NICE National Institute for Health and Care Excellence

Post-traumatic stress disorder (PTSD)

Evidence Update December 2013

A summary of selected new evidence relevant to NICE clinical guideline 26 'The management of PTSD in adults and children in primary and secondary care' (2005)

Evidence Update 49

Evidence Updates provide a summary of selected new evidence published since the literature search was last conducted for the accredited guidance they relate to. They reduce the need for individuals, managers and commissioners to search for new evidence. Evidence Updates highlight key points from the new evidence and provide a commentary describing its strengths and weaknesses. They also indicate whether the new evidence may have a potential impact on current guidance. For contextual information, this Evidence Update should be read in conjunction with the relevant clinical guideline, available from the NICE Evidence Services topic page for post-traumatic stress disorders.

Evidence Updates do not replace current accredited guidance and do not provide formal practice recommendations.

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Contents

Introduction

This Evidence Update identifies new evidence that is relevant to, and may have a potential impact on, the following reference guidance:

- **Post-traumatic stress disorder (PTSD)**. **NICE clinical guideline 26 (2005)**

A search was conducted for new evidence from 1 July 2011 to 12 July 2013. A total of 2061 pieces of evidence were initially identified. Following removal of duplicates and a series of automated and manual sifts, 19 items were selected for the Evidence Update (see Appendix A for details of the evidence search and selection process). An Evidence Update Advisory Group, comprising topic experts, reviewed the prioritised evidence and provided a commentary.

Although the process of updating NICE guidance is distinct from the process of an Evidence Update, the relevant NICE guidance development centres have been made aware of the new evidence, which will be considered when guidance is reviewed.

NICE Pathways

- Post-traumatic stress disorder. NICE Pathway

Feedback

If you have any comments you would like to make on this Evidence Update, please email contactus@evidence.nhs.uk

Key points

The following table summarises what the Evidence Update Advisory Group (EUAG) decided were the key points for this Evidence Update. It also indicates the EUAG's opinion on whether the new evidence may have a potential impact on the current guidance listed in the introduction. For further details of the evidence behind these key points, please see the full commentaries.

The section headings used in the table below are taken from the guidance.

Evidence Updates do not replace current accredited guidance and do not provide formal practice recommendations.

Key point	Potential impact on guidance	
	Yes	No
Recognition of PTSD • Young people exhibiting behavioural problems such as delinquency may have PTSD.		✓
Assessment and coordination of care • There is a consistent and significant association between PTSD and suicidality, particularly in patients with comorbid depression.		✓
Support for families and carers • Involving the intimate partner in treatment may help improve the patient's PTSD symptoms and relationship satisfaction.		✓
Language and culture • Specific ethnic groups with PTSD following widespread violence associated with conflicts may benefit from group and individual trauma-based therapy provided by trained lay workers from the local community.		✓
Care for all people with PTSD • Studies in patients with PTSD and drug or alcohol dependence gave contradictory findings on the efficacy of trauma-focused interventions and did not address the clinical challenge of which problem to treat first.		✓
The treatment of PTSD *Early interventions* • Single-session psychological debriefing within 3 days of a potentially traumatic event appears to have no impact on post-traumatic stress symptoms and psychological distress.		✓
• A brief trauma-focused psychological intervention (3 sessions) delivered to all in the period immediately following trauma may reduce the development of subsequent trauma symptoms more than no such intervention, though subgroups most likely to benefit have not been identified.		✓
• Trauma-focused psychological interventions in the period within 3 months of a trauma may be effective for prevention or acute treatment of PTSD.		✓

Key point	Potential impact on guidance	
	Yes	No
Treatment of PTSD more than 3 months after a trauma		
• Evidence shows the efficacy of trauma-focused psychological interventions for PTSD.		✓
• Although the standard regimen of 12 weekly sessions of trauma-focused therapy may be effective following a single trauma, patients who have made only a partial recovery may benefit from additional sessions.		✓
• Evidence on the pharmacological treatment of PTSD remains limited, although there may now be limited evidence for the efficacy of other medications (venlafaxine and fluoxetine) not currently recommended by the guideline.	✓*	
• There is insufficient evidence to support the use of acupuncture or transcranial magnetic stimulation for the treatment of PTSD.		✓
Children		
• Limited evidence supports the use of trauma-focused psychological interventions for the treatment of PTSD in children and young people.		✓

* Evidence Updates are intended to increase awareness of new evidence and do not change the recommended practice as set out in current guidance. Decisions on how the new evidence may impact guidance will not be possible until the guidance is reviewed by NICE following its published processes and methods. For further details of this evidence in the context of current guidance, please see the full commentary.

1 Commentary on new evidence

These commentaries analyse the key references identified specifically for the Evidence Update. The commentaries focus on the 'key references' (those identified through the search process and prioritised by the EUAG for inclusion in the Evidence Update), which are identified in bold text. Section headings are taken from the guidance.

1.1 Post-traumatic stress disorder

No new key evidence was found for this section.

1.2 The symptoms of PTSD

No new key evidence was found for this section.

1.3 Recognition of PTSD

Recognition of PTSD in young people with behavioural problems

NICE clinical guideline 26 (NICE CG26) notes that children may not complain directly of PTSD symptoms. The guideline therefore advises that it is vital to take all opportunities to identify PTSD in children and young people, questioning them directly without relying solely on information from the parent or guardian.

A randomised controlled trial (RCT) by **Ford et al. (2012)** reported a study in girls aged 13–17 years involved in delinquency in an urban area in Connecticut (where 26% of families live below the poverty line, 41% of adults have not completed high school, and there are high rates of arrest, violent crime, firearm injuries and fatalities, and family violence). Girls were recruited from schools, health clinics, protective services offices, community programmes and residential treatment centres. Inclusion criteria were self-reported delinquency and full or partial PTSD using the Clinician Administered PTSD Scale (CAPS) for children/adolescents. Of the 159 girls screened for inclusion in the study, 59 were included though only a minority (n=14) were excluded on the basis of no trauma or no PTSD. Participants were randomised to treatment with a psychological intervention (Trauma Affect Regulation: Guide for Education and Therapy, TARGET) or relational supportive therapy (enhanced treatment as usual). Both interventions were delivered as 12 sessions, each of 50 minutes.

Both treatments resulted in generally large effect size improvements compared with baseline in PTSD criteria B (intrusion), C (avoidance), D (hyperarousal) and total symptoms, but there was no consistent significant difference between interventions. Limitations of the study included significant differences in the baseline symptoms of the study groups, frequent missed sessions and lack of information about demographic and other baseline characteristics. Additionally, the assessor was not blind to treatment type, the small sample size limited the ability to detect significant differences between therapy interventions, and the duration of treatment and timing of follow-up was not stated.

The limitations of the study mean that this evidence is unlikely to have an impact on NICE CG26. Nevertheless, the study highlights the need to recognise PTSD in young people exhibiting behavioural problems such as delinquency.

Key reference
Ford JD, Steinberg KL, Hawke J et al. (2012) Randomized trial comparison of emotion regulation and relational psychotherapies for PTSD with girls involved in delinquency. Journal of Clinical Child and Adolescent Psychology 41: 27–37

1.4 Assessment and coordination of care

Comorbid depression and risk of suicide

NICE CG26 recommends that assessment of PTSD sufferers should be conducted by competent individuals. It should be comprehensive, including physical, psychological and social needs, and a risk assessment. The guideline further recommends that for PTSD sufferers whose assessment identifies a high risk of suicide or harm to others, healthcare professionals should first concentrate on management of this risk.

Panagioti et al. (2012) conducted a meta-analysis of the association between PTSD diagnosis and suicidality, and any impact of comorbid depression on this association. Original research studies reporting an effect size for the relationship between PTSD and suicidality among participants aged 15 years or over were included. Most of the 59 studies (from 63 independent samples) were conducted in the US and had cross-sectional designs. The PTSD group comprised over 24,750 participants, with almost 500,000 people in the control group. Suicidality was assessed by frequency of successful suicides, suicide attempts or the presence of suicidal ideation.

The analysis found a highly significant positive association between a PTSD diagnosis and suicidality (overall Hedges g coefficient=0.783, 95% confidence intervals [CI] 0.637 to 0.928, $p < 0.0001$). Within the individual studies, 55 found a significant positive association between PTSD and suicidality (p values ranging from 0.01 to 0.0001), 6 studies did not show a significant association, and 2 studies found a significant negative association ($p < 0.0001$). Subgroup analyses examined whether results were affected by different measures of suicidality, or different populations of participants (including type of trauma experienced). A significant association remained between suicidality and PTSD in all subgroup analyses (p values of <0.01 or <0.0001) except in 4 studies examining the association between successful suicides and PTSD. In 13 studies that provided information on comorbid depression, higher levels of depression in PTSD participants were associated with higher level of suicidality compared with control participants ($p < 0.0001$).

Limitations of the analysis identified by the authors included possible publication bias and the quality of the included studies (only 24 studies met ≥4 of 7 quality domains). The definition of suicidality used was also very broad, including suicidal thoughts and non-lethal acts, so the evidence has limited use in helping to identify patients most at risk of completed suicide.

The review adds to the evidence base demonstrating a consistent and significant association between PTSD and suicidality, particularly in patients with comorbid depression. As such, it contributes to an overall understanding of the clinical needs of patients with PTSD, and is consistent with the recommendations of NICE CG26 that these patients require comprehensive risk assessment.

Key reference
Panagioti M, Gooding PA, Tarrier N (2012) A meta-analysis of the association between posttraumatic stress disorder and suicidality: the role of comorbid depression. Comprehensive Psychiatry 53: 915–30

1.5 Support for families and carers

Involving partners in therapy

NICE CG26 recognises that families and carers have a central role in supporting people with PTSD, noting that healthcare professionals should be aware of the impact of PTSD on the whole family.

Monson et al. (2012) undertook an RCT to evaluate cognitive behavioural conjoint therapy for patients with PTSD and their partners to treat simultaneously PTSD symptoms and

problems with intimate relationships. The study included 40 couples (80 individuals) from an outpatient hospital setting in the USA and a university research centre in Canada. Exclusion criteria for both partners included substance dependence (though abuse was allowed), severe partner aggression, current bipolar or psychotic disorder, and imminent suicidality or homicidality. Half of the couples were randomised to the intervention (15 sessions) immediately and half were placed on a waiting list for subsequent therapy. CAPS was used for diagnosis and for assessment of change in PTSD symptom severity. Both partners also completed the Dyadic Adjustment Scale to measure intimate relationship satisfaction; a total score of 98 or more was the criterion for relationship satisfaction. On both scales, a change of 10 points has been shown to be clinically meaningful. Analysis was based on patients completing the study.

Compared with the waiting list group, patients receiving therapy showed significantly greater improvement in both PTSD symptom score (mean change difference=−23.21, 95% CI −37.87 to −8.55, p=0.004) and Dyadic Adjustment Scale score (mean change difference=9.43, 95% CI 0.04 to 18.83, p=0.049).

Limitations of the study included several differences between treatment and waiting list groups at baseline (for example, the intervention group included only 3 participants who experienced child sexual abuse compared with 8 in the waiting list group). There may have been a beneficial impact of the more intense attention on the treatment group, the dropout rate was higher in the treatment group (6 couples) than in the waiting list group (3 couples) and the study had limited sample size. The impact of treating the couple compared with individual therapy for the patient could not be evaluated as there was no direct comparison.

The study demonstrates that involving the intimate partner in treatment may help improve the patient's PTSD symptoms and relationship satisfaction. Although the evidence is limited, these findings are broadly consistent with NICE CG26.

Key reference
Monson CM, Fredman SJ, Macdonald A et al. (2012) Effects of cognitive-behavioral couple therapy for PTSD. JAMA: Journal of the American Medical Association 308: 700–9

1.6   Practical support and social factors

No new key evidence was found for this section.

1.7   Language and culture

Community-implemented trauma therapy

NICE CG26 notes that people with PTSD treated in the NHS come from diverse cultural and ethnic backgrounds and some have no or limited English, but all should be offered the opportunity to benefit from psychological interventions. The guideline advises that this can be achieved by the use of interpreters and bicultural therapists.

An RCT by **Bass et al. (2013)** examined psychotherapy for survivors of sexual violence in the Democratic Republic of Congo. Interventions were provided by psychosocial assistants with at least 4 years of post-primary school education and 1–9 years of experience providing case management and individual supportive counselling to survivors of sexual violence. The psychosocial assistants reviewed their files of current and prior clients in 15 villages. Up to 30 women with clinically significant psychological problems were identified from each village and invited to participate in the study. Randomisation to treatment was by village, with all participants from the same village allocated the same intervention:

* cognitive processing therapy (CPT; 1 individual session and 11 group sessions; 7 villages, 157 women, maximum of 8 women per treatment group) or

- individual support (psychosocial support and economic, medical and legal referrals; 8 villages, 248 women).

Psychosocial assistants in villages randomised to CPT received 2 weeks of training on the intervention in the USA with a manual that was adapted and translated. Ongoing supervision was provided by a bilingual clinical social worker who made weekly telephone calls with US trainers. Outcomes assessed included PTSD symptoms (using the PTSD Checklist – Civilian Version) and combined anxiety and depression (using the Hopkins Symptom Checklist). Assessments at all time points (baseline, end of treatment and 6 months after the end of treatment) were completed by 65% of participants receiving group therapy and by 52% of those receiving individual therapy. Effect sizes reflecting regression adjustments were calculated with Cohen's d, representing the mean between-group differences standardised with the use of the baseline pooled standard deviation.

PTSD symptoms improved with both interventions, but to a significantly greater extent with CPT at the end of treatment (Cohen's d=1.4, p<0.001) and 6 months later (Cohen's d=1.3, p<0.001). Likewise, combined depression and anxiety resulted in significantly greater improvement at the end of treatment (Cohen's d=1.8, p<0.001) and 6 months later (Cohen's d=1.6, p<0.001).

Limitations of the study included potential confounders (for example, selection of participants based on proximity to the offices of the psychosocial assistants and being known to the assistants). Baseline differences in symptom severity may limit comparability, and outcome measures used were of unknown clinical validity. It is also unclear how much of the treatment effect was due to the group context.

Ertl et al. (2011) conducted an RCT to evaluate community-implemented trauma therapy for PTSD in former child soldiers in 3 areas of Northern Uganda with varying degrees of war exposure. Participants (12–25 years) were identified by a positive result on screening for PTSD (using the Post-traumatic Stress Diagnostic Scale) carried out in camps for internally displaced people and new settlement sites in the study areas, with diagnosis confirmed by clinical experts using CAPS. To be representative of the population of interest, participants with suicidal ideation, depression and substance abuse were not excluded. Participants were randomised to 1 of 3 treatments.

- Narrative exposure therapy (8 individual sessions of 90–120 minutes each, 3 times a week based on KidNET; n=29),
- Academic catch-up programme with elements of supportive counselling with no focus on traumatic experiences (8 individual sessions of 90–120 minutes each, 3 times a week based on an intensive English course using official Ugandan school books; n=28),
- Waiting list (n=28).

Treatments were carried out by 14 intensively trained local lay counsellors, who were monitored by supervision meetings, observation and evaluation of treatment sessions via video recordings. The primary outcome measure was PTSD severity, assessed using CAPS before and 1 year after treatment.

PTSD symptom severity was improved significantly more with narrative exposure therapy than academic catch-up (mean change difference=−14.06, 95% CI −27.19 to −0.92, p=0.02) and waiting list (mean change difference=−13.04, 95% CI −26.79 to 0.72, p=0.02). Limitations of the study included potential confounders (for example, improving stability in Uganda during the study period reducing the likelihood of potential triggers such as gunfire) and lack of objective measures of functioning. The sample size was also small.

Taken together, these 2 studies of specific ethnic groups with PTSD following widespread violence associated with conflicts show benefits of group CPT and individual exposure therapy provided by trained lay workers from the local community. While this evidence was

gathered at localities far removed from the UK, refugees from conflict zones form a growing (and often highly localised, culturally intact) population requiring trauma treatment from the NHS. Although unlikely to affect NICE CG26, these studies suggest that research may be warranted into the delivery of trauma-based therapy within refugee communities in the UK using trained lay workers from the ethnic group. Group therapy for participants exposed to similar traumatic experiences may be an effective way to deliver services, though further research is required.

Key references

Bass JK, Annan J, McIvor Murray S et al. (2013) Controlled trial of psychotherapy for Congolese survivors of sexual violence. The New England Journal of Medicine 368: 2182–91

Ertl V, Pfeiffer A, Schauer E et al. (2011) Community-implemented trauma therapy for former child soldiers in Northern Uganda. JAMA: Journal of the American Medical Association 306: 503–12

1.8   Care for all people with PTSD

Comorbidities

For PTSD sufferers with drug or alcohol dependence or in whom alcohol or drug use may significantly interfere with effective treatment, NICE CG26 recommends that the drug or alcohol problem should be treated first.

Foa et al. (2013) reported a single-blind RCT to compare combinations of treatment for alcohol dependency (naltrexone), treatment for PTSD (prolonged exposure therapy), and supportive counselling. Participants (n=165) were diagnosed with both PTSD and alcohol dependence, had clinically significant PTSD symptoms (score of at least 15 on the PTSD Symptom Severity Interview [PSSI]) and drank heavily during the last 30 days (more than 12 alcoholic drinks per week with at least 1 day of at least 4 drinks, determined by the Timeline Follow-Back Interview). Exclusion criteria included current other substance dependence (other than nicotine or cannabis), current psychotic disorder, clinically significant suicidal or homicidal ideation and opiate use in the month prior to entry. Before randomisation to treatment, participants completed outpatient medical detoxification (at least 3 consecutive days of alcohol abstinence) with oxazepam as required to manage alcohol withdrawal symptoms.

Participants were randomised to:

- naltrexone and supportive counselling
- prolonged exposure therapy, placebo medication and supportive counselling
- naltrexone, prolonged exposure therapy and supportive counselling
- placebo medication with supportive counselling.

Naltrexone treatment was 50 mg/day for 3 days then titration over 7 days, if tolerated, to 100 mg/day. Prolonged exposure therapy consisted of 12 weekly 90-minute sessions followed by 6 biweekly sessions, and included imagined exposure (recounting traumatic memories) and processing (discussing thoughts and feelings related to revisiting the memory). Supportive counselling (12 weekly 30–45-minute sessions followed by 6 biweekly sessions) was based on medication management with compliance enhancement based on motivational interviewing. PTSD symptoms were assessed by PSSI every 4 weeks during treatment and post-treatment (weeks 24, 38 and 52). Alcohol consumption was assessed using the Timeline Follow-Back Interview.

PTSD symptoms improved in all treatment groups, as shown by change in PSSI from baseline to end of treatment (week 24):

- naltrexone: −12.4, 95% CI −15.8 to −9.0
- exposure therapy: −16.1, 95% CI −20.8 to −11.3

- naltrexone and exposure therapy: −19.1, 95% CI −23.1 to −15.1
- counselling alone: −11.6, 95% CI −14.1 to −9.1.

However, the effect of prolonged exposure therapy was not significantly different from other interventions (p=0.15). Drinking was reduced in all treatment groups, as shown by change in percentage of drinking days from baseline to end of treatment (week 24):

- naltrexone: −69.9, 95% CI −78.7 to −61.20
- exposure therapy: −63.9, 95% CI −73.9 to −53.8
- naltrexone and exposure therapy: −63.9, 95% CI −73.6 to −54.2
- counselling alone: −61.0, 95% CI −68.9 to −53.0.

Naltrexone was significantly more effective than other interventions (mean difference [MD]=7.9%, p=0.008). During the 6 months after treatment ended (weeks 24 to 52), the percentage of drinking days did not significantly change in the group receiving prolonged exposure therapy (MD=3.6, 95% CI −2.2 to 9.5) but showed a significant increase among groups that did not receive this intervention (MD=15.9, 95% CI 8.8 to 23.1).

Limitations of the study included:

- the considerable dropout rate before completion of the treatment period (32.1%)
- low attendance at prolonged exposure therapy sessions (mean completion of 6.18 sessions in the group also receiving naltrexone therapy; mean completion of 6.48 sessions in the group not receiving naltrexone therapy)
- non-specific effects of supportive counselling that may have masked the effects of prolonged exposure therapy
- no reporting of baseline drinking consumption, which may have been lower than expected for patients with alcohol dependency because the inclusion criterion was within recommended limits for men.

Mills et al. (2012) conducted an RCT to compare concurrent treatment of PTSD and substance abuse using prolonged exposure ('COPE', n=55) or usual treatment (n=48). Patients included in the study met diagnostic criteria for PTSD (median 6.0 trauma types experienced) and most were polysubstance users (median of 4.0 different drug classes in the preceding month, most commonly benzodiazepines, cannabis, alcohol, heroin and amphetamines). Exclusion criteria included current suicidal ideation, recent history of self-harm and current symptoms of psychosis.

COPE consisted of 13 individual 90-minute sessions that integrated evidence-based cognitive behavioural therapy (CBT) approaches for PTSD and for substance dependence. Although designed for weekly delivery, some flexibility was permitted. Usual treatment for substance abuse (for example, inpatient or outpatient detoxification, and pharmacological treatment) was available for all study participants. Assessment of PTSD symptom severity was with CAPS, and severity of substance dependency (indicated by the number of dependence criteria met) was assessed using the Composite International Diagnostic Interview (range 0–7 with higher score indicating more severe dependency). A total of 39 patients receiving COPE and 38 receiving usual treatment alone were assessed at the study end (9-month follow-up). Analysis was based on the intention-to-treat population.

Compared with baseline measurements, PTSD symptoms were significantly reduced after 9 months with both COPE (MD=−38.24, 95% CI −47.93 to −28.54) and usual treatment (MD=−22.14, 95% CI −30.33 to −13.95), though the impact of COPE was significantly greater (MD between groups=−14.74, 95% CI −29.15 to −0.33, p=0.045). The severity of substance dependency declined from baseline to 9-month follow-up with both COPE (MD=0.43, 95% CI 0.31 to 0.58, p<0.001) and usual treatment (MD=0.52, 95% CI 0.41 to 0.66, p<0.001), with no significant difference between study arms (MD=0.85, 95% CI 0.60 to 1.21).

Limitations of the study included the reliance on self-reported measures, high dropout rates (median attendance: 5 of the 13 sessions) and lower sample size than planned due to the low recruitment rate.

The high dropout rate seen in the studies by Foa et al. (2013) and Mills et al. (2012) is typical of this patient population with PTSD and drug or alcohol dependency. These studies add to the evidence base, but reported contradictory results. The trauma-focused intervention was shown to be effective in the study by Mills et al. (2012), in contrast to the findings of Foa et al. (2013). However, neither study provided evidence to address the clinical challenge of whether to treat PTSD or substance abuse first, or to treat together. Consequently, this evidence is unlikely to have an impact on NICE CG26.

Key references

Foa EB, Yusko DA, McLean CP et al. (2013) Concurrent naltrexone and prolonged exposure therapy for patients with comorbid alcohol dependence and PTSD: a randomized clinical trial. JAMA: Journal of the American Medical Association 310: 488–95

Mills KL, Teeson M, Back SE et al. (2012) Integrated exposure-based therapy for co-occurring posttraumatic stress disorder and substance dependence: a randomized controlled trial. JAMA: Journal of the American Medical Association 308: 690–9

1.9   The treatment of PTSD

Early interventions

NICE CG26 notes that a number of sufferers with PTSD may recover with no or limited interventions, though without effective treatment, many people may develop chronic problems over many years. In considering immediate psychological interventions for all, the guideline notes that practical support delivered in an empathetic manner is important in promoting recovery for PTSD. It recommends that brief, single-session interventions (often referred to as psychological debriefing) that focus on the traumatic incident are unlikely to be helpful and should not be routine practice when delivering services. The guideline notes that brief psychological interventions (5 sessions) may be effective if treatment starts within the first month after the traumatic event. Beyond the first month, the duration of treatment is similar to that for chronic PTSD.

Debriefing after a traumatic event
Tuckey and Scott (2013) conducted an RCT of volunteer fire-fighters in Australia to compare critical incident stress debriefing, stress management education and screening for PTSD but no treatment.

Currently in Australia, fire brigades are able to request a range of services following a potentially traumatic event, including critical incident stress debriefing and individual psychological therapy. During the study period, an invitation to participate in the study was extended to all fire brigades requesting services following a potentially traumatic event (in all but 1 case, following provision of fire and rescue services at motor vehicle accidents that resulted in fatalities or serious injuries to the vehicle occupants). After initial consent by the brigade leader to participate in the study, individual informed consent was obtained from the brigade members and the brigade was randomly allocated to an intervention. Of the 19 brigades eligible to participate, 3 withdrew from the study when allocated to the screening arm of the study due to their strong preference to hold debriefing. The final sample providing data for analysis before and after the intervention comprised 67 fire-fighters of whom 61 (91%) were men.

Interventions were conducted within 3 days of the potentially traumatic event. Group debriefing sessions followed standard approaches and lasted approximately 90 minutes. Group stress management education consisted of a 90-minute workshop (predominantly

presenting information with limited discussion) covering recognition and management of stress, potential reactions to trauma, recovery and reassurance. Both intervention groups received a survey before and 1 month after the intervention. Those in the screening group were also surveyed but received no intervention or discussion about the critical incident or its impact. Outcome measures evaluated in the surveys comprised the Impact of Event Scale (to assess subjective distress caused by traumatic events), Kessler-10 (to provide a measure of nonspecific psychological distress), Quality of Life Enjoyment and Satisfaction Questionnaire, and alcohol consumption.

On study entry, average levels of post-traumatic stress symptoms and nonspecific psychological distress were low, with quality of life rated as satisfying. After controlling for pre-intervention scores, there were no significant differences between treatment groups in post-intervention levels of post-traumatic stress symptoms or nonspecific psychological distress. Post-intervention, there were some indications (p<0.05) of increased alcohol consumption in the screening group compared with debriefing (though pre-intervention alcohol consumption was significantly lower in the debriefing group), and increased quality of life in the debriefing group compared with the education group but not the screening group.

Limitations of the study included the refusal of 3 brigades to participate when not randomised to debriefing, which highlights the cultural expectation of debriefing and the ethical issues of preventing emergency services personnel taking part in the traditional sharing of experiences. The imbalance between groups in baseline alcohol consumption may have overstated the benefits of debriefing. There was also no robust testing for sustainability of the intervention effects. The very low levels of psychological distress at the beginning of the study made it unlikely that any effect of an intervention would be apparent.

This study shows that it is possible to evaluate the effect of group debriefing of emergency services, although it appeared to show no impact of the intervention on post-traumatic stress symptoms and psychological distress.

Gartlehner et al. (2013) performed a systematic review of interventions delivered to adults within 3 months of exposure to a traumatic event with the aim of preventing progression to PTSD. Controlled studies with less than 20% attrition rate were eligible. The review is discussed in more detail below (see 'Interventions within 3 months of trauma' in Section 1.9).

The review included an RCT (n=77) that found immediate debriefing (within 10 hours of the traumatic episode) reduced post-traumatic symptoms significantly more than late debriefing (after 48 hours) in robbery victims, but limitations of the study meant that the strength of evidence was considered low. The authors concluded that debriefing is not effective to prevent PTSD.

The absence of clear benefit from immediate single-session psychological debriefing within 3 days of a potentially traumatic event is consistent with NICE CG26, which does not recommend immediate brief psychological interventions for all people exposed to potentially traumatic experiences.

Key references
Gartlehner G, Forneris CA, Brownley K et al. (2013) Interventions for the prevention of posttraumatic stress disorder (PTSD) in adults after exposure to psychological trauma. Rockville, MD, USA: Agency for Healthcare Research and Quality. Comparative Effectiveness Review: 109

Tuckey MR, Scott JE (2013) Group critical incident stress debriefing with emergency services personnel: a randomized controlled trial. Anxiety, Stress and Coping doi.org/10.1080/10615806.2013.809421

Immediate psychological intervention for all

Rothbaum et al. (2012) conducted an RCT of people attending an emergency department of a US hospital following a trauma, to compare modified prolonged exposure therapy (3 weekly sessions each of 1 hour including imaginal exposure and processing of traumatic material) or assessment only. Those assigned to the intervention received the first session immediately. Patients (18–65 years) were included if they presented to the emergency unit within 72 hours of experiencing a trauma (Diagnostic and Statistical Manual of Mental Disorders IV Criterion A), spoke English, were alert and had a memory of the event. Exclusion criteria included loss of consciousness for longer than 5 minutes and current intoxication. Post-traumatic stress reactions were assessed at 4 and 12 weeks post-injury using the PSSI.

Of the 137 people included in the study, most had experienced rape (34.3%), motor vehicle accident (33.6%) or nonsexual assault (27.0%). Patients were assessed an average of 11.8 hours post-trauma. Most participants completed the 4-week (74%) and 12-week follow-up (66%). Intervention group participants reported significantly lower levels of PTSD symptoms than the assessment-only group after 4 weeks (mean PSSI score=19.09, 95% CI 15.51 to 22.68 versus 24.54, 95% CI 21.22 to 27.87, $p<0.01$) and 12 weeks (mean PSSI score=15.47, 95% CI 11.60 to 19.34 versus 20.33, 95% CI 16.79 to 23.87, $p<0.05$). Subgroup analysis by type of trauma showed a significant effect of the intervention for rape victims at week 4 (mean PSSI score=20.10 versus 30.45, $p<0.01$) and week 12 (mean PSSI score=16.63 versus 25.04, $p<0.05$) but not for other groups of trauma victims.

Limitations of the study included the lack of baseline scores for PTSD symptoms and the small sample size that precluded extensive analysis of subgroups most likely to benefit from the intervention.

This study suggests that a brief trauma-focused psychological intervention (3 sessions) delivered to all in the period immediately following trauma may reduce the development of subsequent trauma symptoms more than no such intervention. However, further research is required to confirm the findings and explore further the subgroups of patients who may benefit, so this evidence is unlikely to have an impact on NICE CG26.

Key reference

Rothbaum BO, Kearns MC, Price M et al. (2012) Early intervention may prevent the development of posttraumatic stress disorder: a randomized pilot civilian study with modified prolonged exposure. Biological Psychiatry 72: 957–63

Interventions within 3 months of a trauma

A review by **Gartlehner et al. (2013)** described previously (see 'Debriefing after a traumatic event' in Section 1.9 for details) included interventions delivered to adults within 3 months of exposure to a traumatic event with the aim of preventing progression to PTSD. Controlled studies with less than 20% attrition rate were eligible, and the review included 19 studies (total number of participants not stated). One study evaluated debriefing (discussed previously). The remaining 18 studies evaluated a range of interventions (such as CBT and pharmacological treatments) in different populations (for example, civilian mixed trauma, medical trauma, and US military personnel). Studies included those based on universal prevention (that is, delivered to all people exposed to a trauma regardless of symptoms or risk of developing PTSD) and those based on a targeted approach (that is, delivered to those at high risk of developing PTSD). The review assessed:

- efficacy and comparative efficacy of interventions
- impact of timing, intensity and duration
- effects of interventions in different subgroups
- risk of harms.

Meta-analysis was not conducted. For each study, the review assessed the strength of evidence and whether results were inconclusive or conclusive. For most interventions and

outcomes of interest, evidence was either lacking or insufficient to draw conclusions, though there was some indication that brief trauma-focused CBT might be the preferred choice for reducing PTSD symptom severity in adults with acute stress disorder.

Limitations noted by the authors included the methodological difficulties and high risk of bias in the majority of studies. The stringent exclusion criteria limited the weight of evidence included in the analysis, weakening any possible conclusions.

This study adds to the evidence base suggesting that trauma-focused psychological interventions in the period within 3 months of a trauma may be effective for prevention or acute treatment of PTSD, consistent with NICE CG26.

Treatment of PTSD more than 3 months after a trauma

Types of psychological interventions

NICE CG26 states that most patients presenting with PTSD have had the problem for many months, if not years. For those with PTSD where symptoms have been present for more than 3 months after a trauma, the guideline recommends offering a course of trauma-focused psychological treatment (TF-CBT) or eye movement desensitisation and reprocessing (EMDR). These treatments should normally be provided on an individual outpatient basis. The guideline recommends that non-trauma-focused interventions, such as non-directive therapy or relaxation, should not routinely be offered to people who present with chronic PTSD.

Jonas et al. (2013) conducted a review of psychological and pharmacological treatments for adults with PTSD. RCTs of adults with PTSD (based on Diagnostic and Statistical Manual of Mental Disorders IV criteria) were included if they were of at least 4 weeks duration and assessed efficacy using outcomes such as PTSD symptoms, remission, or loss of PTSD diagnosis. Studies deemed at high risk of bias were excluded. Meta-analyses were performed for outcomes reported by multiple studies that were sufficiently homogeneous to combine results.

A total of 92 RCTs were included in the review. Evidence of mainly moderate strength supported the efficacy of trauma-based psychological interventions compared with inactive comparator, as assessed by differences in effect size (Cohen's d) for PTSD symptoms assessed as the mean change from baseline after at least 4 weeks of treatment:

- CPT (standardised mean difference [SMD]=−1.40, 95% CI −1.95 to −0.85; 4 studies, n=299)
- cognitive therapy that was not specifically CPT (SMD=−1.22, 95% CI −1.91 to −0.53; 3 studies, n=221)
- CBT-exposure therapy (SMD=−1.27, 95% CI −1.54 to −1.00; 7 studies, n=387)
- CBT-mixed (SMD=−1.09, 95% CI −1.40 to −1.78; 14 studies, n=825)
- EMDR (SMD=−1.08, 95% CI −1.83 to −0.33; 4 studies, n=117)
- narrative exposure therapy (SMD=−1.25, 95% CI −1.92 to −0.58; 3 studies, n=227).

Direct head-to-head comparative evidence was generally insufficient to determine relative efficacy of psychological treatments, psychological and pharmacological treatments, and combinations of treatments. There was also insufficient evidence to make definitive conclusions about comparative efficacy of treatment approaches for specific types of trauma. Few studies of psychological interventions reported any information on adverse effects of treatment.

Limitations of the review included the restriction of studies evaluating efficacy to RCTs of any size, which may have excluded observational studies that could have provided useful information. Studies of alternative or complementary treatments were also excluded. The classification of psychological interventions may also have differed from the approach used in other reviews or guideline descriptions.

A systematic review and meta-analysis by **Watts et al. (2013)** assessed treatments for PTSD and included 112 RCTs of adults with a PTSD diagnosis (based on Diagnostic and Statistical Manual of Mental Disorders III, III-R or IV criteria) that reported outcomes before and after treatment using a valid PTSD symptom measure. Studies were classified according to broad treatment type (psychotherapy, pharmacological treatments and somatic therapy), with further subsequent categorisation within each treatment type. Effect size was calculated as between-group difference in change before and after treatment using Hedges g correction for small samples.

All psychotherapies grouped together were significantly more effective than control (g=1.14, 95% CI 0.97 to 1.3; 76 studies, n=3771), as were all medications grouped together (g=0.42, 95% CI 0.31 to 0.53; 56 studies, n=537). Most psychotherapy studies were categorised as CBT (72%, 54 studies, n=2585) or EMDR (14%, 11 studies, n=390), with both approaches found to be significantly more effective than control (CBT: g=1.26, 95% CI 1.09 to 1.44; EMDR: g=1.01, 95% CI 0.42 to 1.62).

Limitations of the review included the possible overestimation of observed effect size for psychotherapies (the authors noted a potential publication bias for psychotherapy studies compared with medication studies), and significant heterogeneity between studies. The categorisation of psychological therapies may also differ from other reviews.

Schoorl et al. (2013) reported an RCT to investigate the impact of attentional bias modification treatment for outpatients at a Dutch clinic with a diagnosis of chronic PTSD (duration of at least 3 months). Attentional bias modification is a treatment to address the selective attention to threatening information that is seen in patients with anxiety disorders and may contribute to symptoms – patients with PTSD may also show attentional bias. Patients on a waiting list for PTSD received either attentional bias modification treatment (n=48) or a control intervention (n=54). Both interventions consisted of 8 sessions of approximately 20 minutes over 3 weeks. The primary outcome measure was a change in CAPS. Attentional bias was also assessed before and after treatment.

At the end of the treatment period, PTSD symptoms improved in both groups but there was no significant difference between treatments. Attentional bias was not improved with either treatment. Limitations of the study included the short follow-up (3 weeks) and the lack of effect of the intervention on attentional bias, which was the presumed mechanism for any effect of treatment. The authors concluded that this version of attentional bias modification was not effective in patients with chronic PTSD.

Taken together, these reports add to the evidence base showing the efficacy of trauma-focused psychological interventions for PTSD, consistent with NICE CG26.

Key references
Jonas DE, Cusack K, Forneris CA et al. (2013) Psychological and pharmacological treatments for adults with posttraumatic stress disorder (PTSD). Rockville, MD, USA: Agency for Healthcare Research and Quality. Comparative Effectiveness Review: 92

Schoorl M, Putman P, Van Der Does W (2013) Attentional bias modification in posttraumatic stress disorder: a randomized controlled trial. Psychotherapy and Psychosomatics 82: 99–105

Watts BV, Schnurr PP, Mayo L et al. (2013) Meta-analysis of the efficacy of treatments for posttraumatic stress disorder. Journal of Clinical Psychiatry 74: e541–50

Delivery of psychological interventions
NICE CG26 notes that brief psychological interventions (5 sessions) may be effective if treatment starts within the first month after the traumatic event. Beyond the first month, the guideline recommends that duration of TF-CBT should normally be 8–12 sessions. Healthcare professionals should consider extending the duration of treatment beyond 12 sessions if several problems need to be addressed in the treatment of PTSD sufferers,

particularly after multiple traumatic events, traumatic bereavement, or where there is also chronic disability resulting from the trauma, significant comorbid disorders or social problems. When the trauma is discussed in the treatment session, longer sessions (for example, 90 minutes) are usually necessary. Treatment should be regular and continuous (usually at least once a week) and should be delivered by the same person.

Galovski et al. (2012) conducted an RCT to assess a flexible approach to administration of a CPT intervention for PTSD. Patients (aged 19–68 years, n=100) recruited to the study had chronic PTSD (diagnosed by CAPS) following trauma (68% child sexual abuse, 59% child physical abuse, 52% adult sexual assault, 67% adult physical assault, 54% domestic violence). Exclusion criteria included psychosis, suicidal intent, being in a current abusive relationship and current drug or alcohol dependence. There was considerable comorbidity (48% major depressive disorder, 25% panic disorder, 36% history of alcohol abuse, 34% history of substance dependence).

The interventions consisted of immediate CPT or initial symptom-monitoring delayed treatment, with an option to crossover to CPT after the 10-week wait period. The primary outcome measures were changes in CAPS, self-reported PTSD symptoms (assessed using the Posttraumatic Distress Scale [PDS]) and depressive symptoms (assessed using the Beck Depression Inventory-II [BDI-II]). The number of CPT sessions (ranging from 4 to 18) delivered was determined by progress towards pre-defined criteria (PDS score of 20 or below and BDI-II score of 18 or below), and analysed for the combined total of patients completing CPT (n=69) after initial or delayed entry to active intervention.

Compared with the symptom monitoring group, there was a significantly greater additional reduction with CPT in CAPS (−31.7 versus −15.8, p<0.001), PDS (−11.8 versus −8.5, p<0.001) and BDI-II (−13.2 versus −7.0, p<0.001). Of the 50 participants who completed CPT, 58% reached ending criteria prior to session 12, 8% at session 12, and 34% at sessions 12–18. Limitations of the study included the dropout rate (36% attrition) and the use of inexperienced clinicians with no prior experience of CPT to deliver the intervention.

The authors concluded that individual patients respond at a variable rate to psychological interventions, with significant benefit gained from additional therapy sessions where goals have not been achieved with a standard course of therapy.

This evidence adds to the evidence base on the delivery of psychological interventions. Although the standard regimen of 12 weekly sessions may be effective following a single trauma, patients with complex trauma history or comorbid conditions who have made only a partial recovery may benefit from additional sessions. This evidence is consistent with NICE CG26, which although providing guidance on the usual delivery pattern for therapy, also encompasses flexibility by noting that therapy may require more than 12 sessions.

Key reference
Galovski TE, Blain LM, Mott JM et al. (2012) Manualized therapy for PTSD: flexing the structure of cognitive processing therapy. Journal of Consulting and Clinical Psychology 80: 968–81

Pharmacological treatment
NICE CG26 notes the very limited evidence base for use of pharmacological treatments for PTSD. The guideline recommends that pharmacological treatments should not be used as routine first-line treatment for adults. Pharmacological treatments (paroxetine or mirtazapine[1] for general use, amitriptyline[1] or phenelzine[1] for initiation only by mental health specialists) should be considered where a sufferer expresses a preference not to engage in, or cannot start, a trauma-focused psychological treatment, or who has gained little or no benefit from

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[1] At the time of publication of this Evidence Update, mirtazapine, amitriptyline and phenelzine did not have UK marketing authorisation for use in PTSD. Informed consent should be obtained and documented.

such psychological treatment. Pharmacological treatments should also be considered as an adjunct to psychological treatment where there is significant comorbid depression, or severe hyperarousal that significantly affects the ability to benefit from psychological treatment. The guideline does not address the use of pharmacological cognitive enhancers as an adjunct to psychological interventions.

Jonas et al. (2013) conducted a systematic review of RCTs assessing treatments for adults with PTSD (see 'Types of psychological interventions' in Section 1.9 for more details). Improvement in PTSD symptoms, as assessed by differences in effect size (Cohen's d), was found for a number of pharmacological treatments (moderate strength evidence):

- fluoxetine[2] (SMD=−0.31, 95% CI −0.44 to −0.17; 5 trials, n=889)
- paroxetine (SMD=−0.49, 95% CI −0.61 to −0.37; 2 trials, n=886)
- sertraline (SMD=−0.25, 95% CI −0.42 to −0.07; 8 trials, n=1155)
- topiramate[3] (SMD=−0.96, 95% CI −1.89 to −0.03; 3 trials including 1 that was not monotherapy, n=142)
- venlafaxine[3] (SMD=−0.28, 95% CI −0.43 to −0.13; 2 trials, n=687).

Risperidone[3] was also found to reduce PTSD symptoms, but evidence was considered low strength (SMD=−0.26, 95% CI −0.52 to 0.00; 4 trials, n=419). However, the mean effect size was small or medium for all medications with evidence of efficacy. Little direct comparative evidence was found, precluding comparisons of efficacy between different pharmacological treatments, between pharmacological and psychological interventions, and between combinations of interventions. The review did not include unpublished data, which was considered in NICE CG26.

A meta-analysis by **Watts et al. (2013)** (see 'Types of psychological interventions' in Section 1.9 for more details) assessed the efficacy of pharmacological treatments for PTSD. Antidepressants were studied in 32 trials (n=4276) included in the analysis, with significant differences from control (calculated as between-group difference in change before and after treatment using Hedges g correction for small samples) noted for:

- all treatments together (g=0.43, 95% CI 0.31 to 0.55)
- all selective serotonin reuptake inhibitors (SSRI: g=0.48, 95% CI 0.32 to 0.64; 20 studies, n=3168)
- paroxetine (g=0.74, 95% CI 0.51 to 0.97; 6 studies, n=1158)
- fluoxetine (g=0.43, 95% CI 0.25 to 0.60; 6 studies, n=924)
- sertraline (g=0.41, 95% CI 0.15 to 0.66; 7 studies, n=1051)
- venlafaxine (g=0.48, 95% CI 0.33 to 0.63; 2 studies, n=687).

The atypical antipsychotic, risperidone, showed a significant effect in a single study of monotherapy (g=0.95) but not in a pooled analysis of 6 studies of augmentation therapy (g=0.31). Although anticonvulsants as a whole showed no significant difference from placebo, there was a large significant effect for topiramate in 3 studies involving a total of 136 patients (all studies: g=1.20; monotherapy: g=0.85, p<0.001, 2 studies; augmentation therapy: g=1.84, p<0.02, 1 study). Other treatments (including tricyclic antidepressants, monoamine oxidase inhibitors, mirtazapine) did not show a significant benefit over placebo. The review did not include unpublished data, which was considered in NICE CG26.

A placebo-controlled RCT by **de Kleine et al. (2012)** evaluated the effect of administering D-cycloserine[3] 50 mg, an hour before exposure therapy in patients with a diagnosis of PTSD

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[2] At the time of publication of this Evidence Update, fluoxetine is not recommended by current guidance and does not have UK marketing authorisation for use in PTSD.
[3] At the time of publication of this Evidence Update, topiramate, venlafaxine, risperidone and D-cycloserine are not recommended by current guidance and did not have UK marketing authorisation for use in PTSD.

who were attending Dutch outpatient clinics. Exclusion criteria included psychosis, substance abuse and acute suicidal tendency. The 67 patients (aged 18–65 years; 81% women; 71% with a comorbid diagnosis, most commonly depression and anxiety) entering the study had experienced a variety of traumatic events, including childhood sexual assault (n=35) and violent non-sexual assault (n=20). The primary outcome measure was PTSD symptom severity, assessed by CAPS after completion of exposure therapy (8–10 sessions). CAPS scores decreased with treatment in both groups but there was no significant difference between groups.

Limitations of the study included significant differences in baseline characteristics and high dropout rate (9 of 33 participants receiving D-cycloserine; 13 of 34 participants in the control group). There is also lack of precedent for use of D-cycloserine for enhancement of exposure therapy, and little consistency of dosing approach in other studies of potential cognitive enhancers.

Overall, evidence on pharmacological treatment of PTSD remains limited. Differing findings were reported in the reviews, possibly because of differences in inclusion and exclusion criteria that may also have been different from criteria used in initial searches to inform NICE CG26. Some of the medications currently recommended in the guideline were not included in these reviews, although evidence from the reviews was consistent with guideline recommendations on the use of paroxetine. The finding that some medications not currently recommended (for example, venlafaxine and fluoxetine) might also have potential value for the treatment of PTSD in published studies may have a potential impact on the guidance (though the reviews considered here did not include data from unpublished studies, as was the case for the evidence base for recommendations made in NICE CG26). Details of any impact are outside the scope of the Evidence Update. Decisions on how the new evidence may impact guidance will not be possible until the guidance is reviewed by NICE following its published processes and methods.

Evaluation of potential cognitive enhancers remains at an early stage.

Key reference

de Kleine RA, Hendriks G-J, Kusters WJC et al. (2012) A randomized placebo-controlled trial of D-cycloserine to enhance exposure therapy for posttraumatic stress disorder. Biological Psychiatry 71: 962–8

Other therapies

Hypnotherapy and transcranial magnetic stimulation were considered during the development of NICE CG26. No recommendations were made specifically about complementary and alternative medicine.

Kim et al. (2013) conducted a systematic review of acupuncture as a treatment for PTSD, including RCTs and prospective clinical trials with or without a control group. Studies were included if participants were diagnosed with PTSD (based on any criteria including Diagnostic and Statistical Manual of Mental Disorders IV or International Classification of Diseases-10) and the interventions included any type of needling acupuncture. Complex interventions that included acupuncture were allowed, but laser acupuncture and acupoint stimulation without needling were excluded. A total of 4 RCTs (n=543; treatment duration 1–12 weeks; 3 studies conducted in China with earthquake survivors and 1 in the USA) and 2 uncontrolled trials were included in the analysis. Outcomes assessed included reduction in severity of PTSD symptoms.

Acupuncture showed significant improvement in self-reported post-traumatic stress symptoms compared with a waitlist control group (effect size=−0.98, p=0.001; 1 study, n=73 analysed in 3 treatment groups, mixed trauma in the USA) but not compared with CBT. An RCT found a positive effect of acupuncture with moxibustion (a traditional Chinese medicine technique involving burning herbs over acupuncture points) compared with oral SSRI assessed using

CAPS (effect size=−1.77, p<0.00001). In another RCT, no significant difference was found between oral SSRI and acupuncture with moxibustion, or compared with acupuncture alone.

Limitations of the evidence included the suboptimal methodological quality of all studies in the analysis. Of the 4 RCTs included in the analysis, 1 breached exclusion criteria as it evaluated acupoint stimulation. The review evaluated a restricted range of traumas and populations.

A review by **Watts et al. (2013)**, discussed in detail previously (see 'Types of psychological interventions' in Section 1.9 for more details) evaluated somatic treatments (calculated as between-group difference in change before and after treatment using Hedges g correction for small samples), which included a single trial of acupuncture (n=48). A large effect size was reported for this study (g=1.28, 95% CI 0.67 to 1.89). Details of the study were not provided. The review also assessed transcranial magnetic stimulation and found a large but nonsignificant effect (g=1.23, 95% CI 0.00 to 2.53; 4 studies, n=80).

Taken together, there is insufficient evidence to support the use of acupuncture or transcranial magnetic stimulation for the treatment of PTSD. An impact on NICE CG26 is unlikely. Research from large, high quality randomised trials would be needed to assess further the place of complementary and alternative therapies in treating PTSD.

Key reference
Kim Y-D, Heo I, Shin B-C et al. (2013) Acupuncture for posttraumatic stress disorder: a systematic review of randomized controlled trials and prospective clinical trials. Evidence-Based Complementary and Alternative Medicine 2013: ID 615857

Children

Although recognising the limited evidence, NICE CG26 recommends that TF-CBT should be offered to older children with severe post-traumatic symptoms or severe PTSD in the first month after the traumatic event. For PTSD where symptoms have been present for more than 3 months after a trauma, the guideline recommends a course of TF-CBT adapted to the age of the child or young person, normally for 8–12 sessions at least weekly when the PTSD results from a single event. The guideline also recommends informing parents (and where appropriate, children and young people) that there is no good evidence for the efficacy of play therapy, art therapy or family therapy.

A systematic review and meta-analysis by **Kramer and Landolt (2011)** evaluated the characteristics and efficacy of early psychological interventions in children and young people after a single trauma. Prospective controlled studies were included if: details of the intervention were described and the first session was conducted within 1 month of a single traumatic event; all participants were 18 years or younger; and at least 1 standard measure of PTSD or post-traumatic stress symptoms was reported with accompanying descriptive statistics. The 7 studies (635 participants aged 7–18 years) in the analysis included 4 examining the effects of a single type of trauma (for example, classmate's suicide, road traffic accident) and 3 studies with a mixture of trauma types (for example, physical and sexual assault, unintentional injuries). Most of the interventions were based on elements of behavioural and cognitive therapy. Outcome measures included post-traumatic stress symptoms, intrusion, avoidance, arousal, dissociation, depression, anxiety, anger and behaviour (although these outcomes were measured differently across the 7 studies therefore SMDs were used in the overall analyses).

No significant impact of the interventions was found for PTSD symptoms, either for follow-up within 3 months (SMD=−0.10, 95% CI −0.33 to 0.12; 4 studies, 309 patients) or after 3–8 months (SMD=−0.13, 95% CI −0.30 to 0.04; 7 studies, 565 patients).

Of the other outcome measures assessed, a statistically significant benefit from early intervention was found only for:

- dissociation (follow-up <3 months: SMD=−1.25, 95% CI −1.61 to −0.89, p<0.001; 2 studies, 168 patients; follow-up 3–8 months: SMD=−1.26, 95% CI −1.62 to −0.91, p<0.001; 2 studies, 165 patients) and
- anxiety (follow-up <3 months: SMD=−0.58, 95% CI −0.87 to −0.28, p<0.001; 3 studies, 252 patients; follow-up 3–8 months: SMD=−0.40, 95% CI −0.60 to −0.20, p<0.001; 8 studies, 420 patients).

Limitations of the review included the search strategy (which may have excluded potentially relevant studies), methodological problems with the studies included, and the potential impact of dropouts from studies (which could introduce bias).

A Cochrane review by **Gillies et al. (2012)** included RCTs assessing psychological treatments for children and young people (aged 3–18 years) with a clinician diagnosis of PTSD (based on Diagnostic and Statistical Manual of Mental Disorders III, III-R or IV or International Classification of Diseases-10 criteria, or other validated scales). Comorbid conditions (for example, depression or substance abuse) were permitted. Studies were included if dropout rates were no more than 40%. A total of 14 studies meeting the inclusion criteria were identified (n=758), with trauma types including sexual abuse, civil violence, natural disaster, domestic violence and motor vehicle accidents. Psychological therapies evaluated included CBT, exposure based therapies, supportive counselling and EMDR. Comparator interventions included no treatment, waiting list controls and treatment as usual. The primary outcomes assessed were improvement from a diagnosis of PTSD using accepted clinical diagnosis criteria and PTSD symptoms using validated scales, considering effects after therapy completion in the short-term (≤1 month), medium term (>1–12 months) and long term (>12 months).

Psychological therapies significantly reduced PTSD in the short term (odds ratio [OR]=8.64, 95% CI 2.01 to 37.14; 2 studies, n=49) and medium term (OR=9.49, 95% CI 2.46 to 36.32; 2 studies, n=50) but not the long term (OR=1.84, 95% CI 0.60 to 5.65; 1 study, n=53). Symptoms of PTSD also showed significant improvement with psychological therapies in the short term (SMD=−1.05, 95% CI −1.52 to −0.58; 6 studies, n=241) and medium term (SMD=−0.58, 95% CI −0.97 to −0.18; 3 studies, n=115) but not the long term (SMD=−0.44, 95% CI −0.98 to 0.11; 1 study, n=53). With regard to individual therapies, there was evidence for short and medium term reduction in PTSD diagnosis and symptoms with CBT (1−3 studies, n=25–98) but no significant impact of other therapies on the primary outcome measures.

Limitations of the review included exclusion of some studies identified in initial searches because of misclassification as prevention studies. CBT was classified as a separate category to behavioural therapy (including exposure-based and narrative therapy) when these studies could all be considered as TF-CBT. A study (**Ertl et al. 2011**; see 'Community-implemented trauma therapy' in Section 1.7 for more details) was included with a sample age range of 12–25 years and mean age of 18 years.

Forman-Hoffman et al. (2013) reviewed interventions to treat children (0–17 years) exposed to traumatic events other than maltreatment or domestic violence. Although initially over 6500 studies were identified, only 21 RCTs and 1 observational study (total number of participants not reported) were included in the analysis. As quantitative analysis was not considered possible, the effect size reported in each study was reported, with results categorised by population and intervention type.

No pharmacological intervention showed evidence of efficacy, either for children exposed to traumatic events (1 study) or children with symptoms of PTSD (3 studies). Limited evidence of

benefit was found for 5 of 6 studies on children exposed to traumatic events treated with psychological interventions (TF-CBT or with a trauma focus or with elements of CBT); 1 study on early interventions was not effective. Limited evidence of benefit was found for 6 studies on children already experiencing PTSD symptoms treated with psychological interventions involving TF-CBT, other cognitive-behavioural approaches with trauma or grief components, and EMDR; 6 studies of other psychological interventions (for example, TARGET, narrative exposure therapy) showed no evidence of benefit.

Limitations of the review include the few studies that reached the stringent inclusion criteria (low or medium risk of bias, attrition rate no more than 20%, specific outcome criteria). Applicability to other settings may be limited as half of all the studies were conducted in the USA.

Taken together, these reviews suggest there is some evidence to support use of trauma-focused psychological interventions for the treatment of PTSD in children and young people, but further high quality studies are required to add to the limited evidence base. This evidence is consistent with NICE CG26. Also consistent with the guideline, there was no evidence to support use of pharmacological treatments in children or young people with PTSD.

Key references

Forman-Hoffman VL, Zolotor AJ, McKeeman JL et al. (2013) Comparative effectiveness of interventions for children exposed to nonrelational traumatic events. Pediatrics 131: 526–39

Gillies D, Taylor F, Gray C et al. (2012) Psychological therapies for the treatment of post-traumatic stress disorder in children and adolescents. Cochrane Database of Systematic Reviews issue 12: CD006726

Kramer DN, Landolt MA (2011) Characteristics and efficacy of early psychological interventions in children and adolescents after single trauma: a meta-analysis. European Journal of Psychotraumatology 2: 7858

1.10   Disaster planning

No new key evidence was found for this section.

2   New evidence uncertainties

During the development of the Evidence Update, the following evidence uncertainties were identified for the UK Database of Uncertainties about the Effects of Treatments (UK DUETs).

The treatment of PTSD

Early interventions

- Psychological first aid in adults exposed to trauma and the incidence of PTSD

Psychological interventions

- Exposure therapy versus cognitive processing therapy for adults with PTSD

Children

- Early interventions with a stepped procedure in children with PTSD
- Interventions for children exposed to trauma other than maltreatment

Further evidence uncertainties for PTSD can be found in the UK DUETs database and in the NICE research recommendations database.

UK DUETs was established to publish uncertainties about the effects of treatments that cannot currently be answered by referring to reliable up-to-date systematic reviews of existing research evidence.

Appendix A: Methodology

Scope

The scope of this Evidence Update is taken from the scope of the reference guidance:

- [Post-traumatic stress disorder (PTSD)](). NICE clinical guideline 26 (2005)

Searches

The literature was searched to identify studies and reviews relevant to the scope. Searches were conducted of the following databases, covering the dates 1 July 2011 (the month of the search for the last review) to 12 July 2013:

- AMED (Allied and Complementary Medicine Database)
- CDSR (Cochrane Database of Systematic Reviews)
- CENTRAL (Cochrane Central Register of Controlled Trials)
- CINAHL (Cumulative Index to Nursing and Allied Health Literature)
- DARE (Database of Abstracts of Reviews of Effects)
- EMBASE (Excerpta Medica database)
- HTA (Health Technology Assessment) database
- MEDLINE (Medical Literature Analysis and Retrieval System Online)
- MEDLINE In-Process
- NHS EED (Economic Evaluation Database)
- PILOTS (Publishers International Literature on Traumatic Stress)
- PsycINFO

The Evidence Update search strategy replicates the strategy used by the original guidance (for key words, index terms and combining concepts) as far as possible. If this is not practical, then the search replicates the basic PICO (population, intervention, comparison, outcome) structure of the original searches. Where necessary, the strategy is adapted to take account of changes in search platforms and updated indexing language.

Table 1 provides details of the MEDLINE search strategy used (with minor changes to increase sensitivity), which was adapted to search the other databases listed above. The search strategy was used in conjunction with validated Scottish Intercollegiate Guidelines Network [search filters for RCTs and systematic reviews]().

Additionally, 3 studies (Foa et al. 2013; Rothbaum et al. 2012; Tuckey and Scott 2013) were identified outside of the literature search. Figure 1 provides details of the evidence selection process. The long list of evidence excluded after review by the Chair of the EUAG, and the full search strategies, are available on request from contactus@evidence.nhs.uk

There is more information about [how NICE Evidence Updates are developed]() on the NICE Evidence Services website.

Table 1 MEDLINE search strategy (adapted for individual databases)

1	Stress Disorders, Traumatic/	7	(railway spine or re?experienc$ or re-experienc$ or torture syndrome or traumatic neuros$ or traumatic stress).tw.
2	Combat Disorders/		
3	Stress Disorders, Traumatic, Acute/		
4	Stress Disorders, Post-Traumatic/	8	((rape or torture or assault) adj2 trauma$).tw.
5	(post?traumatic$ or post-traumatic$ or stress disorder$ or acute stress or PTSD or DESNOS).tw.	9	(trauma$ and (avoidance or grief or horror or death$ or night?mare$ or night-mare$ or emotion$)).tw.
6	(((combat or war) adj2 (neuros$ or syndrome)) or concentration camp syndrome or extreme stress or flash?back$ or flash-back$ or hypervigilan$ or hypervigilen$ or psych$ stress or psych$ trauma$ or psycho?trauma$ or psycho-trauma$).tw.	10	Dreams/ and trauma$.tw.
		11	shell shock.tw.
		12	(Battered woman/ or spouse abuse/) and trauma$.tw.
		13	Or/1-12

Figure 1 Flow chart of the evidence selection process

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┌─────────────────────┐
│ 2061 records        │
│ identified through  │──────────┐
│ search              │          │      ┌──────────────────────┐
└──────────┬──────────┘          └─────▶│ 803 duplicates from  │
           │                            │ searching            │
           ▼                            └──────────────────────┘
┌─────────────────────┐
│ 1258 records after  │──────────┐
│ duplicates removed  │          │      ┌──────────────────────┐
└──────────┬──────────┘          └─────▶│ 671 records excluded │
           │                            │ at first sift        │
           ▼                            └──────────────────────┘
┌─────────────────────┐
│ 587 records         │──────────┐
│ included after      │          │      ┌──────────────────────┐
│ first sift          │          └─────▶│ 424 records excluded │
└──────────┬──────────┘                 │ at second sift       │
           │                            └──────────────────────┘
           ▼
┌─────────────────────┐                 ┌──────────────────────┐
│ 163 records         │──────────┐      │ 130 records excluded │
│ included after      │          └─────▶│ at critical appraisal│
│ second sift         │                 │ and evidence         │
└──────────┬──────────┘                 │ prioritisation       │
           │                            └──────────────────────┘
           │          ┌──────────────────────┐
           │          │ 3 additional records │
           │          │ identified by EUAG   │
           │          │ outside original     │
           │          │ search               │
           │          └──────────────────────┘
           ▼
┌─────────────────────┐
│ 36 records          │──────────┐
│ discussed by EUAG   │          │      ┌──────────────────────┐
└──────────┬──────────┘          └─────▶│ 17 records excluded  │
           │                            │ by EUAG              │
           ▼                            └──────────────────────┘
┌─────────────────────┐
│ 19 records included │
│ by EUAG in          │
│ published Evidence  │
│ Update              │
└─────────────────────┘
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EUAG – Evidence Update Advisory Group

Appendix B: The Evidence Update Advisory Group and Evidence Update project team

Evidence Update Advisory Group

The Evidence Update Advisory Group is a group of topic experts who review the prioritised evidence obtained from the literature search and provide the commentary for the Evidence Update.

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