

## PREHOSPITAL CARE

# Interventions for post-traumatic stress disorder and psychological distress in emergency ambulance personnel: a review of the literature

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A literature review was carried out to establish the extent of the literature on interventions for psychological distress and post-traumatic stress disorder in emergency ambulance personnel. A total of 292 articles were identified. Of these, 10 were relevant to this review. The primary intervention used with this population was critical incident stress debriefing, although there was some debate in the literature about the effectiveness of this intervention and the quality of the research conducted. More high quality research is needed on critical incident stress debriefing before being confident of its effectiveness.

Critical incident stress debriefing (CISD) is “a structured intervention designed to promote the emotional processing of traumatic events through the ventilation and normalisation of reactions and preparation for possible future experiences.”<sup>8</sup> It is a treatment that is designed to take place several hours after an incident and can last about two hours. It can be offered to emergency services personnel who may attend a CISD session voluntarily or on the recommendation of a superior. It has been promoted positively in the USA by Jeffrey Mitchell.<sup>9</sup>

The aims of this review were to identify literature relating to interventions aimed at treatment or prevention of PTSD or psychological distress in this population.

## METHOD

### Search strategy for identification of studies

A search of various databases was performed. Given the exploratory nature of this review, the search strategy was made as broad as possible. A variety of search methods were used. Online databases were searched using keywords alone and in combination (table 1). Selected journals were hand searched (table 2). The internet was searched and references were followed up from papers identified.

### Criteria for considering studies for this review

- *Personnel*: emergency ambulance workers as part or all of the considered population.
- *Scope*: stress (in general) and PTSD.
- *Events*: mass disasters, day to day contributors to stress, events of specific personal relevance.

### Appraisal procedure

To maximise consistency in literature appraisal, a pre-designed critical appraisal template for surveys was identified on the American College of Physicians and American Society of Internal Medicine web site and adapted for use in this project.<sup>10</sup>

## RESULTS

A total of 292 articles were identified. Of these, 10 were concerned with the use of CISD with emergency ambulance personnel. Of these, one was an

Emergency ambulance personnel are vulnerable to psychological distress in both the short-term and long term. While emergency work can be rewarding, personnel are also required to deal with some potentially traumatising situations. Some of those rated as being most stressful include: accidents involving children, cot death, mass incidents, major fires, road traffic accidents, burns patients, dead on arrival, violent incidents, and murder scenes.<sup>1,2</sup> One review<sup>3</sup> concluded that: “Compared to other health professionals and fire-fighters, EMTs’ [emergency medical technicians] stress and burnout levels are among the highest.”

After involvement in a disaster, personnel may be at risk of acute stress disorder, which can be a risk factor for developing post-traumatic stress disorder (PTSD). A study of victims of road traffic accidents,<sup>4</sup> found that 80% of those who fulfilled the criteria for acute stress disorder went on to develop PTSD. Lifetime prevalence of PTSD (in a population based sample) is estimated to be 7.8%,<sup>5</sup> although estimates for specific “at risk” populations may be higher. For example, in a study of fire fighters, prevalence was estimated at 18%.<sup>6</sup> The nature of their occupation makes emergency ambulance personnel another group “at risk”. Estimates of prevalence of PTSD in this group have been around 20%.<sup>7</sup> Rates of psychiatric symptoms varied from 20%<sup>1</sup> to 60%.<sup>2</sup> These psychiatric symptoms can be related to an incident or a traumatic event experienced by pre-hospital emergency technicians, but not necessarily be PTSD. Symptoms can present such as depression, anxiety, sleep deprivation, or undue worry, which can reach significant levels and would require treatment.

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**Abbreviations:** PTSD, post-traumatic stress disorder; CISD, critical incident stress debriefing

**Table 1** Summary of online databases and keywords used in this study

Databases	Keywords
ClinPSYCH	Paramedic
Amed	Emergency medical technician
CINAHL	EMT (emergency medical technician)
PubMed	EMS (emergency medical services)
Medline	Ambulance service
HealthStar	Ambulance
PILOTS	Stress
Cochrane Library	PTSD
Effective Health-Care Bulletins	P.T.S.D.
Effectiveness Matters	Post traumatic stress disorder
Health Evidence Bulletins Wales	Critical incident
	Critical incident stress debriefing

**Table 2** Summary of hand searched journals

Journals hand searched	Years
Ambulance UK	1986 to present
ASI International	1998 to 2000
British Association for Immediate Care (BASICS) Journal	1978 to 1997
British Journal of Accident and Emergency Medicine	1994 to present
Emergency Medicine Annual	1990 to 1994
Emergency Medicine Clinics of North America	1990 to 1994
Emergency Services International	1987 to 1989
Pre-Hospital Immediate Care	1997 to present
Yearbook of Emergency Medicine	1995 to 2000

expression of concern, three were evaluations of debriefing, one was a literature review and two tackled methodological issues in researching debriefing.

### Methodological issues

Two articles<sup>8,11</sup> were found that specifically tackled methodological issues.

1 Bisson and Deahl (1994)<sup>8</sup>—were concerned with evaluating the evidence for psychological debriefing. This is of interest as CISD has received a great deal of interest in emergency services literature, and as Bisson and Deahl note, the first description of the use of the method with ambulance personnel was in 1983.<sup>9</sup> The review discusses the results of various

types of study (although only one study on emergency workers is mentioned<sup>12</sup>), evaluates the risks of debriefing and summarises the methodological shortcomings of the research. These were: non-prospective studies, small sample size, no control group, varying degrees of trauma, absence of random allocation, confounding variables ignored, low response rates, sampling bias, lack of uniformity in the debriefing process, timing variance, and questionnaire versus interview results. These are all issues that can be equally applied to the research discussed in this review. The authors concluded that at present it is not possible to fully determine the effectiveness of CISD, and before it is made more widely available (at considerable cost) it would be prudent to conduct a proper evaluation. A recent Cochrane Review (2000)<sup>12</sup> also recommended research into the psychological debriefing of emergency workers as a priority area for study.

2 Green (1982)<sup>11</sup>—discussed the methodological issues concerned with measuring levels of psychological impairment after disaster, including the dimensions of disaster, methodological, and comparability issues. It included a discussion of methodological concerns, including the need to clearly define the study population and cases. In common with Bisson and Deahl, Green was concerned about the interpretation of questionnaire versus interview results, as these can yield different estimates of psychopathology. In addition, the type of data collected varies widely and this raises problems with comparability and generalisation of results. The timing of follow up is also of concern as it is “more likely to be based on practical considerations (for example, funding) than on scientific ones”.

### Interventions

Four articles were found on CISD in emergency ambulance personnel:

1 Ostrow (1996)<sup>14</sup>—advocated caution in the use of debriefing without further evidence. The author points out that CISD was promoted through non-refereed journals and conference speaking, but scant research was gathered to support the models, and little was published in “juried psychiatric or psychological journals about this model.” This statement is certainly supported by the results of the literature search conducted for this review. Only three pieces of work were found evaluating CISD in emergency ambulance personnel, and these are reported below (see table 3).

2 Robinson and Mitchell (1993)<sup>12</sup>—conducted an evaluation of the impact of debriefings carried out by an Australian team. A total of 288 welfare and health personnel had been

**Table 3** Table summarising results of studies on debriefing in emergency ambulance personnel

Study	Methods	Participants	Response rate	Timing of measure	Comments
Robinson and Mitchell 1993	Evaluation questionnaire	288 emergency, welfare and hospital workers	60%	Evaluation of debriefings in Dec 1987–Aug 1989	Biased tool used to evaluate impact—no negative values included. Average impact of events at time was moderate to considerable. Both groups (emergency service personnel and welfare/hospital workers) showed a significant lowering of impact at the time of the post evaluation debriefing.
Hutt 1996	Questionnaire	Two comparison groups: 34 emergency workers who had been debriefed, 19 who had not been debriefed	100%	All measures collected in one data collection phase	No significant differences between the groups, mean scores very similar.
Jenkins 1996	Semi-structured interview, incident, social support, Symptom Checklist 90-R, psychosomatic distress	n=36 (EMTs, paramedics and fire fighters)	87% (Phase 1)	T1=8th–10th day after incident from 3 successive 24 hour shifts. T2=one month follow up from 29th–31st day after incident.	Very small sample. Strongest recovery effects from anxiety and depression were seen in CISD participation group. CISD non-participants were significantly more likely to be married.

debriefed by the team, and of these 60% responded. On average, the debrief was reported as valuable for oneself and others. However, the questionnaire was crudely designed with no negative values in the scale. This paper is coauthored by one of the original proponents of CISD that may also be a source of bias.

3 Jenkins (1996)<sup>15</sup>—evaluated debriefing conducted among emergency workers involved in a mass shooting. Data were collected 8–10 days and 29–31 days after incident. At 8–10 days, a response rate of 87% was achieved. About half of the sample attended CISD, and the strongest recovery effects appeared to be in this group. Those who had less social support available to them were more likely to state that CISD helped them to cope. However, as CISD attendance was a matter of personal choice rather than random allocation, there is a strong possibility that CISD attendees systematically differed from non-attendees in some way.

4 Hutt (1994) (unpublished data)—conducted a study of the effects of CISD as part of a PhD thesis. A group of 34 emergency workers who had been debriefed were compared with a group of 19 who had not. This was not a randomised study, simply a comparison of retrospective reports of traumatic response. This study found no significant differences in adjustment between the two groups, and no evidence of benefit for the CISD. However, the study was not randomised and relied upon a comparatively small sample size, which may have been too small to demonstrate a treatment effect.

It seems from these studies that there is limited evidence to support the use of debriefing with this professional group. Studies evaluating CISD in this field and others have been methodologically flawed, “researching interventions not qualifying as psychological debriefing; using self selection to the groups, inadequate timing of the intervention and interventions of dubious clinical value”.<sup>16</sup> For both research and clinical purposes, quality control measures, which aim to maintain the quality and consistency of CISD sessions, need to be implemented. It has been proposed that CISD is unlikely to be successful unless combined with other stress management and support services.<sup>8</sup> In addition, the authors of this paper caution against compulsory debriefing that can lead to passive participation and resentment.

### Reviews of the literature

The only item located in this category focused on emergency response groups.<sup>17</sup>

1 Orner (1995)<sup>17</sup>—reviewed critical incident intervention strategies for emergency service personnel (ambulance personnel, nurses, fire fighters, and police). It divided the literature into three key areas: clinical descriptive studies (which look at psychological and physical reactions), features of a major incident that precipitate high stress responses, and epidemiological studies (studies looking at incidence and prevalence). Useful comments about the quality of the existing research were made and a direction for future study is proposed. Primary psychological ramifications of a negative critical incident response included anxiety, depression, intrusive and avoidance psychological reactions. More positive reactions were also described, for example feeling a renewed appreciation for being alive, and increased personal confidence. Duration and intensity of exposure to the stressor were suggested as the most reliable predictors of post-traumatic stress reactions. Other predictive factors identified in this review included identification with victims, high mortality rates, body handling, infant deaths, child abuse, mass casualties, and large fires. In addition, factors such as role conflict, risk to personal safety, and individual differences can also contribute. Options for providing psychological support such as CISD and similar schemes are also discussed. However, it advocates caution in the face of the “almost evangelical

enthusiasm” developing for CISM and similar services in the absence of any high quality published service evaluation. Orner could only identify one systematic evaluation of a counselling service for emergency responder groups (police). Finally the author looks to the future in both research and practice. A degree of organisational change is advocated. Management need to acknowledge that a range of reactions may be possible following a critical incident, and that their employees are “at risk” of these reactions. Regarding the future of research in this area, despite the obvious difficulties, good quality evidence of the effectiveness of critical incident stress debriefing is called for.

### DISCUSSION

Studies in all categories of this review suffered from general limitations such as poor reporting, inadequate sample sizes, low response rates, and sampling bias. While some of these factors are not always unavoidable, they do limit the ability to generalise and replicate the research. In studies that evaluate interventions such as CISD, methods for evaluating effectiveness should be given further consideration. Simply asking about participant satisfaction is inadequate. Repeated measures of symptoms should be taken, preferably from a treatment and a control group. Efforts to develop CISD quality control measures should also be made.

The studies included in this review make an interesting starting point, and future research in this area should focus on improving methodological quality. There are a number of ways in which this might be done, and the first relates to the way in which research is reported. In many of the studies, information, for example response rate, was missing. Future reporting should be accurate and complete. Following a protocol, such as the CONSORT statement,<sup>18</sup> is one way to ensure that reporting is both complete and consistent.

Methods of monitoring quality and consistency of the intervention should be built into the design of the study. To give the most precise information possible on the effect of the intervention, studies should, where possible, take the form of a randomised controlled trial, with a control or “treatment as usual” group. Sample size calculations should also be conducted before starting a trial.

There is need for further good quality research in all of the areas discussed. This includes studies on the prevalence of PTSD and other psychological sequelae of emergency response work, such as burnout, anxiety, and depression. In addition, further investigation of the efficacy and effectiveness of different treatment packages is needed. These may include less formal strategies such as peer support. There also needs to be some consideration given to preventive measures. These might include consideration of extending the amount of stress management information in training programmes as well as finding ways in which to reinforce this information throughout the course of a paramedic or technician’s professional life.

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