing concurrent treatments for both conditions.
44. When co-morbid depression is severe, primary or long standing, clinicians should treat the depression prior to treating the PTSD symptoms or consider treating the disorders concurrently.

45. When PTSD is combined with substance misuse, clinicians should consider the possibility of integrated treatment of both conditions. However, the trauma-focused psychological component of PTSD treatment should not commence until the emergency worker has demonstrated an ability to attend sessions and manage distress without abusing alcohol or drugs in a way that leads to dangerous situations.

46. When an emergency worker with PTSD experiences severe sleep disturbance, it is important for clinicians to integrate cognitive behavioural therapy for insomnia (CBT-i) and sleep hygiene practices into treatment. Sleep difficulties can impede treatment success and are often resistant to trauma-focused psychotherapy.

47. When an emergency worker with PTSD presents with significant levels of anger, clinicians should delay exposure therapy and place their initial emphasis on cognitive behavioural interventions targeted at anger.

48. Emergency workers may experience guilt, shame or other responses to moral injury. Clinicians should consider combining cognitive therapy approaches with broader therapeutic strategies that address feelings of transgression or maladaptive perceptions of identity.

Enhancing occupational function and return to work

49. Occupational recovery should be considered from the very beginning of treatment. When possible, remaining at, or returning to, work should be an aim of treatment and considered an important part of the recovery of emergency workers with PTSD.

50. Most emergency workers with PTSD can gain benefits from appropriate treatment. As such, where possible, clinicians should avoid putting constraints on patients' occupational recovery (for example, stating they will never work again) until adequate trials of proven treatments have been undertaken. However, the extended use of modified duties may be necessary to lessen the risk of recurrence or intensification of subsyndromal symptoms once treatment has been completed.

51. Employers should, when possible, attempt to maintain regular supportive contact with an emergency worker who is away from work due to PTSD. Regular, supportive contact is important during all stages of an episode of sickness absence.

52. The treatment of emergency workers with PTSD must be integrated with return to work/recovery programs, with regular supportive contact between the worker, the workplace and the treating clinicians.

53. While emergency workers with PTSD may require a period away from operational duties, clinicians should consider the possibility of adjusted duties and partial return to work as ways of promoting recovery and reducing the risk of long-term sickness absence.
54. Any adjustment to usual work duties should be agreed by the emergency worker, the treating clinicians and the relevant occupational health rehabilitation coordinator. Duties should be provided that allow the meaningful rehabilitation and ongoing employment of emergency workers. Alternative duties should be non-stigmatising and, where possible, commensurate with the worker's level of experience and seniority.
55. If an emergency worker with PTSD requires a period away from their usual duties, they should be made aware of which individual or individuals within the emergency service they or their clinician can speak to, if needed, to help plan their recovery and rehabilitation. This individual or individuals should have knowledge of the organisation; the recovery pathways available; and the hazards, risks and benefits of returning to work.
56. Symptomatic treatments alone may not improve occupational outcomes. All emergency workers who are absent from work due to PTSD should be offered work-focused interventions, such as work-focused exposure therapy, in addition to standard symptom-focused treatment.
57. All emergency workers who engage with psychological therapy should have work-related triggers and work-specific anxieties addressed as part of their treatment. Clinicians should monitor workers' reactivity to these triggers on return to emergency work as these are predictors of relapse.
58. Key barriers preventing return to work and recovery should be identified and discussed as part of the management of emergency workers with PTSD. This may involve considering interventions for non-trauma related work and non-work factors.
59. A return to work should be planned between the emergency worker, the treating clinicians, the employer and, when present, the workplace occupational health service.
60. Emergency workers can return to operational duties if their symptoms have substantially improved, even while still undertaking treatment (including medication) for PTSD. However, all aspects of an emergency worker's role must be considered prior to a return to full duties, including special circumstances such as carrying a weapon or driving regular or heavy vehicles at high speed.
61. When an emergency worker who has had PTSD returns to work, the treating clinicians, the emergency worker, the employer and the workplace occupational health service should agree on how the emergency worker's

symptom levels will be monitored and the types of symptom recurrence that should prompt a re-assessment.

62. In some circumstances, it will be necessary to consider a permanent cessation of an emergency worker's employment in the emergency services. Consideration of this should only occur after an adequate trial of evidence-based treatments. All workers who are unable to continue with their employment should still be offered symptom and work-focused interventions to maximise their future functioning.
63. When an emergency worker ceases employment in emergency services as a result of PTSD, it is important that employers and occupational recovery agencies foster an environment in which the worker can feel proud and respected for their previous professional achievements.





Introduction

Emergency services organisations ensure public health and safety by responding to, and preventing, various emergency situations. Within Australia there are three main emergency services — police, fire and rescue, and ambulance — as well as various additional voluntary emergency organisations. These include the State Emergency Services (SES), coast guard, marine rescue, rural fire service and life savers. Workers and volunteers within each of these organisations are exposed to potentially traumatic events as part of their daily work or volunteer activities.

A degree of psychological distress is common after traumatic experiences.³ In most cases, an individual's personal coping strategies and established support networks will enable them to quickly return to their usual level of functioning. However, some individuals will experience persistent symptoms or an increase in symptom intensity over time, leading to a psychiatric diagnosis. There are a range of potential mental health problems that may occur in the aftermath of a traumatic event, including depression, anxiety, acute stress disorder (ASD) and post-traumatic stress.⁴⁻⁹

Post-traumatic stress disorder (PTSD) is a relatively new diagnosis. However, its predecessor, traumatic neurosis, has long been documented in the scientific literature. While the psychological consequences of trauma have been known about for many years, PTSD was only formally recognised as a diagnostic label in the 1980s.¹⁰

Over the last 30 years, there has been considerable debate regarding the frequency of PTSD following trauma and how the psychological consequences of trauma should be managed. Despite these debates, there is clear evidence that emergency workers have higher rates of PTSD symptoms than the general population and that, for many emergency workers, these symptoms cause significant distress and functional problems.^{11 12} As a result of this symptom burden, large numbers of emergency workers with PTSD are declared unfit to work, with many losing the ability to continue doing work they love. Disabling mental illness following workplace trauma is a tragic outcome for all concerned — the individual, the emergency services and society at large.

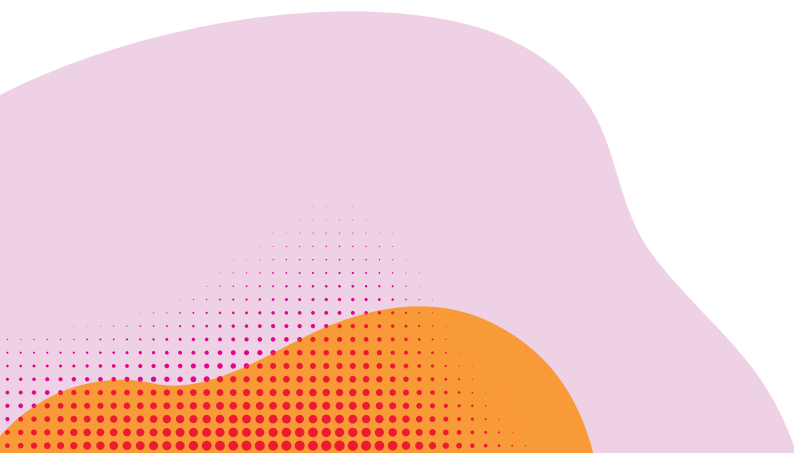


Aims of these guidelines

The guidelines presented in this report combine expert opinion and the best available research evidence to produce succinct, focused guidance on the diagnosis and treatment of emergency workers with PTSD. As noted in the Foreword to this report, these guidelines build on National Health and Medical Research Council (NHMRC) approved Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder.² However, they differ from these and other previously available guidance by focusing on the unique challenges associated with treating PTSD amongst emergency workers.

Treating emergency workers with PTSD can be a complicated task. In developing these guidelines, the authors have considered as many of the common complicating factors as possible. This document is intended to be a general evidence-based guide to appropriate practice, to be followed subject to a practitioner's judgement and consideration of the circumstances of the individual patient in each case.

There is increasing interest in the notion of preventing mental disorder, such as PTSD, with evidence-based workplace interventions.¹³ As a result, topics such as resilience training, pre-employment screening, wellbeing checks, peer support schemes and post-trauma interventions are of vital importance to emergency services.¹⁴ However, these pre-diagnosis interventions were not within the scope of these guidelines, which have been designed to focus on what should occur once PTSD is suspected or established in an emergency worker. More details about pre-diagnosis interventions can be found in other published reviews¹⁴⁻¹⁷ and in the Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder.²



Expert panel composition

The expert panel that authored these guidelines was co-chaired and convened by Prof Samuel Harvey and Prof Richard Bryant. The panel composition ensured that a wide variety of views and both clinical and academic expertise were considered in the construction of these guidelines. Panel members' professional backgrounds include psychiatry, psychology, general practice and occupational medicine. The expert panel and authors of this report were:



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Role of funding body



The development of these guidelines was made possible by the funding from Employers Mutual (part of the EML Group), which offers workers' compensation insurance and claims management services across multiple states and schemes.

The authors of these guidelines were granted full editorial and academic independence throughout the development of these guidelines. Employers Mutual have had no influence on the content, conclusions, or recommendations presented within these guidelines. This independence was ensured through formal agreements with both the University of New South Wales and the Black Dog Institute, governing the funding and development process.

For more information on Employers Mutual or the EML Group, please visit: www.eml.com.au

A detailed table provided in Appendix 1 provides the affiliation and a full conflict of interest statement for each author.





What is PTSD and how common is it amongst emergency workers?

The potential for adverse psychological effects following exposure to trauma has been recognised for many years. Earlier conceptualisations of traumatic stress typically regarded these reactions as transient responses that would normally abate shortly after trauma exposure. The diagnosis of PTSD was formally recognised in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III).¹⁰ This formal recognition was initially heavily influenced by the need to understand and support veterans returning from Vietnam with PTSD reactions, although over time the relevance of PTSD to non-military populations has increasingly been recognised.

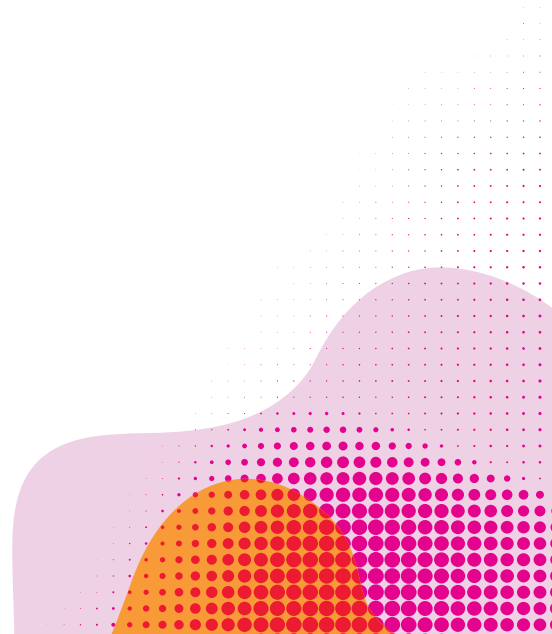
PTSD describes severe and persistent stress reactions after exposure to a traumatic event. A pre-requisite to the symptoms of PTSD is that an individual must be exposed to threatened or actual death or serious injury to self or others, including repeated or extreme exposure to the adverse details of traumatic events, as typically occurs with emergency workers. PTSD comprises four additional major clusters of symptoms:

1. Re-experiencing symptoms, including intrusive memories, flashbacks, nightmares, and distress to reminders of the trauma
2. Avoidance symptoms, including active avoidance of thoughts and situational reminders of the trauma
3. Negative cognitions and mood associated with the traumatic event, such as an inability to remember important details about the event or persistent unusual ideas about the cause of consequence of the traumatic experience
4. Arousal symptoms, including exaggerated startle response, insomnia, irritability, and sleeping and concentration difficulties

The latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) requires that for a diagnosis of PTSD, at least one symptom in each of these clusters must be present for more than one month and be associated with significant distress or impairment in social, occupational or other important areas of functioning.¹⁸

There is strong evidence that many people who are exposed to a traumatic experience commonly report post-traumatic stress reactions in the initial weeks after trauma, but that for most, these symptoms are transient.³ For example, detailed studies of south Manhattan residents following the September 11 terrorist attacks show rates of probable PTSD one month after the attacks were around 7.5%, but that by six months after the incident, rates had decreased to more normal background rates of 0.6%.¹⁹ A further study followed police responders who attended the World Trade Centre following the terrorist attacks over an eight-year period.²⁰ Given the direct exposure to trauma, their rates of PTSD were, as expected, higher than those seen in the previously mentioned studies of civilian residents. However, after eight years, 78% of police officers were classed as demonstrating a resistant/resilient trajectory of PTSD symptoms, with a further 8% classed as continuing to recover.²⁰

Despite a general trend for symptoms to occur soon after a traumatic event, then gradually abate, mental health symptoms can follow numerous trajectories. The most notable example of this is delayed-onset PTSD, where the initial symptoms present more than six months after a traumatic incident. Delayed-onset PTSD has been best described in military samples. Some estimates suggest that this type of PTSD may account for as many as 38% of all PTSD cases.²¹ In the eight-year follow up of police officers attending the World Trade Centre attack described above, 9% of officers were described as having a delayed onset of PTSD symptoms.²⁰ A variety of explanations for delayed-onset PTSD have been offered, including an exaggerated initial numbing response, additive impact of post-trauma stressors, the impact of cumulative trauma, missed early low-level symptoms and sensitisation.²¹⁻²³



PTSD presentation amongst emergency workers

The nature and pattern of trauma exposure amongst emergency workers are different to those experienced by other populations. Emergency workers expect to experience multiple episodes of potentially traumatic experiences while undertaking their usual work. They may witness individuals who have been badly hurt or deceased, be directly threatened themselves, or, in the case of police officers, be required to seriously wound or kill others as part of their job. As a result of this regular exposure, an emergency worker's response to trauma is often anger and guilt rather than the fear or horror often described by members of the general population exposed to one-off, unexpected trauma. Given these differences, it is not surprising that emergency workers with PTSD may present in different ways.

Individual emergency workers may experience a gradual build-up of distress and symptoms over a prolonged period rather than a sudden onset of symptoms after one isolated event. Alternatively, they may present with an acute onset of symptoms after a single event. Many emergency workers exposed to repeat traumas demonstrate sensitisation, with increasingly severe responses to each successive trauma exposure, or kindling, when lesser traumatic events that previously would not have caused them distress begin to generate mental health problems.²³ Given the culture of first response work, many emergency workers will attempt to minimise post-trauma symptoms and may present initially with more indirect symptoms, such as substance abuse, interpersonal conflict or violent outbursts. In addition, emergency workers with PTSD can display more pervasive disinterest in daily activities, emotional numbing and social withdrawal relative to others with PTSD.²⁴ These more dysphoric or depressive features of PTSD can occur as a result of years of service in which the worker has developed coping strategies to distance themselves from emotions, and as accumulative effect of suffering PTSD symptoms over an extended period of time. Clinicians should be aware of these issues during the assessment because they are often not obvious and can be more difficult to identify.²⁵

As a result of these complexities, there has been some debate regarding the exact prevalence of PTSD amongst emergency workers. However, a large published systematic review and meta-regression examining the results of international studies of over 20,000 emergency workers concluded that the prevalence of PTSD amongst current workers was 10%.¹¹ This figure may be an under-estimate as it is likely that rates are even higher amongst retired emergency workers, particularly those who have retired early due to poor health.¹²

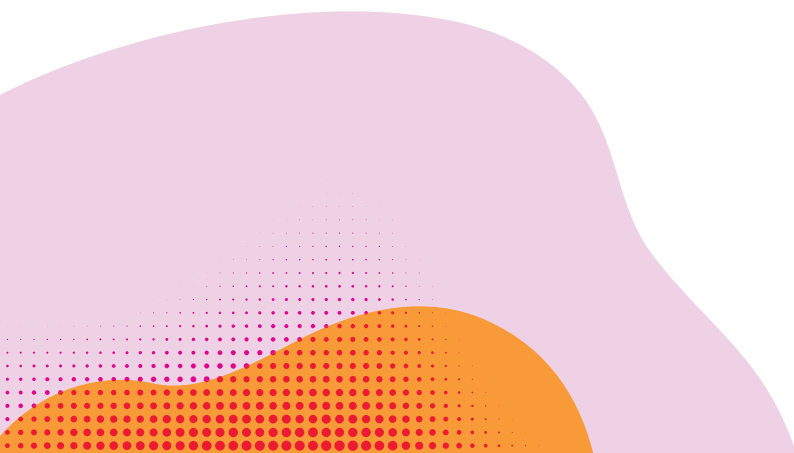
The prevalence and nature of PTSD amongst volunteer emergency workers is less clear, although Australian data from volunteer firefighters suggest that those exposed to regular trauma are at similarly increased risk.²⁶

While there are many considerations around the presentation and management of PTSD amongst emergency workers, there is also potential for variation in the issues relevant for different types of emergency workers. Perhaps most notably, some emergency workers (such as rural firefighters and State Emergency Service workers) perform their emergency service work in a voluntary capacity. Despite the intermittent nature of their emergency service work, these individuals may still be exposed to significant trauma. As emergency service work is not their primary occupation, volunteer workers are likely to have different levels of training and experience prior to any traumatic event and may also have less immediate access to specific supports. Even full-time emergency service workers may have differing levels of support and rehabilitation options depending on whether they are based in metropolitan or rural areas. Finally, within each emergency service, there are specific occupational aspects — for example, decisions around police officers carrying weapons or firefighters holding heavy vehicle licenses — that treating practitioners must consider.



Subsyndromal PTSD symptoms

An additional complexity amongst emergency workers is the issue of subsyndromal symptoms. Subsyndromal symptoms occur when an emergency worker has symptoms consistent with PTSD but where the intensity or combination of symptoms are not sufficient for PTSD to be diagnosed. A number of cross-sectional and longitudinal studies have suggested that subsyndromal PTSD is relatively common amongst emergency workers.²⁷ Once subsyndromal symptoms are present, they can become chronic and associated with significant impairment.^{28,29} Studies of emergency workers have shown that early or prolonged subsyndromal symptoms increase the risk of future mental health problems such as PTSD.³⁰ Subsyndromal PTSD symptoms have also been associated with higher rates of co-morbid depression,³¹ increased levels of suicidal ideation,³¹ greater anger and hostility,³² and more sickness absence.³³ There is increasing awareness of the importance of early recognition and early intervention within psychiatry.³⁴ As such, individuals with subsyndromal symptoms of PTSD or early signs of ASD are increasingly considered as candidates for proactive early interventions. While a detailed discussion of these pre-diagnosis interventions falls outside the scope of these guidelines, it is important to recognise that subsyndromal symptoms are particularly relevant for emergency workers exposed to multiple traumatic incidents.





Co-morbidity with other disorders

PTSD, particularly when long standing, rarely exists in isolation. Australian data suggest that 85% of men and 80% of women with PTSD also meet criteria for another mental health conditions, most commonly depression, generalised anxiety disorder, alcohol abuse or illicit drug use.³⁵

It is also relevant to note that several studies indicate that a proportion of emergency service workers can present with complex PTSD. This disorder was introduced in ICD-11³⁶ and is characterised by PTSD combined with disorders in self-organisation, including emotion dysregulation, poor self-concept and relational problems. Surveys have found that CPTSD can occur in between 1.5% and 12.6% of police officers who respond to surveys about traumatic events.^{37 38}

The importance of co-morbidity is threefold: firstly, co-morbid conditions can create diagnostic confusion; secondly, there is a general acceptance that individuals with more than one mental health condition co-occurring have poorer outcomes; and finally, when co-morbidity is present, clinicians need to decide which of the conditions to treat first or whether they can be treated concurrently.

Clinicians should be cognizant of ongoing stressors and organisational pressures that many emergency workers experience as part of their work. Although not traumatic and not meeting Criterion A (a traumatic event), these stressors can exacerbate PTSD and other psychological problems. Workplace bullying, perceived or actual lack of organisational support, and other workplace stressors can foster psychological problems that may be independent of PTSD, or may contribute to severity of PTSD that results from trauma. Accordingly, enquiry about the workplace and other ongoing stressors should be part of the clinical assessment. In some instances, the diagnosis of Adjustment Disorder rather than PTSD, may be indicated if the person has an anxiety or depressive response to ongoing stressors.

A related concept to co-morbidity is the awareness that many individuals with PTSD will have suffered significant financial and social consequences of their emerging symptoms. One study of military reservists with PTSD found that more than one in five had reported actual or serious consideration of separation from their partner since their symptoms commenced.³⁹

Thus, by the time PTSD is identified, there may be substantial psychosocial co-morbidity.

The issues surrounding co-morbidity also extend to physical health problems. It is well established that rates of mental disorder are higher amongst those with chronic physical health problems.⁴⁰ In recent years, there has been increasing evidence of the importance of physical health symptoms, particularly pain, amongst those with PTSD.⁴¹ Some studies have found as many as 80% of veterans presenting with PTSD also complain of chronic pain.⁴² Given such prevalence estimates and the complicating role that chronic pain can have on the treatment and functional recovery from PTSD, enquiring about chronic somatic symptoms such as pain should form part of the routine assessment of PTSD.



Diagnosing PTSD amongst emergency workers

As outlined above, while the symptom clusters that define PTSD are well described, the particular pattern and presentation of PTSD can be variable, particularly amongst emergency workers. This variability and atypical style of presentation can make PTSD more difficult to diagnose in this group. Detailed studies have shown that PTSD is frequently overlooked and missed as a diagnosis in both primary and tertiary care.⁴³ Combined with the stigma associated with mental health problems, which may make emergency workers reluctant to disclose their symptoms, this suggests that PTSD may, at times, be under-diagnosed amongst emergency workers.

There are numerous potential barriers to care that may prevent emergency workers with mental health symptoms from receiving appropriate mental health care. Many emergency workers will be reluctant to ask for help due to fear of negative impacts on their career prospects or standing amongst their fellow workers. A lack of awareness of mental health symptoms and the potential for treatment may also reduce rates of presentation. When emergency workers do seek help, this may initially occur via Employee Assistance Programs (EAP), peer support or workplace counselling services. The level of experience in conducting mental health assessments may vary within these services, which will have an impact on the utility of the initial advice that emergency workers receive.

Many emergency workers who do eventually seek help for PTSD only do so after their condition has become entrenched, leading to considerable disability and inability to work. There are many benefits of striving for early diagnosis of PTSD, including (a) reducing likelihood of co-morbid conditions developing, (b) promoting a sense in emergency workers that symptoms can be managed effectively and continuation of work can be achieved, (c) reduced probability of disability claims that can lead to long-term impairment, and (d) access to evidence-based treatments that can resolve the PTSD before it becomes a chronic condition.

In contrast to concerns regarding these barriers to appropriate diagnosis and care, PTSD may, at times, also be diagnosed too readily amongst emergency workers. An Australian study recently assessed the quality of diagnostic assessments in a selection of emergency service workers making PTSD-related compensation claims.⁴⁴ They found that in most cases, the quality and rigor of the diagnostic process was inadequate, with only one out of 31

reports meeting what was considered a minimum standard for diagnosis.⁴⁴ The presence of such obvious trauma exposure amongst emergency workers may lead clinicians to neglect other possible mental health diagnoses and to settle on a diagnosis of PTSD too rapidly. Based on these contrasting pieces of evidence, it is difficult to say whether overall PTSD is over- or under-diagnosed amongst emergency workers. What is clear is that the precision of psychiatric diagnosis amongst emergency workers can be improved.

Diagnosing PTSD amongst emergency workers is a complex task that often takes time and multiple assessments. Diagnostic accuracy can be increased via comprehensive clinical assessments that utilise a range of sources such as clinical interviews, structured assessments, self-report measures and collateral history. In cases where compensation is involved, the diagnostic assessment should also consider issues relating to causation and the possibility of symptom exaggeration or malingering.⁴⁵ There is increasing awareness of PTSD symptoms amongst emergency workers and evidence that individuals can fake post-traumatic stress symptoms with considerable proficiency in clinical interviews, particularly when using self-report symptom inventories.^{46,47} This observation is not intended to suggest that the majority of PTSD cases amongst emergency workers are not real (indeed, as noted above, under-reporting of mental health symptoms and symptom minimisation amongst emergency workers can also be a major problem) but highlights the importance of directly addressing this possibility at the time of diagnosis. The possibility of symptom exaggeration or malingering should be examined more closely when an emergency worker reports all PTSD symptoms that the clinician enquires about and emphasises re-experiencing (rather than avoidance and numbing) symptoms, or when symptom reports are inconsistent with functioning. While interviewing techniques such as open questions and direct observation of possible symptoms like hypervigilance and flat affect may help, the evidence suggests that clinical observation alone is not always a reliable means of detecting symptom exaggeration.⁴⁵ A number of psychological tests have been proposed to assist in detecting the feigning of psychological symptoms, including the Minnesota Multiphasic Personality Inventory (MMPI/MMPI-2),⁴⁸ Miller Forensic Assessment of Symptoms Test (M-FAST),⁴⁹ and the Personality Assessment Inventory (PAI).⁴⁷ Collateral history can also be useful, as can determining the course of the symptoms relative to the timing of the legal and compensation-seeking actions. Clinicians assessing an emergency worker for possible PTSD should not commence their assessment with self-report questionnaires that list symptoms.

A further task when compensation-related questions are being asked is the distinction between diagnosis and impairment. It is important that the assessment of psychological injury goes beyond the simple level of diagnostic definitions and addresses how psychological injury is adversely affecting the individual. As functional impairment is a relevant criterion to meet PTSD diagnostic criteria, it is important for clinicians to pay close attention to how an emergency service worker's functioning in the workplace, family or

interpersonally is impaired. For example, an individual may suffer a range of PTSD symptoms but may be able to function very ably.⁴⁵ Further, subsyndromal symptoms of PTSD are common amongst emergency workers, with increasing recognition of the importance of identification and possible early treatment of those with sub-threshold symptoms.^{29 50}

Guidance recommendations

1. Practitioners should be sensitive to confidentiality issues with emergency workers and establish the parameters of confidentiality and information disclosure management prior to assessment.
2. PTSD should only be diagnosed following a thorough clinical assessment that covers the history of presentation, trauma history, symptom profile, general psychiatric assessment, physical health, substance use, personal history, family history, and social and occupational functioning.
3. Other potential post-traumatic mental health conditions, such as depression, anxiety disorders or substance misuse, should be considered, both as alternative primary diagnoses and as co-morbid conditions.
4. Primary care clinicians and other health care providers may be able to assist in identifying potential cases of PTSD. However, where possible, health professionals trained in psychopathology and experienced in mental health assessments should conduct a mental health assessment of any emergency worker suspected of suffering PTSD.
5. While clinician assessment should form the main basis of a diagnosis of PTSD, consideration should be given to combining clinician assessment with validated self-report and structured clinical interview measures. Clinicians should also not rely solely on self-report scales or purely directive questions. Emphasis should be placed on detailed analysis of patients' experiential reports and objectively verified evidence.
6. Clinicians assessing emergency workers with possible PTSD should be aware of the different ways in which PTSD may present in this group given the cumulative exposure to trauma in the course of employment. They should focus on the lifetime exposure to trauma as well as the immediate antecedent event that may have prompted presentation for treatment.

7. Clinicians should be aware of the risk of symptom minimisation and symptom exaggeration and assess for these as a regular part of their diagnostic assessment.
8. Clinicians should be sensitive to the tendency for emergency workers to present with emotional numbing and detachment, which can contribute to poor functioning.
9. A functional assessment, including both occupational and non-occupational functioning, should be part of any diagnostic assessment.
10. Co-morbid mental health conditions, including complex PTSD, should be identified and treated with evidence-based interventions.
11. Co-morbid physical health problems, particularly chronic pain, should be enquired about and addressed as part of the routine assessment of emergency workers suspected of suffering PTSD.
12. Subsyndromal symptoms of PTSD are relatively common amongst emergency workers and associated with a range of adverse outcomes. Early intervention should be considered in emergency workers with persistent or distressing subsyndromal symptoms.
13. Assessments should recognise that emergency workers can experience a range of PTSD symptoms but still function at a high level – that is, the presence of symptoms does not necessarily result in occupational impairment.
14. Clinicians should also be aware that many emergency workers have suffered adverse experiences during medico-legal and compensation-related assessments. All assessments, whatever the reason, should be conducted in a supportive and objective manner.
15. Clinicians should be cognizant of ongoing stressors and organisational pressures that many emergency workers experience as part of their work. These stressors can exacerbate PTSD and other psychological problems.



Treatment planning and setting

General considerations

Once PTSD is established, effective, evidence-based treatments should be commenced as soon as possible. Although both early and delayed interventions for established PTSD have similar rates of symptom response,⁵¹ early intervention should reduce some of the occupational and social consequences of PTSD. Despite this, many emergency service workers may be reluctant to seek help and may have been suffering from varying levels of PTSD symptoms for many years prior to asking for assistance. Once an emergency worker has sought treatment, it is essential that they feel the treatment setting is a safe environment. A strong therapeutic alliance between the treating clinician and patient is associated with improved treatment adherence and improved outcomes amongst those with PTSD.⁵² Individuals suffering from PTSD need to feel comfortable and safe before they can begin to discuss their prior traumatic experiences. Given the chronic nature of many emergency workers' trauma experiences, building an adequate therapeutic alliance may take additional time. This generally requires the clinician to have some prior knowledge and experience of the occupation setting and culture. Whether a safe treatment environment can be constructed while an emergency worker is continuing to carry out their usual duties requires careful consideration. If their work is associated with significant risk of further trauma exposure and the threat of further exposure is impeding trauma-focused therapy, then a period of modified work duties is most likely required.

As outlined in the following sections, there are a range of evidence-based treatments that can be offered to an emergency worker with PTSD. Ethical management of emergency workers demands that evidence-based treatments are employed, preferably by appropriate specialists (typically psychiatrists or clinical psychologists) with training in trauma-focused cognitive behaviour therapy. There are currently treatment manuals available, including manuals dedicated to treatment of emergency workers²⁵; these should be followed in treatment planning and execution.

The selection of the correct treatment or collection of treatments for any individual will depend on a range of individual factors, such as duration of symptoms, presence of co-morbidity, prominence of different symptoms clusters, the patient's ability to consider psychological concepts and patient preference. In more severe cases, a combination of

interventions may be offered, meaning a whole team of clinicians will be involved. Although this may be appropriate, it is essential that one clinician retain overall responsibility for the management and co-ordination of treatment.

Guidance recommendations

- 16.** Once a diagnosis of PTSD has been established, evidence-based treatments should be commenced without delay.
- 17.** While only evidence-based treatments are recommended, a range of other factors, including patient choice, should be considered when deciding which treatments to commence.
- 18.** Practitioners who provide mental health care to emergency workers with PTSD, regardless of professional background, must be appropriately trained to ensure adequate knowledge and competencies to deliver the recommended treatments. This requires specialist training over and above basic mental health or counselling qualifications.
- 19.** Even if treatment is being provided by psychiatrists, clinical psychologists or other mental health professionals, an emergency worker's general practitioner should remain an active member of the treating team. When treatment is shared between different clinicians or between primary and secondary care, it is essential that practitioners agree on who has primary responsibility for coordinating care and monitoring progress.
- 20.** A safe environment is necessary for the delivery of trauma-focused therapy. Emergency workers may require their duties to be temporarily modified to prevent further exposure to potentially traumatic events while undertaking treatment. However, in many cases, workers may engage with treatment while continuing to work. These decisions should be made jointly between the treating clinician, the patient and the occupational rehabilitation case manager.
- 21.** To facilitate safety for the emergency worker, treatment should respect the worker's rights to privacy and confidentiality, especially in relation to their employer. Whilst at times the employer will be familiar with details of treatment progress, the extent to which confidentiality can be maintained should be openly clarified at the outset of treatment.

Treatment setting

The treatment of PTSD amongst emergency workers can be conducted in an inpatient hospital setting, day hospital programs or in outpatient community environments. As noted in the following sections, the setting of any treatment is less important than the form and content of the intervention applied. However, most clinical trials examining the efficacy of PTSD treatments are conducted in community and outpatient settings. Community treatment has several advantages, including less disruption to an emergency worker's usual relationships, social supports and functioning and the ability to incorporate in vivo exposure into treatment. However, inpatient treatment may sometimes be required if the clinician is concerned about the patient's safety or symptom severity.

PTSD is associated with an increased risk of self-harm or suicide⁵³ and aggressive behaviour towards others.⁵⁴ Individuals with PTSD are six times more likely to attempt suicide and five times more likely to consider self-harm compared to the general population.⁵⁵ These risks increase if co-morbid psychiatric conditions, such as depression or substance misuse, are present. As a result, it is essential that clinicians consider and assess the risk of self-harm and violence, including family violence, in every emergency worker with PTSD.⁵⁶ If there is a significant risk of harm, then more restrictive treatment options such as inpatient care should be considered.

Guidance recommendations

- 22.** The risk of self-harm, aggression and violence must be regularly assessed throughout each stage of treatment of any emergency worker with PTSD. The risk of these behaviours recurring requires reassessment when returning a worker to frontline duties.
- 23.** In general, emergency workers with PTSD can be treated as outpatients. Inpatient care should only be required when there are severe co-morbid psychiatric diagnoses, serious threat of harm to themselves or others, or for severely ill patients who lack adequate social support outside a hospital setting.

Treatment goals

It is important that all treating clinicians and the emergency worker agree on realistic treatment goals at the planning stage of PTSD treatment. These goals should be reviewed regularly. Treatment goals not being met should prompt review of the treatment plan. Treatment goals should be individualised for each patient, but the American Psychiatric Association suggests there should be five broad categories of goals when treating PTSD:⁵⁷

1. Reduce severity of PTSD symptoms
2. Prevent or reduce other trauma-related co-morbid conditions
3. Improve personal, social and occupational functioning
4. Protect against relapse
5. Integrate the trauma experienced by the patient into a more constructive schema of risk, safety, prevention and protection

As a result of the increasing influence of patient groups in recent decades, a new model of chronic disease management has emerged. Called the recovery model⁵⁸, it has primarily been used in the conceptualisation of severe mental illness, such as psychosis, but is equally relevant to the care of those with PTSD. Within the current context, treatment within the recovery model emphasises the importance of the partnership between the emergency services worker, health care professionals, employers, insurers and occupational recovery agencies. This model emphasises the importance of recognising and valuing the lived experience of emergency workers and integrating this experience with the clinical and workplace competencies of health practitioners and employers. The recovery model encourages all parties to recognise that an emergency service worker who has developed PTSD in the course of their duties has a personal identity beyond their diagnosis. Further, all parties should aim to interact with the emergency service worker in a manner that recognises their dignity and maintains a respectful consideration of the service they have provided to the wider community.

This model also encourages all parties to move beyond a narrow focus on symptoms to a broader focus on recovery that includes improved social and occupational functioning and reduced stigma and other unhelpful attitudes, beliefs and behaviours.

Guidance recommendations

- 24.** Prior to commencing treatment for PTSD, patients and clinicians should agree on a set of treatment goals that consider symptom levels, functional improvement, quality of life and occupational and social recovery.
- 25.** Assessment and monitoring should be undertaken throughout treatment. If adequate progress towards the agreed goals is not being made, the treatment provider should revisit the case formulation, reassess potential treatment obstacles, and implement appropriate strategies, or refer to another practitioner.

Psychological treatments for PTSD

Trauma-focused cognitive behavioural therapy

Cognitive behavioural therapy (CBT) is based on the underlying rationale that an individual's affect and behaviour is determined by their cognitions, which are in turn influenced by behaviour. Therapy aims to change an individual's specific misconceptions and maladaptive assumptions, either directly or via behaviour providing correcting information.⁵⁹ CBT has been successfully used to treat a range of mental disorders, including depression and many anxiety disorders. When used in PTSD, CBT should have two main components. The cognitive component of therapy should aim to help individuals identify, challenge and modify distorted thoughts relating to themselves and the world around them that result from their traumatic experience. The behavioural aspect of therapy should utilise prolonged imaginal and in vivo exposure to allow the emergency worker to confront their memory of the traumatic event and trauma-related situations in a gradual and supported manner. Through the process of 'extinction learning', these behavioural processes should present corrective information and result in reduced anxiety levels when the emergency worker is exposed to their memories of trauma events or situational triggers.

In practice, a course of trauma-focused CBT (TF-CBT) for PTSD will usually begin with psychoeducation. The patient is then led through a series of exercises in which the traumatic event and its aftermath are imagined and described, with particular focus on the level of negative emotion and arousal this experience generates. As with all CBT, homework assignments allow progress to continue outside of regular session times, with the patient often being asked to record observations while they expose themselves to anxiety-provoking in vivo situations.

Different variations of TF-CBT have been used to treat PTSD, each with a different level of emphasis on the cognitive and behavioural aspects of therapy. As with the Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder, treatments included under the heading of TF-CBT included prolonged exposure, in vivo exposure, cognitive therapy and cognitive processing therapy.

TF-CBT is the most studied intervention for adults with PTSD, with over 60 published randomised controlled trials (RCTs) comparing its effectiveness to both waitlist controls

and other interventions.² Based on the results of these multiple trials, there is good quality evidence that TF-CBT is effective at reducing PTSD symptoms and is more effective than other types of general psychosocial support, such as supportive counselling.^{57 60-64}

More recently, there has been an increase in research investigating the use of internet-delivered CBT for PTSD, with a number of trials suggesting internet-based CBT can be effective, either by itself or in addition to therapist-based treatment.^{65 66} A smartphone app that can facilitate this type of blended care has been developed specifically for use amongst emergency service workers,⁶⁷ although whether this is more effective than simple face-to-face treatment is yet to be determined. New technologies are now also in use within face-to-face therapy, with virtual reality experiences being deployed as a safe and easily modifiable way to reproduce anxiety-provoking situations within exposure therapy.⁶⁸

Despite the large volume of research literature surrounding TF-CBT in the general population, at the time of the first edition of these guidelines, there had only been two published RCTs of CBT as a treatment for PTSD amongst emergency workers.^{69 70} Although both studies reported positive effects from CBT compared to waitlist, the total number of emergency workers involved was only ⁷³, meaning any conclusions about the effectiveness of this technique specifically amongst emergency workers were preliminary. In 2019, the largest-ever controlled trial of CBT for treating PTSD amongst emergency service workers was published.⁷¹ This study, which involved 100 emergency workers with PTSD, showed that exposure-based CBT programs were an effective treatment in this group. Similar positive effects were seen regardless of whether the imaginal exposure to trauma memories lasted for 10 or 40 minutes during treatment sessions.⁷¹

CBT treatment is designed to be short term, with most studies of CBT for PTSD using 8 to 12 sessions.^{63 64} The key study showing efficacy of CBT in emergency service workers used a treatment program that involved 12 individual weekly sessions with one session of psychoeducation, four sessions of CBT skills training, six sessions that combined imaginal and in vivo exposure and one session of relapse prevention.⁷¹ Each session lasted between 60 and 90 minutes. When specific traumatic events are discussed within a session, longer session times (90 minutes) are recommended to ensure any anxiety and distress can be appropriately managed within the session.^{2 64} Some guidelines suggest that if treatment commences in the first month after an event, then fewer treatment sessions (around five) may be needed, although the relevance of this recommendation to emergency service workers who have multiple exposures to potentially traumatic events remains unclear.⁶⁴ It should be noted that some patients may require more than 12 sessions, especially if they have more chronic, complex symptoms and extensive histories of traumatic exposure. As noted above, many emergency workers will require additional time with a clinician before they feel safe discussing their trauma experiences and may have chronic symptoms. As such,

some emergency workers will require more sessions of TF-CBT. Treatment duration should be determined by a combination of progress and current symptom level; if an emergency worker has gained benefit from TF-CBT but continues to experience significant PTSD symptoms, then it is reasonable for treatment to be extended.

Eye movement desensitisation and reprocessing

Eye movement desensitisation and reprocessing (EMDR) is a specific form of treatment for PTSD first described in 1989. It is based on a belief that when PTSD occurs, the emotions and memories of the traumatic event are stored in an unprocessed manner. During EMDR therapy, a patient is asked to repeatedly focus on trauma-related thoughts, experiences and memories while following the movement of a therapist's finger across their field of vision. It is proposed that this dual attention facilitates the appropriate processing of the traumatic event. EMDR therapy has evolved over time and now usually involves 8 to 12 sessions. It includes many components that are considered core aspects of TF-CBT. This has resulted in some questioning the contribution of eye movements in any treatment effect of EMDR. In spite of these concerns, EMDR has been shown to be an effective treatment for PTSD in multiple RCTs, with a number of head-to-head comparison trials suggesting EMDR is as effective as TF-CBT.⁵⁷ Some have also suggested it may be a particularly useful intervention for those who have difficulty verbalising or discussing their traumatic experiences.⁵⁷ On the basis of this evidence, a number of (but not all) international guidelines for the treatment of PTSD recommend the use of EMDR.^{57 60 64} While a number of case reports describing the successful use of EMDR amongst emergency workers are available,⁷² to date there are no published RCTs of EMDR amongst emergency workers with PTSD.^{73 74}

Other psychological interventions

A wide range of other psychological interventions have been described in the treatment of PTSD, including narrative exposure therapy, present-centred therapy, and stress inoculation training. The Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder provide a comprehensive list and outline of these interventions.² The majority of literature relating to these other forms of intervention consists of case reports or smaller studies, hence providing limited evidence regarding their efficacy. Several non-trauma-focused interventions, particularly counselling and relaxation therapy, have been used as control conditions in trials of trauma-focused psychological treatments. These trials have shown that non-trauma-focused interventions are less effective in reducing PTSD symptoms than TF-CBT and EMDR.² Other non-trauma-focused interventions, such as stress inoculation training, have been found to reduce PTSD symptoms in the short term; however, these gains are again less than those seen with TF-CBT in the long term.⁷⁵

This observation is supported by the results of a recent meta-analysis of psychological interventions for PTSD amongst emergency service workers which showed that CBT-based interventions were significantly more effective at reducing PTSD symptoms than other types of psychological interventions.⁷⁶

There is increasing interest in the role of lifestyle interventions in the treatment of PTSD. The positive effects of physical activity on mental health, particularly levels of depression and more generalised anxiety, have been well documented.^{77 78} While interventions aimed at increasing physical activity are increasingly shown to enhance wellbeing and relieve the symptoms of other mental disorders, most notably depression,⁷⁹ studies investigating physical activity as a treatment for PTSD are still emerging. One open, non-randomised study of supervised exercise sessions for police officers with PTSD has been published; it suggested that guided exercise programs may have a role in reducing PTSD symptoms when used as part of a broader treatment program.⁸⁰ Similarly, early positive findings are beginning to emerge for mind-body exercise programs, such as modified yoga, which seek to combine both physical and psychological training techniques.^{81 82}

Group therapy can be an efficient means of delivering psychological interventions. Well-conducted groups also provide an opportunity for peer support, normalisation of post-traumatic experiences, and learning and motivation from other patients' experiences of recovery. Group CBT has been shown to be effective in treating PTSD,⁸³ however, it is noteworthy that one trial found better outcomes for CBT for PTSD when delivered individually.⁸⁴ Given such findings and the fact that the vast majority of the PTSD treatment literature relies on studies of individual therapy, most treatment guidelines tend to promote this as the most evidence-based treatment type.^{2 57 64} Because of the highly distressing nature of many traumatic incidents and the need to monitor the process of habituation to traumatic memories and situational triggers, it is generally recommended that the prolonged exposure components of any group-based CBT program be offered in an individual face-to-face format where progressive engagement with exposure tasks can be monitored and adjusted to maximise the emergency service worker's recovery.

Guidance recommendations

- 26.** All emergency workers suffering from PTSD should be offered a variant of trauma-focused cognitive behavioural therapy (TF-CBT), including prolonged exposure, cognitive processing therapy and trauma-focused cognitive therapy, or eye movement desensitisation and reprocessing (EMDR). As outlined below,

there are some circumstances in which an emergency worker's presentation or co-morbidities may require a delay before these therapies can be safely offered.

- 27.** Emergency workers will usually require 8 to 12 sessions of trauma-focused psychological treatment (either TF-CBT or EMDR), each lasting between 60 and 90 minutes. Many emergency workers will require additional treatment sessions, especially if they have severe symptoms, have experienced multiple traumatic events or have co-morbid mental health problems.
- 28.** Trauma-focused therapy normally includes prolonged exposure therapy that systematically exposes the patient/worker to the traumatic memories associated with their PTSD symptoms. If appropriate, feared or avoided situations, including those in the workplace, should be systematically addressed through in vivo exposure to optimise functioning.
- 29.** The development of a therapeutic alliance is necessary for undertaking specific psychological interventions. The establishment of a suitable therapeutic alliance may require extra time for emergency workers who have experienced prolonged and/or repeated traumatic exposure.
- 30.** Emergency workers' responses to psychological therapy should be reviewed regularly. If an adequate response to one type of trauma-focused psychological therapy (TF-CBT or EMDR) is not observed after 12 trauma-focused sessions, the practitioner should revisit the case formulation; assess potential treatment obstacles; and consider further sessions, alternative trauma-focused treatments or augmentation with pharmacological treatment (see Guidelines 34-40 below).
- 31.** Empathic support can be an important step in preparing emergency workers for PTSD-specific treatment. However, non-trauma-focused psychological interventions, such as relaxation or supportive counselling, should not be used for treatment of PTSD. If trauma-focused interventions are not available or cannot be tolerated by the worker, second-line psychological interventions should be considered. These include narrative exposure therapy, present-centred therapy and stress inoculation training.

- 32.** Where possible, clinicians should offer the prolonged exposure components of trauma-focused psychological therapies in an individual, face-to-face setting, even if other components are delivered in a group setting. However, when this is not possible, or if the patient refuses, other delivery methods, including internet-delivered or group cognitive behavioural therapy (CBT), can be offered.
- 33.** When appropriately trained clinicians are not available for in-person sessions, evidence-based treatments can be effectively delivered via videoconferencing platforms



Pharmacological treatments for PTSD

Antidepressant medication

Antidepressant medications were, as their name suggests, primarily developed as a specific treatment for depressive disorders. However, many antidepressant medications have also been found to be effective in the treatment of anxiety disorders.⁸⁵ There are a number of different classes of antidepressant medication that are named according to their mode of action or chemical structure. The most commonly prescribed antidepressants are the selective serotonergic reuptake inhibitors (SSRIs), including citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine and sertraline. Other classes of antidepressants include serotonin-noradrenaline reuptake inhibitors (SNRIs), such as venlafaxine and duloxetine, and noradrenergic and specific serotonergic antidepressants (NaSSAs), such as mirtazapine. There are also several older classes of antidepressants still in use, including tricyclic antidepressants (TCAs), such as amitriptyline, and monoamine oxidase inhibitors (MAOIs), including phenelzine.

In terms of their efficacy as antidepressants, each of these classes are relatively similar, with the choice of prescription often dictated by the different side effect profile. In general, the newer antidepressants, such as SSRIs, SNRIs and NaSSAs, tend to be better tolerated than the older TCA and MAOI classes of antidepressants.⁸⁶ Despite this, the individual side effect profile of each SSRI/SNRI varies and needs to be taken into account. For example, SSRIs with a shorter half-life, such as paroxetine, appear more likely to produce discontinuation symptoms, while SNRIs can contribute to an elevation of blood pressure in some individuals. MAOI have the potential for particularly dangerous adverse effects and interactions with alcohol, foods high in tyramine and other medications.

In 2022, the Cochrane Library published an updated systematic review and meta-analysis of all RCTs of pharmacotherapy for PTSD.⁸⁷ This review identified 66 trials involving more than 7000 people with PTSD. The accompanying meta-analysis provided strong evidence of a beneficial effect of SSRI antidepressants, with studies showing that 58% of those receiving a SSRI had reduced PTSD symptoms compared to only 35% who received a placebo medication.⁸⁷ Evidence of benefit was also seen with mirtazapine and TCA antidepressants, but this was based on fewer trial numbers. The authors concluded that SSRI antidepressants should be considered the first-line pharmacological treatment for PTSD.⁸⁷ The British

Association for Psychopharmacology have also published evidence-based guidance for the treatment of PTSD.⁸⁸ They similarly reported evidence for the efficacy of a range of antidepressants in PTSD, with the strongest evidence for SSRIs sertraline and paroxetine and the SNRI venlafaxine.⁸⁸

The 2021 Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder also included an updated review of the state of the evidence pertaining to the pharmacological treatment of PTSD.² This similarly concluded that SSRIs and the SNRI venlafaxine could be recommended as treatment for PTSD, although only in circumstances where evidence-based psychological therapy was not possible or had been ineffective, or where co-morbid conditions such as depression were present.² This recommendation highlights the difficulties of determining whether psychological or pharmacological treatments are more effective in PTSD and whether one should be recommended preferentially. A recent systematic review across all mental disorders confirmed that trials of medications tended to have larger sample sizes, better blinding and more appropriate control groups compared to trials of psychological treatment and that the wait-list control design often used on psychotherapy trials tended to produce larger effect sizes.⁸⁹ As a result, the apparent greater effects observed with psychological therapy compared to pharmacotherapy may be partly or entirely the result of different types of control conditions used. It should be noted that one of the very few head-to-head comparisons of prolonged exposure and sertraline found that these two interventions had comparable reductions in PTSD severity.⁹⁰ There is also uncertainty about the synergistic impact of medication and psychological therapies. While some RCTs have suggested that antidepressants can enhance the effectiveness of exposure therapy,⁹¹ most reviews still concluded there is inclusive evidence regarding the benefits of combined psychological and pharmacological treatments.^{88 92} Overall, the convergent evidence points to the utility of antidepressant medication in treating PTSD. Nonetheless, there is still a greater body of evidence for the efficacy of psychological therapies for PTSD. For this reason, psychological approaches remain recommended as the frontline treatment for PTSD.

Systematic reviews have failed to identify any RCTs of antidepressants or any other pharmacological agents amongst emergency workers with PTSD.⁷⁴ Arguably, military personnel share some important characteristics with emergency response personnel. Both groups often have chronic exposure to multiple and potentially traumatic events in the course of their usual work experiences, meaning they often present to services with more chronic symptoms. There have been numerous published trials of antidepressants being used to treat PTSD amongst military veterans. Analysis of these suggests that veterans with chronic PTSD tend not to respond to antidepressant medication as well as civilian populations with more acute symptoms.⁶²

Guidance recommendations

- 34.** Clinicians should consider medication for the treatment of PTSD amongst emergency workers when:
- the emergency worker has a co-morbid mental health condition or symptoms where medication may be indicated (for example depression)
 - the emergency worker's circumstances are not sufficiently stable to commence trauma-focused psychological therapy
 - the emergency worker has not gained sufficient benefit from trauma-focused psychological therapy
 - the emergency worker is unable or unwilling to engage in trauma-focused psychological therapy
 - there is no immediate access to a trained professional who can deliver trauma-focused psychological therapy.
- 35.** When medication is trialled for the treatment of PTSD, selective serotonin reuptake inhibitor (SSRI) antidepressants should be used initially.
- 36.** When treating PTSD, clinicians should prescribe SSRI antidepressants at half the usual starting dose used for treating depression (to reduce transient increases in anxiety symptoms); however, titration to higher doses is often needed to achieve the full effect.
- 37.** If the required treatment response does not occur after 12 weeks of an adequate dose of a SSRI antidepressant, the treating clinician should revisit the case formulation and consider raising the dose (if the current dosage is well tolerated); swapping to an alternative antidepressant, including the serotonin-norepinephrine reuptake inhibitor (SNRI) venlafaxine; combining pharmacological and psychological treatments; or augmenting the SSRI with another type of medication (as outlined in Guideline 39 below).
- 38.** When an emergency worker responds to a drug treatment with no unacceptable side effects, the medication should be continued for at least 12 months from the time of symptom response.

Other types of medication

Several other types of medication have been proposed as treatment for PTSD. While none of these have been studied extensively, those most often considered are alpha-adrenergic antagonists, atypical antipsychotics, benzodiazepines and anti-convulsants.

Alpha-adrenergic antagonists (often termed alpha-blockers) are used to treat a variety of conditions, including high blood pressure and prostate disease. A small number of studies have examined prazosin, an alpha-blocker, as a treatment for the arousal and re-experiencing symptoms of PTSD. RCTs have shown prazosin can reduce the frequency of nightmares and the level of sleep disturbance amongst US war veterans with PTSD,⁹³ but these trials tend not to show any significant reduction in more generalised measures of PTSD.⁶²

Atypical antipsychotics, such as olanzapine, risperidone and quetiapine, are often prescribed for PTSD, either in isolation or as adjunctive treatment in addition to an antidepressant. Figures from the US Veterans Affairs administrative databases show that almost 20% of patients with PTSD are prescribed atypical antipsychotics,⁹⁴ with Australian-based audits suggesting similar or even higher usage within the Australian private psychiatric sector.⁹⁵

However, this usage occurs with only limited support from the published literature. A systematic review and meta-analysis published in 2011 identified eight placebo-controlled trials assessing the impact of risperidone on PTSD, and two each for olanzapine and quetiapine.⁹⁶ While each of these studies was relatively small in size and the findings were mixed, with only some showing a beneficial effect, a meta-analysis of the studies examining risperidone demonstrated a pooled effect suggestive of improvements in clinician-administered PTSD scales.⁹⁷ While encouraging, others have noted that many of the published studies have significant methodological limitations and that the size of the reported effect is relatively small.⁶² In keeping with these concerns, a meta-analysis published by the Cochrane Library in 2022 was unable to find evidence of beneficial effects of antipsychotic medication on PTSD.⁸⁷ In addition to doubt regarding efficacy, it should be noted that atypical antipsychotics are also associated with a range of important side effects, most notably sedation, weight gain, cardiac arrhythmia and an increased risk of type 2 diabetes mellitus.⁸⁶ Despite this, some guidelines and prescribing algorithms suggest that atypical antipsychotics, such as quetiapine, can play a role in the treatment of PTSD as an adjunct treatment in the setting of marked agitation or where other more evidence-based treatment strategies have failed.² Patients prescribed atypical antipsychotics require baseline and ongoing (at least six monthly) measurement of their weight, blood pressure, serum fasting glucose / haemoglobin A1c and blood lipids in order to monitor for possible metabolic side effects. Patients taking atypical antipsychotics should also have an electrocardiogram (ECG) to check for drug-induced changes including prolongation of the QT interval.

Previous reviews have identified only one published RCT of benzodiazepine use in PTSD.⁶² In this small crossover study, 10 patients with PTSD received alprazolam for five weeks without any identifiable benefit in terms of specific PTSD symptoms.⁹⁸ While some large observational studies have suggested benzodiazepine use amongst veterans with PTSD does not seem to be associated with worse outcomes,⁹⁹ others have reported severe reactions at the time benzodiazepine withdrawal is attempted, including increased anxiety, sleep disturbance, anger, hyper alertness, increased nightmares and intrusive thoughts.¹⁰⁰ Given the unproven efficacy and concerns about dependence of these medications, previously published guidelines tend to either recommend avoiding the use of benzodiazepines in PTSD⁶³ or suggest cautious, short-term use only.^{60 64}

Several anticonvulsant medications, initially developed to aid in the treatment of epilepsy, have demonstrated mood stabilizing properties that make them useful in the treatment of bipolar affective disorder.⁸⁶ Open-labelled studies have examined the use of numerous different anticonvulsant medications, including carbamazepine, valproate, lamotrigine, topiramate and tiagabine, in the treatment of PTSD, although results have been mixed with limited or no efficacy in reducing specific PTSD symptoms.^{57 62} While a very small trial (involving only 15 patients) suggested lamotrigine may have some benefits,¹⁰¹ a much larger RCT of the anticonvulsant tiagabine found it had no significant benefit beyond placebo for symptoms of PTSD.¹⁰² Given the paucity of evidence relating to efficacy in PTSD and the potentially serious side effects, most of the currently available treatment guidelines do not recommend the use of anticonvulsants in PTSD.^{2-4 6}

At present, there are a number of trials investigating novel agents like 3,4-methylenedioxymethamphetamine (MDMA),¹⁰³ usually in combination with psychological therapy, as treatments for PTSD. However, at present, it is unclear what role, if any, such agents will have in treating PTSD amongst emergency service workers.

Guidance recommendations

- 39.** Alpha-adrenergic antagonists, atypical antipsychotics, benzodiazepines and anti-convulsant medication should not be routinely used as initial treatment for emergency workers with PTSD.
- 40.** When symptoms have not responded adequately to antidepressant medication, practitioners should consider the addition of an alpha-adrenergic (prazosin) or an atypical antipsychotic as an augmenting agent. Prazosin

may help in reducing the frequency of nightmares and sleep disturbance. Algorithms are available to assist clinicians to make decisions about the use of augmenting medications. Those prescribed atypical antipsychotics will require an ECG and regular blood tests to monitor for possible side effects.

- 41.** Benzodiazepines can be prescribed for short-term relief of severe anxiety or insomnia in cases of PTSD or to assist with a planned alcohol withdrawal. These medications should be prescribed at the lowest possible dose and for less than four weeks.
- 42.** Appropriate medication should be used to treat any diagnosed co-morbid mental illness, such as depression, in line with disorder-specific treatment guidelines.





Treatment sequencing in the setting of co-morbidity

As noted above, co-morbid psychiatric diagnoses, particularly depression and substance misuse, are very common amongst those with PTSD. Clinicians should consider this issue at the treatment planning stage. If other psychiatric conditions have arisen in response to PTSD symptoms, then treating PTSD may cause some of the co-morbid conditions to resolve. Alternatively, some co-morbid conditions may inhibit effective engagement with trauma-focused therapy and will need to be addressed prior to any PTSD-specific treatment. As a result, treating clinicians need to make decisions about treatment sequencing – specifically, if more than one condition is present, which will be treated first. There is some evidence that effective PTSD treatments can result in some improvements in co-morbid depressive symptoms,⁶⁰ with some promising preliminary results suggesting that PTSD and substance misuse can be treated effectively with simultaneous interventions.¹⁰⁴

Another co-morbidity that appears to be particularly relevant for emergency workers and the planning of their treatment is anger. Problematic anger associated with PTSD has been demonstrated across a broad array of trauma-exposed populations. Most often, it has been reported in military personnel, but problematic anger has also been identified as significant in other PTSD populations, including emergency services personnel and disaster relief workers.^{105 106} The presence of anger has been shown to influence the development of PTSD,¹⁰⁷ create increased risk of harm to self¹⁰⁸ and others,¹⁰⁹⁻¹¹¹ act as a key factor in PTSD maintenance,¹¹² and, importantly, negatively influence the outcome of PTSD treatment.¹¹³⁻¹¹⁵ As a result, when anger is present, it must be addressed early in treatment via focused cognitive behavioural interventions such as cognitive remedial work and arousal management training.

Although not strictly a co-morbid condition, moral injury can also impact emergency service workers as a result of their duties. Moral injury refers to adverse psychological, social and spiritual impacts caused by events that transgress an individual's moral code, such as harming another, failing to prevent harm to another, or being betrayed by others.¹¹⁶ Moral injuries can lead to guilt, shame, a sense of betrayal or existential crisis. While little is known about the prevalence of moral injury amongst emergency services workers, many commentaries have noted that this population is likely to confront a range of morally difficult situations as a direct consequence of their work¹¹⁷. The impacts can also be compounded by non-supportive responses from the worker's organisation.¹¹⁸ One large survey found that 11% of emergency workers and military personnel experienced moral injury without

PTSD, whilst a further 33% had moral injury in combination with PTSD.¹¹⁹ As such, following potentially morally injurious events, clinicians should be aware that some emergency service workers may experience guilt, shame or other non-PTSD reactions that nonetheless require clinical attention. Although there are no published trials to date of treatment of moral injury, clinicians should be aware that cognitive therapy approaches and broader therapeutic strategies that address a sense of transgression may need attention.

Another common clinical presentation that emergency workers with PTSD experience is a disturbance of identity; specifically, their previous identity as a professional who competently serves the community.²⁵ Many emergency workers pride themselves on being a police officer, firefighter or paramedic who serves a critically important function in society, and this often becomes central to their sense of wellbeing and self-esteem. When their capacity to work effectively is threatened due to PTSD, their central identity can be undermined, which can contribute to depression and a sense of meaninglessness. Cognitive therapy approaches can be beneficial in correcting these maladaptive perceptions.¹²⁰

Sleep disturbance is also a commonly encountered co-morbidity amongst emergency workers. This problem is an inherent risk in many emergency workers because of shift work, with studies showing that as many as 70% of police who work night shifts suffer impaired sleep quality.¹²¹ Evidence also shows that workload in emergency workers negatively impacts sleep quality.¹²² Sleep disturbance is a very common symptom of PTSD, contributing to many subsequent problems including tiredness, irritability, performance deficits and even impaired biological functioning such as disrupted daytime cortisol levels.¹²³ Clinicians should pay close attention — evidence indicates that sleep problems are often persistent, even after successful PTSD treatment.¹²⁴ Cognitive-behavioural therapy for insomnia (CBT-i) strategies can be effective, although there are challenges to this approach with shift workers.¹²⁵

Guidance recommendations

- 43.** When an emergency worker presents with both PTSD and mild to moderate depression, clinicians should consider either treating the PTSD first or providing concurrent treatments for both conditions.
- 44.** When co-morbid depression is severe, primary or long standing, clinicians should treat the depression prior to treating the PTSD symptoms or consider treating the disorders concurrently.

- 45.** When PTSD is combined with substance misuse, clinicians should consider the possibility of integrated treatment of both conditions. However, the trauma-focused psychological component of PTSD treatment should not commence until the emergency worker has demonstrated an ability to attend sessions and manage distress without abusing alcohol or drugs in a way that leads to dangerous situations.
- 46.** When an emergency worker with PTSD experiences severe sleep disturbance, it is important for clinicians to integrate cognitive behavioural therapy for insomnia (CBT-i) and sleep hygiene practices into treatment. Sleep difficulties can impede treatment success and are often resistant to trauma-focused psychotherapy.
- 47.** When an emergency worker with PTSD presents with significant levels of anger, clinicians should delay exposure therapy and place their initial emphasis on cognitive behavioural interventions targeted at anger.
- 48.** Emergency workers may experience guilt, shame or other responses to moral injury. Clinicians should consider combining cognitive therapy approaches with broader therapeutic strategies that address feelings of transgression or maladaptive perceptions of identity.



Enhancing occupational function and return to work

There is increasing recognition in the scientific literature and amongst mental health experts of the importance of work for individual wellbeing and recovery from mental illness. A potentially problematic issue for emergency service workers is that their PTSD can lead to protracted periods off work. One audit of time off work across occupational groups as a result of mental disorders found that emergency service workers had on average 45 weeks off work once a mental disorder occurred, compared to only 14 weeks in other occupational groups.¹²⁶

Most individuals with mental illness, even those with severe mental health problems, want to return to meaningful work.¹²⁷ Paid employment not only provides financial security but can also create daily structure, a sense of worth and regular supportive social engagement. It is therefore not surprising that numerous cross-sectional and longitudinal studies have found that being at work is associated with better mental health and lower incidence of suicide.^{128 129} In line with such evidence, Waddell and Burton, in their landmark 2006 report for the UK Department of Work and Pensions, concluded that work is generally good for health and wellbeing and that, in most situations, the benefits of work outweigh the risks.¹³⁰ There are some caveats to this general conclusion, with longitudinal studies showing that the mental health benefits of work depend to a large extent on the psychosocial characteristics of the work environment.¹³¹

While there may be a general consensus that facilitating return to work amongst emergency workers with PTSD is an important goal, devising practical guidance to assist with this is complex. Most emergency workers with PTSD will have experienced their index or cumulative trauma exposure at work. Given that avoidance of environmental reminders of the traumatic experience is a core feature of PTSD and that further trauma exposure is likely when undertaking usual duties in emergency work, it is not surprising that many emergency workers with PTSD find remaining at and returning to work challenging. In addition, there is a risk that additional trauma exposure may precipitate a relapse or exacerbation of PTSD symptoms.

The ability for emergency work roles to be modified to reduce the risk of trauma exposure can be difficult. Some emergency service work involves additional complexities, such as the need for police to carry weapons, ambulance personnel to deliver medical treatment, and other emergency service personnel to drive heavy or regular vehicles at high speed. These additional factors require consideration of public safety in addition to the needs of the emergency

service worker. These complexities are compounded by the lack of a useful evidence base, with most of the available literature on the treatment of PTSD focusing on symptom reduction. Relatively few trials consider occupational function as a primary outcome.

The workers compensation system in Australia creates further complexities. Many emergency workers describe the compensation process as being extremely stressful and find undertaking multiple clinical assessments anxiety provoking. Some data suggest that as workers compensation benefits increase, so too do the number and length of compensation claims and sickness absence.^{132 133} However, there is substantial debate around this topic and much of the research in this area is limited by methodological constraints. Work injury compensation systems have the potential to offer financial and psychological incentives that encourage symptom reporting and act against recovery. However, a review by the US National Center for PTSD concluded that any suggestion that the majority of claimants exaggerate PTSD symptoms to obtain benefits and are cured by claim resolution is “overly simplistic” and that compensation seeking does not dampen PTSD treatment outcome in most contexts.¹³⁴

Amongst other common mental disorders, most notably depression, there is increasing recognition that standard symptom-focused treatments do not necessarily lead to improvements in occupational function.¹³⁵ These findings add weight to the assertion that symptomatology and occupational functioning are not always closely linked, meaning specific work-focused interventions are often required in addition to symptomatic treatment if rates of return to work are to be improved.¹³⁴ Amongst other disorders, work-focused interventions that have some evidence for improving rates of return to work include CBT focused on the specific issues surrounding the workplace and return to work,^{136 137} regular contact with managers¹³⁸ and alternative duties while on sickness absence.¹³⁹ Undertaking alternative duties while on sickness absence (often termed ‘partial sickness absence’ in Europe) is where an injured worker returns or remains at work part-time or with substantially modified duties. This approach assumes that early and continued contact with the broader work environment is important to manage secondary anxiety and individuals’ perceptions about their own vulnerability and that the risks of work are not amplified. These types of work-focused intervention can help reduce a vicious cycle in which workers feel their PTSD prevents them working and that their continued absence from work prevents them from overcoming the disorder.¹⁴⁰ For this reason, it is important that both treating clinicians and emergency services recognise that emergency workers with PTSD can often return to work once their symptoms begin to improve, even if they are still undergoing active treatment. This includes returning to work while taking medication; however, as discussed above, there are specific guidelines around some activities such as carrying a firearm and driving heavy vehicles while taking medication that need to be considered.

A systematic review published in 2011 identified six studies that specifically focused on evaluating techniques to improve occupational outcomes in cases of work-related PTSD.¹⁴⁰ Three of these studies, all of which were pre-post study designs, utilised work-focused exposure treatments such as on-site evaluations and graded work exposure. Taken together, the results of these studies demonstrate a return to work rate of 85%, an impressive figure that was maintained at six month follow up.¹⁴⁰ A similar type of intervention is exposure in vivo, a component of standard CBT; when focused on the workplace, this approach can allow PTSD sufferers to learn to deal with anxiety-provoking work situations in a gradual and supported manner.¹⁴¹ One published RCT has shown that exposure in vivo can produce a moderate to large effect size in terms of both PTSD symptoms and occupational outcomes, resulting in individuals returning to work without an increase in anxiety.¹⁴² Similar findings on the work-related benefits of work-focused exposure therapy has been identified in other anxiety disorders.¹⁴¹ A 2020 systematic search of the published literature on the management of occupational psychological injuries amongst emergency service workers was unable to find any additional studies examining the effectiveness of different techniques on occupational outcomes for this group.¹⁴³

Prospective studies of emergency workers have also demonstrated the importance of non-trauma workplace factors in many cases of PTSD. A study of over 250 traumatised police officers found that workplace factors, such as lack of perceived organisational support, job insecurity and job dissatisfaction, were associated with increased rates of PTSD at various times over a 12 month follow-up.¹⁴⁴ Similarly, studies of military personnel returning from recent conflicts in Iraq and Afghanistan have shown the importance of non-trauma-related risk factors, such as team cohesion, leadership and perceived support, in predicting the development and persistence of PTSD.^{145 146}

Such observations highlight the importance of good leadership and the early identification and management of barriers preventing return to work. If other work-related factors are impacting on an emergency worker's occupational recovery, they may need to be highlighted to the employer. Additional individual cognitive behavioural stress management techniques may also prove useful in dealing with such situations.¹⁴⁷ Social support outside of the workplace is also vital. Emergency service worker's partners and family should be provided with information that allows them to provide support during the recovery process.

Even with the best possible treatment and occupational rehabilitation, it is likely that some emergency workers with PTSD cannot or will choose not to return to emergency service work. In such cases, treatment and rehabilitation should continue to maximise the functional outcome for these workers. Any exit from the emergency services due to PTSD should be handled in a way that allows the emergency worker to feel proud of the contribution they have made and confident that their recovery can continue outside of emergency service work.

Guidance recommendations

- 49.** Occupational recovery should be considered from the very beginning of treatment. When possible, remaining at, or returning to, work should be an aim of treatment and considered an important part of the recovery of emergency workers with PTSD.
- 50.** Most emergency workers with PTSD can gain benefits from appropriate treatment. As such, where possible, clinicians should avoid putting constraints on patients' occupational recovery (for example, stating they will never work again) until adequate trials of proven treatments have been undertaken. However, the extended use of modified duties may be necessary to lessen the risk of recurrence or intensification of subsyndromal symptoms once treatment has been completed.
- 51.** Employers should, when possible, attempt to maintain regular supportive contact with an emergency worker who is away from work due to PTSD. Regular, supportive contact is important during all stages of an episode of sickness absence.
- 52.** The treatment of emergency workers with PTSD must be integrated with return to work/recovery programs, with regular supportive contact between the worker, the workplace and the treating clinicians.
- 53.** While emergency workers with PTSD may require a period away from operational duties, clinicians should consider the possibility of adjusted duties and partial return to work as ways of promoting recovery and reducing the risk of long-term sickness absence.
- 54.** Any adjustment to usual work duties should be agreed by the emergency worker, the treating clinicians and the relevant occupational health rehabilitation coordinator. Duties should be provided that allow the meaningful rehabilitation and ongoing employment of emergency workers. Alternative duties should be non-stigmatising and, where possible, commensurate with the worker's level of experience and seniority.
- 55.** If an emergency worker with PTSD requires a period away from their usual duties, they should be made aware of which individual or individuals within

the emergency service they or their clinician can speak to, if needed, to help plan their recovery and rehabilitation. This individual or individuals should have knowledge of the organisation; the recovery pathways available; and the hazards, risks and benefits of returning to work.

- 56.** Symptomatic treatments alone may not improve occupational outcomes. All emergency workers who are absent from work due to PTSD should be offered work-focused interventions, such as work-focused exposure therapy, in addition to standard symptom-focused treatment.
- 57.** All emergency workers who engage with psychological therapy should have work-related triggers and work-specific anxieties addressed as part of their treatment. Clinicians should monitor workers' reactivity to these triggers on return to emergency work as these are predictors of relapse.
- 58.** Key barriers preventing return to work and recovery should be identified and discussed as part of the management of emergency workers with PTSD. This may involve considering interventions for non-trauma related work and non-work factors.
- 59.** A return to work should be planned between the emergency worker, the treating clinicians, the employer and, when present, the workplace occupational health service.
- 60.** Emergency workers can return to operational duties if their symptoms have substantially improved, even while still undertaking treatment (including medication) for PTSD. However, all aspects of an emergency worker's role must be considered prior to a return to full duties, including special circumstances such as carrying a weapon or driving regular or heavy vehicles at high speed.
- 61.** When an emergency worker who has had PTSD returns to work, the treating clinicians, the emergency worker, the employer and the workplace occupational health service should agree on how the emergency worker's symptom levels will be monitored and the types of symptom recurrence that should prompt a re-assessment.

- 62.** In some circumstances, it will be necessary to consider a permanent cessation of an emergency worker's employment in the emergency services. Consideration of this should only occur after an adequate trial of evidence-based treatments. All workers who are unable to continue with their employment should still be offered symptom and work-focused interventions to maximise their future functioning.
- 63.** When an emergency worker ceases employment in emergency services as a result of PTSD, it is important that employers and occupational recovery agencies foster an environment in which the worker can feel proud and respected for their previous professional achievements.



Appendix 1

Competing interest statements for all authors.*

Name	Affiliations	Competing interests
Prof Samuel B Harvey	<ul style="list-style-type: none"> • The Black Dog Institute • University of New South Wales 	<p>Prof Harvey conducts research in collaboration with Fire and Rescue NSW, NSW Police and NSW Ambulance. Over the last five years, Dr Harvey has received research funding and payments from NHMRC; ARC; iCare; NSW Health; Commonwealth Government; Employers Mutual Ltd; SafeWork Victoria; NSW Centre for Work, Health and Safety; and Mindgardens Neuroscience Network.</p> <p>Prof Harvey leads the National Emergency Worker Support Service together with Prof Bryant. Prof Harvey has provided medicolegal opinions regarding work injury damages claims involving emergency service agencies. He has not received any funding or payments from pharmaceutical companies for more than 10 years.</p>
Prof Richard Bryant	<ul style="list-style-type: none"> • University of New South Wales • Traumatic Stress Clinic, Westmead Hospital 	<p>Prof Bryant conducts research collaboratively with Fire and Rescue NSW, and NSW Police. Over the last 5 years, Prof Bryant has received research funding from NHMRC, ARC, iCare, and Employers Mutual Ltd. He has not received any funding or payments from pharmaceutical companies. He also has a NHMRC Partnership grant; 'Improving the Resilience, Health and Wellbeing of Australian Firefighters', which has the South Australian Metropolitan Fire Service as an Industry Partner.</p>
Prof Nicholas Glozier	<ul style="list-style-type: none"> • Sydney Medical School, University of Sydney 	<p>Over the past 5 years Prof Glozier's employer has received related research funding from ARC, NHMRC, MRFF, SIRA, TAL, SafeWork NSW, NSW Dept of Health, and Batyr. He is an Approved Medical Specialist and a member of the Medical Appeals Panel of the NSW Personal Injury Commission as part of which he conducts assessments of emergency service workers. In the past three years he has received consulting and/or educational honoraria from Return to Work SA, Atai, Servier, Eisai, Seqirus, Lundbeck and Janssen and advisory board fees from Janssen and Seqirus.</p>

Name	Affiliations	Competing interests
Prof Zachary Steel	<ul style="list-style-type: none"> University of New South Wales St John of God Mental Health Services, Richmond & Burwood Hospitals. 	Prof. Steel has a joint clinical and research position with University of New South Wales and St John of God Health Care which provides treatment for emergency service personal with mental health injury and impairment. Over the last 10 years, Prof Steel has received research funding from NHMRC, ARC, and Employers Mutual Ltd. He is undertaking clinical research with military and emergency service populations. He has not received any funding or payments from pharmaceutical companies.
Prof Kim Felmingham	<ul style="list-style-type: none"> Melbourne School of Psychological Science, University of Melbourne 	Prof Felmingham works as an academic and clinical psychologist in private practice treating clients with Posttraumatic Stress Disorder, including emergency service personnel. Over the past five years, Prof Felmingham has received research funding from the NHMRC to conduct research with trauma affected populations. She is also undertaking research with emergency service populations in Melbourne. She has not received any funding or payment from pharmaceutical companies.
Prof Andrea Phelps	<ul style="list-style-type: none"> Phoenix Australia Centre for Posttraumatic Mental Health, University of Melbourne 	Prof Phelps led the development of the NHMRC Australian Guidelines for the Prevention and Treatment of Acute Stress Disorder, Posttraumatic Stress Disorder and Complex PTSD with funding from the Commonwealth Department of Health. Professor Phelps has not received any funding or payments from pharmaceutical companies.

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For more information on Employers Mutual or the EML Group, please visit: www.eml.com.au

Reference list

1. Australian Centre for Posttraumatic Mental Health. Australian guidelines for the treatment of adults with acute stress disorder and posttraumatic stress disorder. Melbourne, Australia: ACPMH, 2007.
2. Phoenix Australia. Australian guidelines for the prevention and treatment of acute stress disorder, posttraumatic stress disorder and complex PTSD. Melbourne: Phoenix Australia Centre for Posttraumatic Mental Health, 2021.
3. Bryant RA. Early predictors of posttraumatic stress disorder. *Biol Psychiatry* 2003;53(9):789–95.
4. Fear NT, Jones M, Murphy D, et al. What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. *Lancet* 2010;375(9728):1783–97. doi: S0140-6736(10)60672-1 [pii] 10.1016/S0140-6736(10)60672-1 [published Online First: 2010/05/18]
5. Grant DM, Beck JG, Marques L, et al. The structure of distress following trauma: posttraumatic stress disorder, major depressive disorder, and generalized anxiety disorder. *J Abnorm Psychol* 2008;117(3):662–72. doi: 10.1037/a0012591
6. Hotopf M, Hull L, Fear NT. The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study. *Lancet* 2006;367(1731–1741)
7. Huizink AC, Slottje P, Witteveen AB, et al. Long term health complaints following the Amsterdam Air Disaster in police officers and fire-fighters. *Occupational and Environmental Medicine* 2006;63(10):657–62. doi: 10.1136/oem.2005.024687
8. Milliken CS, Auchterlonie JL, Hoge CW. Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *Jama* 2007;298(18):2141–8. doi: 298/18/2141 [pii] 10.1001/jama.298.18.2141 [published Online First: 2007/11/15]
9. Zatzick DF, Marmar CR, Weiss DS, et al. Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans. *Am J Psychiatry* 1997;154(12):1690–5. [published Online First: 1997/12/16]
10. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (3th ed.). Washington, DC: Author1980.
11. Berger W, Coutinho ES, Figueira I, et al. Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Soc Psychiatry Psychiatr Epidemiol* 2012;47(6):1001–11. doi: 10.1007/s00127-011-0408-2 [published Online First: 2011/06/18]
12. Harvey SB, Milligan-Saville JS, Paterson HM, et al. The mental health of fire-fighters: An examination of the impact of repeated trauma exposure. *Aust N Z J Psychiatry* 2015 doi: 10.1177/0004867415615217
13. Mykletun A, Harvey SB. Prevention of mental disorders: a new era for workplace mental health. *Occup Environ Med* 2012;69(12):868–9. doi: 10.1136/oemed-2012-100846 [published Online First: 2012/11/16]

14. Wild J, Greenberg N, Moulds ML, et al. Pre-incident Training to Build Resilience in First Responders: Recommendations on What to and What Not to Do. *Psychiatry* 2020;83(2):128–42. doi: 10.1080/00332747.2020.1750215 [published Online First: 2020/04/28]
15. Strudwick J, Gayed A, Deady M, et al. Workplace mental health screening: a systematic review and meta-analysis. *Occup Environ Med* 2023;80(8):469–84. doi: 10.1136/oemed-2022-108608 [published Online First: 20230615]
16. Joyce S, Modini M, Christensen H, et al. Workplace interventions for common mental disorders: a systematic meta-review. *Psychol Med* 2016;46(4):683–97. doi: 10.1017/S0033291715002408
17. Joyce S, Shand F, Tighe J, et al. Road to resilience: a systematic review and meta-analysis of resilience training programmes and interventions. *BMJ open* 2018;8(6):e017858. doi: 10.1136/bmjopen-2017-017858 [published Online First: 2018/06/16]
18. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author2013.
19. Galea S, Vlahov D, Resnick H, et al. Trends of probable post-traumatic stress disorder in New York City after the September 11 terrorist attacks. *Am J Epidemiol* 2003;158(6):514–24.
20. Pietrzak RH, Feder A, Singh R, et al. Trajectories of PTSD risk and resilience in World Trade Center responders: an 8-year prospective cohort study. *Psychol Med* 2014;44(1):205–19. doi: 10.1017/S0033291713000597
21. Bryant RA, Harvey AG. Delayed-onset posttraumatic stress disorder: a prospective evaluation. *Aust N Z J Psychiatry* 2002;36(2):205–9.
22. Andrews B, Brewin CR, Philpott R, et al. Delayed-onset posttraumatic stress disorder: a systematic review of the evidence. *Am J Psychiatry* 2007;164(9):1319–26. doi: 10.1176/appi.ajp.2007.06091491
23. McFarlane AC. The delayed and cumulative consequences of traumatic stress: Challenges and issues in compensation settings. *Psychological Injury and Law* 2010;3(2):100–10.
24. Bryant RA. The nature of posttraumatic stress disorder in treatment-seeking first responders. *European journal of psychotraumatology* 2022;13(1):2011602. doi: 10.1080/20008198.2021.2011602 [published Online First: 20220126]
25. Bryant RA. Treating PTSD in First Responders. New York: American Psychological Association 2021.
26. Milligan-Saville J, Choi I, Deady M, et al. The impact of trauma exposure on the development of PTSD and psychological distress in a volunteer fire service. *Psychiatry Res* 2018;270:1110–15. doi: 10.1016/j.psychres.2018.06.058 [published Online First: 2018/09/08]
27. Maia DB, Marmar CR, Metzler T, et al. Post-traumatic stress symptoms in an elite unit of Brazilian police officers: prevalence and impact on psychosocial functioning and on physical and mental health. *J Affect Disord* 2007;97(1–3):241–5. doi: 10.1016/j.jad.2006.06.004
28. Cukor J, Wyka K, Jayasinghe N, et al. The nature and course of subthreshold PTSD. *J Anxiety Disord* 2010;24(8):918–23. doi: 10.1016/j.janxdis.2010.06.017
29. Pietrzak RH, Schechter CB, Bromet EJ, et al. The burden of full and subsyndromal posttraumatic stress disorder among police involved in the World Trade Center rescue and recovery effort. *J Psychiatr Res* 2012;46(7):835–42. doi: 10.1016/j.jpsychires.2012.03.011
30. Halpern J, Maunder RG, Schwartz B, et al. Identifying risk of emotional sequelae after critical incidents. *Emerg Med J* 2011;28(1):51–6. doi: 10.1136/emj.2009.082982

31. Marshall RD, Olfson M, Hellman F, et al. Comorbidity, impairment, and suicidality in subthreshold PTSD. *Am J Psychiatry* 2001;158(9):1467-73.
32. Jakupcak M, Conybeare D, Phelps L, et al. Anger, hostility, and aggression among Iraq and Afghanistan War veterans reporting PTSD and subthreshold PTSD. *J Trauma Stress* 2007;20(6):945-54. doi: 10.1002/jts.20258
33. Breslau N, Lucia VC, Davis GC. Partial PTSD versus full PTSD: an empirical examination of associated impairment. *Psychol Med* 2004;34(7):1205-14.
34. McGorry PD. Is early intervention in the major psychiatric disorders justified? Yes. *BMJ* 2008;337:a695. doi: 10.1136/bmj.a695
35. Creamer M, Burgess P, McFarlane AC. Post-traumatic stress disorder: findings from the Australian National Survey of Mental Health and Well-being. *Psychol Med* 2001;31(7):1237-47.
36. WHO. International Classification of Diseases 11th Revision (ICD-11): World Health Organisation, 2019.
37. Brewin CR, Miller JK, Soffia M, et al. Posttraumatic stress disorder and complex posttraumatic stress disorder in UK police officers. *Psychol Med* 2022;52(7):1287-95. doi: 10.1017/S0033291720003025 [published Online First: 20200907]
38. Rentmeesters N, Hermans D. Posttraumatic stress disorder in Belgian police officers: prevalence and the effects of exposure to traumatic events. *European journal of psychotraumatology* 2023;14(1):2156558. doi: 10.1080/20008066.2022.2156558
39. Harvey SB, Hatch SL, Jones M, et al. The long-term consequences of military deployment: a 5-year cohort study of United kingdom reservists deployed to Iraq in 2003. *Am J Epidemiol* 2012;176(12):1177-84. doi: 10.1093/aje/kws248 [published Online First: 2012/11/29]
40. Harvey SB, Ismail K. Psychiatric aspects of chronic physical disease. *Medicine* 2008;36:471-74.
41. Moeller-Bertram T, Keltner J, Strigo IA. Pain and post traumatic stress disorder - review of clinical and experimental evidence. *Neuropharmacology* 2012;62(2):586-97. doi: 10.1016/j.neuropharm.2011.04.028
42. Beckham JC, Crawford AL, Feldman ME, et al. Chronic posttraumatic stress disorder and chronic pain in Vietnam combat veterans. *J Psychosom Res* 1997;43(4):379-89.
43. Tagay S, Herpertz S, Langkafel M, et al. Posttraumatic stress disorder in a psychosomatic outpatient clinic. Gender effects, psychosocial functioning, sense of coherence, and service utilization. *J Psychosom Res* 2005;58(5):439-46. doi: 10.1016/j.jpsychores.2004.09.007
44. Matusko D, Kemp RI, Paterson HM, et al. The Assessment of Post-traumatic Stress Disorder for Workers' Compensation in Emergency Service Personnel. *Australian Psychologist* 2013;48:420-27.
45. Bryant RA. Assessing Individuals for Compensation. In: Carson D, Bull R, eds. Handbook of psychology in legal settings. Oxford: Oxford University Press 2003.
46. Lees-Haley PR, Dunn JT. The ability of naive subjects to report symptoms of mild brain injury, post-traumatic stress disorder, major depression, and generalized anxiety disorder. *J Clin Psychol* 1994;50(2):252-6.
47. Liljequist L, Kinder BN, Schinka JA. An investigation of malingering posttraumatic stress disorder on the Personality Assessment Inventory. *J Pers Assess* 1998;71(3):322-36. doi: 10.1207/s15327752jpa7103_3
48. Lees-Haley PR. MMPI-2 base rates for 492 personal injury plaintiffs: implications and challenges for forensic assessment. *J Clin Psychol* 1997;53(7):745-55.

49. Guy LS, Kwartner PP, Miller HA. Investigating the M-FAST: psychometric properties and utility to detect diagnostic specific malingering. *Behav Sci Law* 2006;24(5):687-702. doi: 10.1002/bsl.706
50. Kornfield SL, Klaus J, McKay C, et al. Subsyndromal posttraumatic stress disorder symptomatology in primary care military veterans: treatment implications. *Psychol Serv* 2012;9(4):383-9. doi: 10.1037/a0028082
51. Shalev AY, Ankri Y, Israeli-Shalev Y, et al. Prevention of posttraumatic stress disorder by early treatment: results from the Jerusalem Trauma Outreach And Prevention study. *Arch Gen Psychiatry* 2012;69(2):166-76. doi: 10.1001/archgenpsychiatry.2011.127
52. Ruglass LM, Miele GM, Hien DA, et al. Helping alliance, retention, and treatment outcomes: a secondary analysis from the NIDA Clinical Trials Network Women and Trauma Study. *Substance use & misuse* 2012;47(6):695-707. doi: 10.3109/10826084.2012.659789
53. Kessler RC. Posttraumatic stress disorder: the burden to the individual and to society. *J Clin Psychiatry* 2000;61 Suppl 5:4-12; discussion 13-4.
54. Reijneveld SA, Crone MR, Verhulst FC, et al. The effect of a severe disaster on the mental health of adolescents: a controlled study. *Lancet* 2003;362(9385):691-6. doi: 10.1016/S0140-6736(03)14231-6
55. Kessler RC, Borges G, Walters EE. Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Arch Gen Psychiatry* 1999;56(7):617-26.
56. Petrie K, Spittal M, Zeritis S, et al. Suicide among emergency service workers: a retrospective mortality study of national coronial data, 2001-2017. *Psychol Med* 2022:1-8. doi: 10.1017/S0033291722002653 [published Online First: 20220908]
57. American Psychiatric Association. Practice guidelines for the treatment of patients with acute stress disorder and posttraumatic stress disorder. . Arlington, VA: American Psychiatric Association, 2004.
58. Ramon S, Healy B, Renouf N. Recovery from mental illness as an emergent concept and practice in Australia and the UK. *Int J Soc Psychiatry* 2007;53(2):108-22. doi: 10.1177/0020764006075018
59. Beck AT, Rush AJ, Shaw BF, et al. Cognitive therapy of depression. New York: The Guildford Press 1979.
60. Australian Centre for Posttraumatic Mental Health. Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder. In: ACPMH, ed. Melbourne, Victoria, 2013.
61. Department of Veterans Affairs. VA/DoD Clinical practice guideline for the management of posttraumatic stress, version 1.0. . Washington: DC: Veterans Health Administration, Department of Defense., 2004.
62. Institute of Medicine. Treatment of posttraumatic stress disorder: An assessment of the evidence. Washington, DC: The National Academic Press, 2008.
63. ISTSS. Effective treatments for PTSD. Practice guidelines from the International Society for Traumatic Stress Studies. In: Foa EB, Keane TM, Friedman MJ, et al., eds. 2nd ed. New York: The Guilford Press, 2009.
64. NICE. Post-traumatic stress disorder (PTSD). London: National Institute for Clinical Excellence, 2005.

65. Spence J, Titov N, Dear BF, et al. Randomized controlled trial of Internet-delivered cognitive behavioral therapy for posttraumatic stress disorder. *Depress Anxiety* 2011;28(7):541–50. doi: 10.1002/da.20835
66. Klein B, Mitchell J, Abbott J, et al. A therapist-assisted cognitive behavior therapy internet intervention for posttraumatic stress disorder: pre-, post- and 3-month follow-up results from an open trial. *J Anxiety Disord* 2010;24(6):635–44. doi: 10.1016/j.janxdis.2010.04.005
67. Deady M, Collins D, Gayed A, et al. The development of a smartphone app to enhance post-traumatic stress disorder treatment in high-risk workers. *Digit Health* 2023;9:20552076231155680. doi: 10.1177/20552076231155680 [published Online First: 20230222]
68. Difede J, Cukor J, Jayasinghe N, et al. Virtual reality exposure therapy for the treatment of posttraumatic stress disorder following September 11, 2001. *J Clin Psychiatry* 2007;68(11):1639–47.
69. Gersons BP, Carlier IV, Lamberts RD, et al. Randomized clinical trial of brief eclectic psychotherapy for police officers with posttraumatic stress disorder. *J Trauma Stress* 2000;13(2):333–47. doi: 10.1023/A:1007793803627
70. Difede J, Malta LS, Best S, et al. A randomized controlled clinical treatment trial for World Trade Center attack-related PTSD in disaster workers. *J Nerv Ment Dis* 2007;195(10):861–5. doi: 10.1097/NMD.0b013e3181568612
71. Bryant RA, Kenny L, Rawson N, et al. Efficacy of exposure-based cognitive behaviour therapy for post-traumatic stress disorder in emergency service personnel: a randomised clinical trial. *Psychol Med* 2019;49(9):1565–73. doi: 10.1017/S0033291718002234 [published Online First: 20180828]
72. Kitchiner NJ. Psychological treatment of three urban fire fighters with post-traumatic stress disorder using eye movement desensitisation reprocessing (EMDR) therapy. *Complement Ther Nurs Midwifery* 2004;10(3):186–93. doi: 10.1016/j.ctnm.2004.01.004
73. Kitchiner NJ, Lewis C, Roberts NP, et al. Active duty and ex-serving military personnel with post-traumatic stress disorder treated with psychological therapies: systematic review and meta-analysis. *European journal of psychotraumatology* 2019;10(1):1684226. doi: 10.1080/20008198.2019.1684226 [published Online First: 20191108]
74. Haugen PT, Evces M, Weiss DS. Treating posttraumatic stress disorder in first responders: a systematic review. *Clin Psychol Rev* 2012;32(5):370–80. doi: 10.1016/j.cpr.2012.04.001 [published Online First: 20120413]
75. Foa EB, Rothbaum B, Riggs DS, et al. Treatment of posttraumatic stress disorder in rape victims: a comparison between cognitive-behavioural procedures and counseling. *J Consult Clin Psychol* 1991;59:715–23.
76. Alshahrani KM, Johnson J, Prudenzi A, et al. The effectiveness of psychological interventions for reducing PTSD and psychological distress in first responders: A systematic review and meta-analysis. *PLoS ONE* 2022;17(8):e0272732. doi: 10.1371/journal.pone.0272732 [published Online First: 20220824]
77. Harvey SB, Hotopf M, Overland S, et al. Physical activity and common mental disorders. *Br J Psychiatry* 2010;197:357–64. doi: 10.1192/bjp.bp.109.075176 [published Online First: 2010/11/03]

78. Harvey SB, Overland S, Hatch SL, et al. Exercise and the Prevention of Depression: Results of the HUNT Cohort Study. *Am J Psychiatry* 2017;appiajp201716111223. doi: 10.1176/appi.ajp.2017.16111223
79. Mead GE, Morley W, Campbell P, et al. Exercise for depression. *Cochrane Database Syst Rev* 2009(3):CD004366. doi: 10.1002/14651858.CD004366.pub4 [published Online First: 20090708]
80. Rosenbaum S, Stierli M, McCullagh S, et al. An open trial of the RECONNECT exercise program for NSW Police Officers with posttraumatic stress disorder or psychological injury. *Health promotion journal of Australia : official journal of Australian Association of Health Promotion Professionals* 2022;33(1):28–33. doi: 10.1002/hpja.406 [published Online First: 20200918]
81. Tan L, Deady M, Mead O, et al. Web-Based Mind-Body Tactical Resilience Training Program for First Responders: Pre-Post Study Assessing Feasibility, Acceptability, and Usability. *JMIR Form Res* 2023;7:e40145. doi: 10.2196/40145 [published Online First: 20230201]
82. Tan L, Strudwick J, Deady M, et al. Mind-body exercise interventions for prevention of post-traumatic stress disorder in trauma-exposed populations: a systematic review and meta-analysis. *BMJ open* 2023;13(7):e064758. doi: 10.1136/bmjopen-2022-064758 [published Online First: 20230712]
83. Beck JG, Coffey SF, Foy DW, et al. Group cognitive behavior therapy for chronic posttraumatic stress disorder: an initial randomized pilot study. *Behav Ther* 2009;40(1):82–92. doi: 10.1016/j.beth.2008.01.003 [published Online First: 20080709]
84. Resick PA, Wachen JS, Dondanville KA, et al. Effect of Group vs Individual Cognitive Processing Therapy in Active-Duty Military Seeking Treatment for Posttraumatic Stress Disorder: A Randomized Clinical Trial. *JAMA psychiatry* 2017;74(1):28–36. doi: 10.1001/jamapsychiatry.2016.2729
85. Rickels K, Rynn M. Pharmacotherapy of generalized anxiety disorder. *J Clin Psychiatry* 2002;63 Suppl 14:9–16.
86. Taylor D, Paton C, Kerwin R. The Maudsley Prescribing Guidelines. 9th ed. London: *Informa Healthcare* 2007.
87. Williams T, Phillips NJ, Stein DJ, et al. Pharmacotherapy for post traumatic stress disorder (PTSD). *Cochrane Database Syst Rev* 2022;3(3):CD002795. doi: 10.1002/14651858.CD002795.pub3 [published Online First: 20220302]
88. Baldwin DS, Anderson IM, Nutt DJ, et al. Evidence-based pharmacological treatment of anxiety disorders, post-traumatic stress disorder and obsessive-compulsive disorder: a revision of the 2005 guidelines from the British Association for Psychopharmacology. *J Psychopharmacol* 2014;28(5):403–39. doi: 10.1177/0269881114525674
89. Huhn M, Tardy M, Spineli LM, et al. Efficacy of pharmacotherapy and psychotherapy for adult psychiatric disorders: a systematic overview of meta-analyses. *JAMA psychiatry* 2014;71(6):706–15. doi: 10.1001/jamapsychiatry.2014.112
90. Rauch SAM, Kim HM, Powell C, et al. Efficacy of Prolonged Exposure Therapy, Sertraline Hydrochloride, and Their Combination Among Combat Veterans With Posttraumatic Stress Disorder: A Randomized Clinical Trial. *JAMA psychiatry* 2019;76(2):117–26. doi: 10.1001/jamapsychiatry.2018.3412
91. Schneier FR, Neria Y, Pavlicova M, et al. Combined prolonged exposure therapy and paroxetine for PTSD related to the World Trade Center attack: a randomized controlled trial. *Am J Psychiatry* 2012;169(1):80–8. doi: 10.1176/appi.ajp.2011.11020321

92. Hetrick SE, Purcell R, Garner B, et al. Combined pharmacotherapy and psychological therapies for post traumatic stress disorder (PTSD). *Cochrane Database Syst Rev* 2010(7):CD007316. doi: 10.1002/14651858.CD007316.pub2
93. Raskind MA, Peskind ER, Hoff DJ, et al. A parallel group placebo controlled study of prazosin for trauma nightmares and sleep disturbance in combat veterans with post-traumatic stress disorder. *Biol Psychiatry* 2007;61(8):928–34. doi: 10.1016/j.biopsych.2006.06.032
94. Leslie DL, Mohamed S, Rosenheck RA. Off-label use of antipsychotic medications in the department of Veterans Affairs health care system. *Psychiatr Serv* 2009;60(9):1175–81. doi: 10.1176/appi.ps.60.9.1175
95. Botvinik L, Ng C, Schweitzer I. Audit of antipsychotic prescribing in a private psychiatric hospital. *Australas Psychiatry* 2004;12(3):227–33. doi: 10.1111/j.1039–8562.2004.02099.x
96. Maher AR, Maglione M, Bagley S, et al. Efficacy and comparative effectiveness of atypical antipsychotic medications for off-label uses in adults: a systematic review and meta-analysis. *JAMA* 2011;306(12):1359–69. doi: 10.1001/jama.2011.1360
97. Maglione M, Maher AR, Hu J, et al. Off-Label use of atypical antipsychotics: an update. Comparative Effectiveness Review No 43. Santa Monica, CA: Southern California Evidence-based Practice Center, 2011.
98. Braun P, Greenberg D, Dasberg H, et al. Core symptoms of posttraumatic stress disorder unimproved by alprazolam treatment. *J Clin Psychiatry* 1990;51(6):236–8.
99. Kannel WB, Sorlie P. Some health benefits of physical activity. The Framingham Study. *Arch Intern Med* 1979;139(8):857–61.
100. Kannel WB, Wolf PA. Framingham Study insights on the hazards of elevated blood pressure. *JAMA* 2008;300(21):2545–7. doi: 10.1001/jama.2008.759
101. Kannel WB, Vasan RS, Keyes MJ, et al. Usefulness of the triglyceride-high-density lipoprotein versus the cholesterol-high-density lipoprotein ratio for predicting insulin resistance and cardiometabolic risk (from the Framingham Offspring Cohort). *Am J Cardiol* 2008;101(4):497–501. doi: 10.1016/j.amjcard.2007.09.109
102. Kannel WB, Evans JC, Piper S, et al. Angina pectoris is a stronger indicator of diffuse vascular atherosclerosis than intermittent claudication: Framingham study. *J Clin Epidemiol* 2008;61(9):951–7. doi: 10.1016/j.jclinepi.2007.10.025
103. Mitchell JM, Ot’alora GM, van der Kolk B, et al. MDMA-assisted therapy for moderate to severe PTSD: a randomized, placebo-controlled phase 3 trial. *Nat Med* 2023;29(10):2473–80. doi: 10.1038/s41591-023-02565-4 [published Online First: 20230914]
104. van Dam D, Vedel E, Ehring T, et al. Psychological treatments for concurrent posttraumatic stress disorder and substance use disorder: a systematic review. *Clin Psychol Rev* 2012;32(3):202–14. doi: 10.1016/j.cpr.2012.01.004
105. Evans S, Giosan C, Patt I, et al. Anger and its association to distress and social/occupational functioning in symptomatic disaster relief workers responding to the September 11, 2001, World Trade Center disaster. *Journal of traumatic stress* 2006;19(1):147–52. doi: 10.1002/jts.20107 [published Online First: 2006/03/29]
106. Mearns J, Mauch TG. Negative mood regulation expectancies predict anger among police officers and buffer the effects of job stress. *Journal of Nervous and Mental Disease* 1998;186(2):120–25.

107. Koenen KC, Stellman JM, Stellman SD, et al. Risk factors for course of posttraumatic stress disorder among Vietnam veterans: A 14-year follow-up of American Legionnaires. *Journal of consulting and clinical psychology* 2003;71(6):980–86. doi: Doi 10.1037/0022-006x.71.6.980
108. Dyer KFW, Dorahy MJ, Hamilton G, et al. Anger, aggression, and self-harm in PTSD and complex PTSD. *Journal of clinical psychology* 2009;65(10):1099–114.
109. Barrett EL, Mills KL, Teesson M. Hurt people who hurt people: Violence amongst individuals with comorbid substance use disorder and post traumatic stress disorder. *Addictive Behaviors* 2011;36(7):721–28. doi: 10.1016/j.addbeh.2011.02.005
110. Beckham JC, Moore SD, Reynolds V. Interpersonal hostility and violence in Vietnam combat veterans with chronic posttraumatic stress disorder: A review of theoretical models and empirical evidence. *Aggress Violent Beh* 2000;5(5):451–66. doi: 10.1016/S1359-1789(98)00018-4
111. Finley EP, Baker M, Pugh MJ, et al. Patterns and Perceptions of Intimate Partner Violence Committed by Returning Veterans with Post-Traumatic Stress Disorder. *J Fam Violence* 2010;25(8):737–43. doi: DOI 10.1007/s10896-010-9331-7
112. Jayasinghe N, Giosan C, Evans S, et al. Anger and Posttraumatic Stress Disorder in Disaster Relief Workers Exposed to the September 11, 2001 World Trade Center Disaster One-Year Follow-Up Study. *Journal of Nervous and Mental Disease* 2008;196(11):844–46. doi: 10.1097/NMD.0b013e31818b492c
113. Forbes D, Creamer M, Hawthorne G, et al. Comorbidity as a predictor of symptom change following treatment in combat-related posttraumatic stress disorder. *Journal of Nervous & Mental Disease* 2003;191(2):93–99.
114. Foa EB, Riggs DS, Massie ED, et al. The impact of fear activation and anger on the efficacy of exposure treatment for posttraumatic-stress disorder. *Behavior Therapy* 1995;26(3):487–99. doi: 10.1016/S0005-7894(05)80096-6
115. Forbes D, Parslow R, Creamer M, et al. Mechanisms of anger and treatment outcome in combat veterans with posttraumatic stress disorder. *Journal of Traumatic Stress* 2008;21(2):142–49. doi: 10.1002/jts.20315
116. Litz BT, Stein N, Delaney E, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev* 2009;29(8):695–706. doi: 10.1016/j.cpr.2009.07.003
117. Lentz LM, Smith-MacDonald L, Malloy D, et al. Compromised Conscience: A Scoping Review of Moral Injury Among Firefighters, Paramedics, and Police Officers. *Front Psychol* 2021;12:639781. doi: 10.3389/fpsyg.2021.639781 [published Online First: 20210331]
118. Simmons-Beauchamp B, Sharpe H. The Moral Injury of Ineffective Police Leadership: A Perspective. *Front Psychol* 2022;13:766237. doi: 10.3389/fpsyg.2022.766237 [published Online First: 20220415]
119. Mensink B, van Schagen A, van der Aa N, et al. Moral Injury in Trauma-Exposed, Treatment-Seeking Police Officers and Military Veterans: Latent Class Analysis. *Front Psychiatry* 2022;13:904659. doi: 10.3389/fpsyg.2022.904659 [published Online First: 20220711]
120. Kolubinski DC, Frings D, Nikcevic AV, et al. A systematic review and meta-analysis of CBT interventions based on the Fennell model of low self-esteem. *Psychiatry Res* 2018;267:296–305. doi: 10.1016/j.psychres.2018.06.025 [published Online First: 20180613]

121. Fekedulegn D, Burchfiel CM, Charles LE, et al. Shift Work and Sleep Quality Among Urban Police Officers: The BCOPS Study. *J Occup Environ Med* 2016;58(3):e66–71. doi: 10.1097/JOM.0000000000000620
122. Bond J, Hartley TA, Sarkisian K, et al. Association of traumatic police event exposure with sleep quality and quantity in the BCOPS Study cohort. *Int J Emerg Ment Health* 2013;15(4):255–65.
123. Fekedulegn D, Burchfiel CM, Violanti JM, et al. Associations of long-term shift work with waking salivary cortisol concentration and patterns among police officers. *Ind Health* 2012;50(6):476–86. doi: 10.2486/indhealth.2012-0043 [published Online First: 20121008]
124. Schnurr PP, Lunney CA. Residual symptoms following prolonged exposure and present-centered therapy for PTSD in female veterans and soldiers. *Depress Anxiety* 2019;36(2):162–69. doi: 10.1002/da.22871 [published Online First: 20181221]
125. Edinger JD, Arnedt JT, Bertisch SM, et al. Behavioral and psychological treatments for chronic insomnia disorder in adults: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med* 2021;17(2):255–62. doi: 10.5664/jcsm.8986
126. Safe Work Australia. Work-related mental disorders profile. Canberra: Safe Work Australia, 2015.
127. Harvey SB, Modini M, Christensen H, et al. Severe mental illness and work: What can we do to maximise the employment opportunities for individuals with psychosis? *Aust N Z J Psychiatry* 2013;47(5):421–4. doi: 10.1177/0004867413476351 [published Online First: 2013/02/13]
128. Boardman AP, Grimbaldston AH, Handley C, et al. The North Staffordshire Suicide Study: a case-control study of suicide in one health district. *Psychol Med* 1999;29(1):27–33. [published Online First: 1999/03/17]
129. Claussen B, Bjorndal A, Hjort PF. Health and re-employment in a two year follow up of long term unemployed. *J Epidemiol Community Health* 1993;47(1):14–8. [published Online First: 1993/02/01]
130. Waddell G, Burton AK. Is work good for your health and well-being? In: Pensions DfWa, ed. UK: The Stationary Office, 2006.
131. Butterworth P, Leach LS, Strazdins L, et al. The psychosocial quality of work determines whether employment has benefits for mental health: results from a longitudinal national household panel survey. *Occup Environ Med* 2011;68(11):806–12. doi: 10.1136/oem.2010.059030
132. Butler RN, Gardener B, Gardener H. More than cost shifting: Moral hazard lowers productivity. *The Journal of Risk and Insurance* 1998;65:671–88.
133. Johannsson P, Palme M. Assessing the effect of public policy on worker absenteeism. *Journal of Human Resources* 2002;37:381–409.
134. Sayer NA, Murdoch M, Carlson KF. Compensation and PTSD: consequences for symptoms and treatment. PTSD Research Quarterly. Vermont, USA: The National Center for Posttraumatic Stress Disorder, 2007.
135. Timbie JW, Horvitz-Lennon M, Frank RG, et al. A meta-analysis of labour supply effects of interventions for major depressive disorder. *Psychiatric Services* 2006;57:212–18.
136. Bruinvels DJ, Rebergen DS, Nieuwenhuijsen K, et al. Return to work interventions for adjustment disorders. *Cochrane Database Syst Rev* 2007;(1)(CD006389)
137. Corbiere M, Shen J. A systematic review of psychological return-to-work interventions for people with mental health problems and/or physical injuries. *Canadian Journal of Community Mental Health* 2006;25(2):261–88.

138. Nieuwenhuijsen K, Verbeek JH, de Boer AG, et al. Supervisory behaviour as a predictor of return to work in employees absent from work due to mental health problems. *Occup Environ Med* 2004;61(10):817–23. doi: 10.1136/oem.2003.009688 [published Online First: 2004/09/21]
139. Viikari-Juntura E, Kausto J, Shiri R, et al. Return to work after early part-time sick leave due to musculoskeletal disorders: a randomized controlled trial. *Scand J Work Environ Health* 2012;38(2):134–43. doi: 10.5271/sjweh.3258 [published Online First: 2011/10/29]
140. Stergiopoulos E, Cimo A, Cheng C, et al. Interventions to improve work outcomes in work-related PTSD: a systematic review. *BMC Public Health* 2011;11:838.
141. Noordik E, van der Klink JJ, Klingen EF, et al. Exposure-in-vivo containing interventions to improve work functioning of workers with anxiety disorder: a systematic review. *BMC Public Health* 2010;10:598.
142. Foa EB, Hembree EA, Cahill SP, et al. Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: outcome at academic and community clinics. *J Consult Clin Psychol* 2005;73(5):953–64. doi: 10.1037/0022-006X.73.5.953
143. Antony J, Brar R, Khan PA, et al. Interventions for the prevention and management of occupational stress injury in first responders: a rapid overview of reviews. *Syst Rev* 2020;9(1):121. doi: 10.1186/s13643-020-01367-w [published Online First: 20200531]
144. Carlier IV, Lamberts RD, Gersons BP. Risk factors for posttraumatic stress symptomatology in police officers: a prospective analysis. *J Nerv Ment Dis* 1997;185(8):498–506.
145. Harvey SB, Hatch SL, Jones M, et al. Coming home: social functioning and the mental health of UK Reservists on return from deployment to Iraq or Afghanistan. *Ann Epidemiol* 2011;21(9):666–72. doi: 10.1016/j.annepidem.2011.05.004 [published Online First: 2011/07/09]
146. Iversen AC, Fear NT, Ehlers A, et al. Risk factors for post-traumatic stress disorder among UK Armed Forces personnel. *Psychol Med* 2008;38(4):511–22. doi: 10.1017/S0033291708002778
147. Richardson KM, Rothstein HR. Effects of occupational stress management intervention programs: a meta-analysis. *J Occup Health Psychol* 2008;13(1):69–93. doi: 10.1037/1076-8998.13.1.69 [published Online First: 2008/01/24]

