

# Effective elements for workplace responses to critical incidents and suicide – A systematic rapid review of the literature

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## Background and Rationale

Critical incidents (CIs) including work related death and injuries remain a significant public health issue. Recent global estimates provided by the International Labor Organization (ILO) estimate 350,000 deaths are due to fatal accidents with additional 313 million workers involved in non-fatal occupational events resulting in either serious injuries or requiring at least four days absence from work (Wadsworth & Walters, 2019). During 2018, in the US, 5,250 total deaths due to work related injuries were reported, representing a 2% increase from 5,147 work related deaths in 2017 (Bureau of Labor Statistics, 2019). Nationwide, in Australia, 144 workplace deaths were recorded in 2018 with agriculture and transport industries accounting for the majority of work-related fatalities (Safe Work Australia, 2018). Another hazardous sector includes the Australian construction industry. Current fatalities data indicate 24 work related deaths occurred in 2018 (2.0 per 100,000 employees) (Safe Work Australia, 2018). Majority of fatalities in the construction industry involve mostly males with a mean age of 43 years (Cooke & Lingard, 2011). Although there has been a downward trend in the number of deaths in the construction industry where in 2017-2018, 30 fatalities were recorded, this sector continues to have the highest rate of work-related injury or illness (59 per 1000 employed persons) (Australian Bureau of Statistics, 2018). Apart from occupational injuries (fatal and non-fatal), another type of CI resulting in trauma in the workplace is employee suicide. In the USA, in 2013, Bureau of Labor Statistics reported 282 suicides occurring in a work environment (representing 6 percent of the 4,585 total workplace fatalities) (Harris, 2016). In Australia, a meta-analysis of suicide by occupation found the risk of suicide was greatest in those industries employing men with low -level manual skills compared to males occupying high skilled non-manual positions (Milner, Spittal, Pirkis, & LaMontagne, 2013).

With the high rates of injuries (fatal and non-fatal) and suicide occurring in the workplace environment, colleagues who witness these types of traumatic events are left susceptible to the effects of psychological trauma and post-traumatic stress disorder (PTSD) (Brooks,

Rubin, & Greenberg, 2019). Risk factors for psychological trauma include the nature of the CI and post incident events, the amount of exposure and life history of the individual exposed to the event (Skogstad et al., 2013). Symptoms of psychological trauma include depression, anxiety, insomnia, restlessness and poor concentration (DeFraia, 2016). While only a few individuals will develop chronic mental health issues following exposure to traumatic events (Skogstad et al., 2013), workplaces and organisations have become increasingly interested in implementing best practice interventions to help disrupt any adverse effects of psychological trauma.

#### Evidence informed responses and postvention for workplace

The level of preparedness to CIs in the workplace vary. While most workplaces particularly government organisations will have in place formal policies and procedures, some organisations will also choose to outsource their management of critical events to employee assistance programs (EAP). These programs offer an early intervention strategy providing employees with immediate emotional support following traumatic events. A recent systematic review reported benefits of EAP's included improvements in employee work presenteeism, absenteeism, workplace distress, work engagement and overall life satisfaction (Milot & Borkenhagen, 2018). An alternative model is the Critical Incident Stress Management (CISM) program (Mitchell, 2016). This approach is delivered by mental health professionals and trained workplace peers with the aim of mitigating the effects of exposure to traumatic events (Mitchell, 2016). However, a lack of quality studies have resulted in mixed reviews on the effectiveness of CISM. While anecdotal evidence based on reports of participant satisfaction support the use of CISM (Tracy, 2017), scientific advisory councils oppose this type of intervention citing a lack of convincing evidence of its effectiveness and potential to cause harm (Aucott & Soni, 2016; Pia, Burkle, Stanley, & Markenson, 2011). Other agencies such as the World Health Organization (WHO, 2013) also reject CISM recommending "psychological debriefing should not be used for people exposed recently to a traumatic event as an intervention to reduce the risk of post-traumatic stress, anxiety or depressive symptoms" (p. 6). Overall, regardless of the approach employed by workplaces when responding to such events, embedded in the policies and procedures of CI strategies are the following goals: "facilitat[ing] worker resilience and recovery, reduce subsequent workplace disruption, restore operations and maintain organizational stability" (DeFraia, 2016, p. 77).

With regard to suicide postvention in the workplace, there is little quality evidence of how organisations should respond to such a traumatic event. To examine postvention, the following definition is used, whereby postvention is: "those activities developed by, with, or for suicide survivors, in order to facilitate recovery after suicide, and to prevent adverse outcomes including suicidal behaviour" (Andriessen, 2009, p.43). Evidence based responses to those exposed to suicide death are rare; our systematic review of 50 years of postvention research (Maple et al., 2017) published to 2016 located only 5% of suicide bereavement research reporting interventions. In an update to this review undertaken in May 2020, only a slight increase to 6.9% was identified. Beyond bereavement, exposure to suicide has rarely been considered in relation to suicide prevention, and there are no evidence-based

interventions to support exposure to suicide in the community, and this extends into the workplace.

### Training requirements for workplaces

In terms of training requirements, there is very little evidence of recommendations on the type of training workplaces should consider in management of workplace CIs. Some organisations focus on preventative measures such as pre-incident resiliency training. This approach which has been implemented in the emergency sector is focused on psychological resiliency and developing education and awareness in employees of how resiliency can act as a protective factor when exposed to traumatic events (Gunderson & Grill, 2014). A study on the effectiveness of resiliency training found significant increases in the level of education after post-test assessment compared to pre-test (Gunderson & Grill, 2014). Another popular approach is training employees in “psychological first aid” (PFA) which can be delivered either on an individual or group basis (Sijbrandij et al., 2020). The approach is aimed at reducing initial distress and promotion of short- and long-term functioning in those exposed to traumatic events (Sijbrandij et al., 2020). Evaluations of the effectiveness of PFA are yet to be completed.

### Purpose and Aim of the Review

The primary purpose of this rapid review is to answer the following research question:  
*What are the key elements for response to CIs and suicide in the workplace?*

This will be achieved by retrieving literature that will be used to inform the development of postvention and CI response training module for Mates in Construction (MiC). The results of this review will also assist in providing an evidence base to guide the qualitative interviews which intend to capture the lived experiences of construction workers and managers and their responses to CIs and deaths by suicide in the workplace.

To achieve these goals, this rapid review aims to:

1. Identify all of the relevant evidence regarding workplace responses to CIs and suicide in the workplace published between 2015 and 2020
2. Synthesise the existing evidence to identify the key elements necessary for the development of an effective workplace program.
3. Assess the quality of this evidence using the Joanna Briggs Institute (JBI) appraisal tools and;
4. Design a framework represented as a Haddon’s matrix to categorize the intervention strategies identified in the review.

### Haddon’s Matrix

In reviewing the literature on responses to CIs and suicide, the authors chose Haddon’s matrix to capture the critical elements necessary for the implementation and delivery of effective programs and interventions across critical times and functions. Originally, Haddon’s Matrix was conceived as a conceptual framework for use in the field of injury prevention (Williams, 1999). The framework offers a practical approach to analysing and comparing the

interactions and interrelationships between causal factors (human, agent, environment e.g. physical and socio-political) that occur during the three “time windows” of a single event or incident (e.g. 1. pre-event, 2. during the event and, 3. post-event) (Engström, Angrén, Björnstig, & Britt-Inger, 2018). Intermeshed with these three “time windows” are opportunities for prevention activities at the primary, secondary and tertiary level (Barnett et al., 2005). In the context of this review, applying Haddon’s Matrix will provide us with a clear and concise recording of the key elements of current programs and interventions across the three-time windows. By capturing information in this way, it will enhance our understanding of how to plan, prepare for and respond to each stage of critical events such as workplace death, injury or suicide.

To date, with a focus on prevention of suicide and CIs in the workplace, there has been little attention given to the issues of workplace responses to suicide and CIs on an individual level and at the broader organisational level, how blue-collar industries are managing responses to these traumatic events.

### *Definition of Critical Incident*

Despite widespread use of the term “critical incident” no standard definition exists. In the published literature definitions of the term “critical incident” vary widely depending on the context in which it is being used. A further complication is the frequent use of the term “traumatic event” which is often used interchangeably with “critical incident”. In a paper on CIs in the police force, Maguen (as cited in Brucia, Cordova, & Ruzek, 2017) defined critical incident as: “A potentially traumatic event which may cause a given individual’s emotional resources to become over-taxed, resulting in a spectrum of reactions from exhaustion to increased and unrelenting mental health symptomology” (p. 130). While Maguen’s definition focuses on the individual, others consider those indirectly affected through sensory or informational exposure as evidenced in a review paper by Adamson (2017) on CIs and best practice in social work. In that paper CI is defined as “an event or situation within workplace settings or roles which have the potential to create a sense of emergency, crisis, and extreme stress, or have a traumatic impact on those directly or indirectly affected” (p. 733). A broader interpretation of “critical incident” was generated through the content analysis of fourteen definitions (Schwester, 2012). Fifteen attributes shared amongst the definitions were identified in the results of the study where CI was characterised as: 1) a cause social trauma; 2) a cause of fear; 3) they create an emotional effect on trained people; 4) they affect a change in societal norms; 5) it is possible that they undermine public trust; 6) they impact on the practice of democracy; 7) they are relatively brief in occurrence; 8) they cause significant injury or loss of life as well as 9) significant property/infrastructure damages; 10) they require a state of declared emergency; 11) the event is unexpected with 12) a limited in scope; 13) they can require an intergovernmental/international coordination; 14) they can create positive outcomes and 15) they attract significant media coverage (Schwester, 2012, p. 34, 39-42).

### *Methods*

This rapid review of evidence, commissioned by Mates in Construction (MiC) Queensland, Australia, involves searching for evidence of responses to CIs and suicide in the workplace.

Both searches of peer reviewed literature and desktop search for grey literature were conducted. For the purposes of this study, a rapid review was chosen as the preferred review method. Rapid reviews are favoured by policy and other decision makers as they allow for a simplified version of a systematic review to be conducted while still producing actionable and relevant evidence in a timely manner (Khangura, Konnyu, Cushman, Grimshaw, & Moher, 2012). In the case of this review, the study was undertaken over a six-week period from June to mid-July, 2020.

Due to the brief time period some of the steps normally included in a Cochrane standard systematic review were omitted. For instance, electronic searches were limited to a specific date range and language. Also, records at Level 1 (screening by title/abstract) stage were divided between two reviewers whereas Cochrane standards require two reviewers to be involved throughout every stage of the screening process. However, as both reviewers have authored several literature reviews, are experienced in the screening of records and were guided by a screening protocol (see Appendix 2) the authors are assured the risk of selection bias has been minimised. This rapid review used systematic review methodology and adheres to the reporting standards as set out in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher, Liberati, Tetzlaff, Altman, & Group, 2009).

#### Eligibility Criteria

The eligibility criteria used to screen records was established during the pre-testing stage of the search strategy. Papers were included if they met all of the following four criteria: 1) reported on death or CIs within the workplace environment; 2) included responses to the incident (e.g. interventions or postvention programs or strategies); 3) full text available in English language and published between 2015 and 2020 and, 4) contains original data (qualitative, quantitative, mixed) or review of original data. Records were excluded if: 1) the focus was on patient or client death (e.g. in a health care or social care setting or first responders (e.g. police, fire, ambulance attending to accidents or suicides that do not involve a work colleague); 2) studies which do not contain empirical evidence (e.g. papers that only describe an event) or, 3) were protocols or descriptions of interventions.

#### Identification of Included Papers

Prior to searching the literature test searches of search strings and databases were conducted. In any quality review, the pre-testing of the search strategy serves a dual purpose. Firstly, testing of keywords and corresponding MeSH (Medical Subject Headings) or thesauri terms (if available) ensures the maximum retrieval of relevant material whilst minimising the number of irrelevant records. Secondly, the testing of search strings across a variety of databases guides the process of identifying which database contains information that will help to answer the research question. As a result, eligible studies were identified by searching the title and abstracts of records using the following search string: (suicide OR death OR critical incident) AND (bereavement OR grief OR mourning OR trauma OR postvention) AND (workplace OR workforce OR employment OR employee OR co-worker OR colleague). Truncation and/or proximity operators were applied to each of the search terms. The following six databases were searched for articles published from January 2015 to June 2020:

Medline/Web of Science; CINAHL (Cumulated Index to Nursing & Allied Health)/EBSCO; PsycINFO/ProQuest; Sociology Collection/ProQuest; Academic Search Complete/EBSCO and, Business Search Complete/EBSCO. An example of a search string used to retrieve articles in Medline (Web of Science) is included in Appendix 3. The searches were completed on the 15 June 2020 and the results were limited to articles published in English language peer reviewed journals. Additional studies were identified by searching Google Scholar and the websites of both Australian and International peak organisations (for a list of organisations see Appendix 1). Coronial findings as listed by coronial courts in NSW, QLD and VIC were also examined to check for any recommendations that may have been made by the coroner with regard to implementing relevant programs or interventions in the workplace.

### Study Selection

Once the searches of the electronic databases and desktop grey literature were completed, the titles and abstracts of the identified records were imported into Endnote x9 (bibliographic software). Duplicate citations were removed using Endnote's duplicate identification tool. A rigorous manual review was also undertaken for any remaining duplicate records. Following this, unique records were imported into Covidence systematic review software (Veritas Health Innovation, 2016) for screening and full-text review. Two reviewers (L.B. and T.P) conducted independent screening of the title and abstract of half of the records to determine which of those did not meet the eligibility criteria. Next, the same two reviewers completed screening of the full text of the remaining records. This involved reading each paper in full and determining whether the study met the eligibility criteria. Reconciliation of any conflicts was resolved by a third reviewer (M.M).

### Assessment of Methodological Quality

The methodological quality of included studies was independently assessed by two reviewers (L.B and T.P) using the National Health & Medical Research Council (NHMRC) Hierarchy of Evidence (National Health Medical Research Council, 2009) and the Joanna Briggs Institute (JBI) appraisal checklists (Joanna Briggs Institute, 2017).

#### *National Health & Medical Research Council (NHMRC) Hierarchy of Evidence*

The National Health & Medical Research Council (NHMRC) Hierarchy of Evidence which assigns levels of evidence based on study design, ranging from I (highest) to IV (lowest). This tool specifies broad principles of evidence-based science that can be used for quality assessments of studies. The NHMRC Evidence Statement Form describes the basis for rating the five key components of the 'body of evidence' for each recommendation which includes:

- The evidence base, in terms of number of studies, level of evidence and quality of studies (risk of bias)
- The consistency of its findings to other similar studies
- Clinical impact and generalisability of results to the target population
- The applicability of results to the Australian and/or local health care setting

Level I studies typically consist of systematic reviews of randomised controlled trials while Level IV studies largely refer to case series with post-test or pre/post-test outcomes (see table below).

Level of Evidence	Study Design
I	A systematic review of Level II studies.
II	A randomised controlled trial.
III-1	A pseudo-randomised controlled trial (i.e. alternate allocation or some other method).
III-2	A comparative study with concurrent controls (i.e. non-randomised experimental trials, cohort studies, case-control studies and interrupted time series studies with a control group).
III-3	A comparative study without concurrent controls (i.e. historical control study, two or more single arm studies and interrupted time series studies without a parallel control group).
IV	Case series with either post-test or pre-test/post-test outcomes.

**Table 1: NHMRC level of evidence**

*Joanna Briggs Institute (JBI) Critical Appraisal Tools*

Additional tools used for assessing the quality and trustworthiness of evidence included appraisal checklists from the Joanna Briggs Institute (JBI) (2017). These tools cover 13 study types from cross-sectional and case series through to qualitative studies. A score of ‘1’ was applied for each criterion met and ‘0’ was applied where the criteria was not met or it was unclear. The number of criteria met were tallied to form the quality score for each study. The scores calculated for each study were then converted to a final quality rating of ‘low’, ‘moderate’ or ‘high’ quality. The following JBI Critical Appraisal Tools and scoring parameters were implemented in this review: Checklist for Analytical Cross-Sectional Studies (score out of 8; Low 0-2, Moderate 3-5, High 6-8); Checklist for Case Series (score out of 10; Low 0-3, Moderate 4-6, High 7-10); and Checklist for Qualitative Research (score out of 10; Low 0-3, Moderate 4-6, High 7-10).

In a systematic review the main purpose of assessing the quality of the literature is to exclude those papers which do not meet the standard of best evidence. However, as this is a rapid review of all of the available evidence, all studies meeting the eligibility criteria were rated and included regardless of their quality.

*Data Extraction*

Data extraction, from the included studies, was completed by two reviewers (L.B and T.P) using a Microsoft Office Excel 2007 coding template, custom made for this project. Categories of data retrieved included country, study design, type, workplace setting, target group, number of subjects, intervention name and description, primary outcome measures and summary of key results. In addition, each included study received a rating based on the

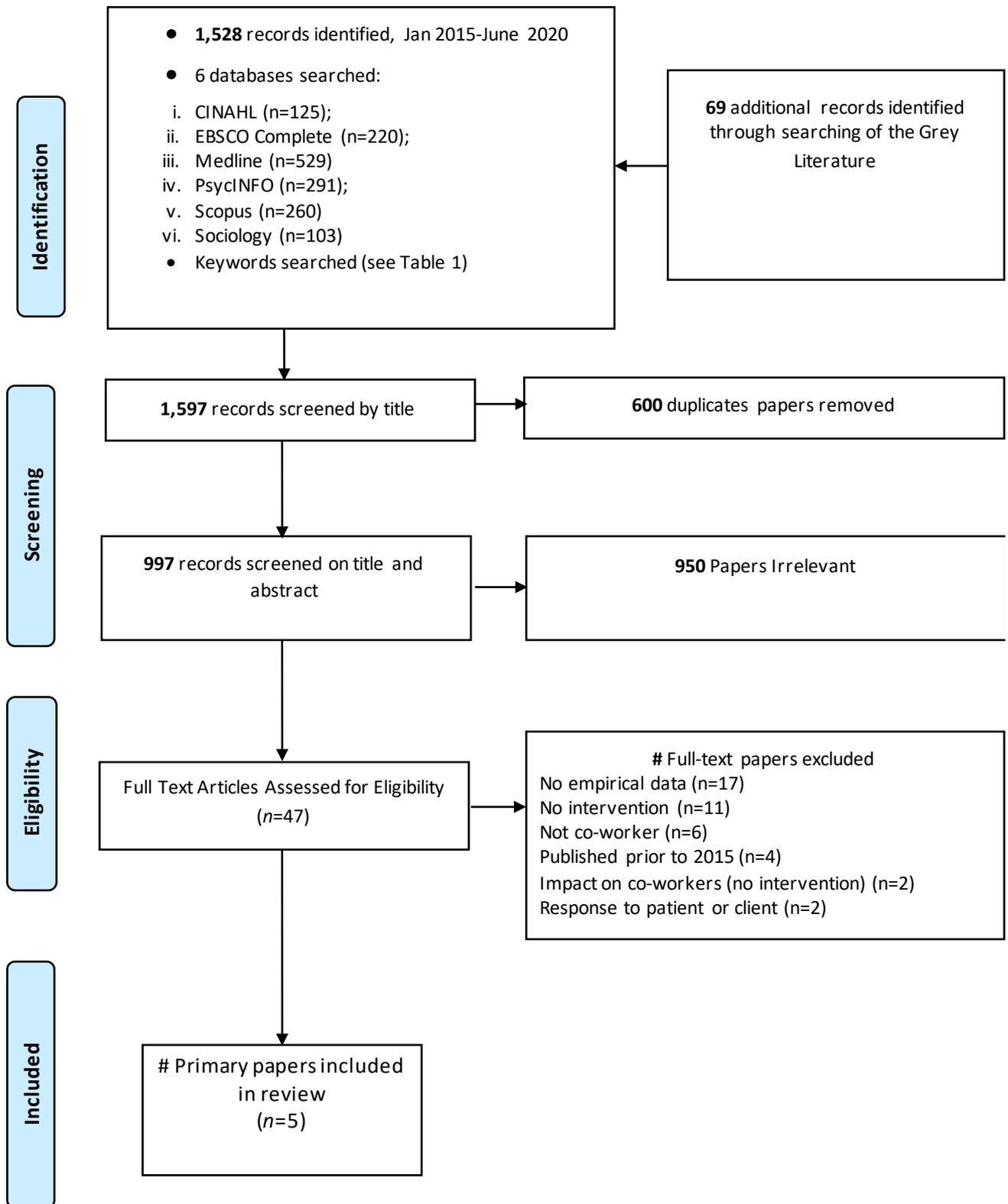
NHMRC 2009 Hierarchy of Evidence (see Table 1) and were assessed using the JBI Critical Appraisal Tool checklist (Joanna Briggs Institute, 2017).

## Results

A total of 1,528 studies were located during the peer-review database search, with an additional 69 grey literature records retrieved. After removal of 600 duplicates, 997 records were screened by title and abstract, resulting in a further 950 records being excluded. Reasons for exclusion at this stage of the screening process included: no empirical data (n=17); no intervention (n=11); not co-worker (n=6); published prior to 2015 (n=4); study examined the impact of CIs on co-workers not an intervention (n=2); and response to patient or client (n=2). Following full text review, 5 records met the eligibility criteria and were included.

Figure 1 below summarises the search process and reasons for exclusion.

**Figure 1:** PRISMA flow diagram summarising rapid review search to identify published literature on workplace responses to critical incidents and suicide



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

## Study characteristics

The characteristics of included studies are presented in Tables 2 and 3. The five included studies were published between 2015 and 2020 across three countries: The United States of America (n=3), Canada (n=1) and Korea (n=1). Four of the five studies utilised a quantitative methodology and one utilised mixed methods. Three of the four quantitative studies used a cross-sectional design and one was a case series. The one mixed methods study used a quantitative cross-sectional design and a qualitative survey (Table 2). With regard to the types of workplace settings (Table 3), these ranged from railways to factories, police and the military with one represented by an external critical response unit. In four out of the five examples interventions were delivered by external professionals who also provided support and advice to both organisations and their employees on managing the psychological effects of traumatic events (Toukoleht et al., 2020; Kang et al., 2017; DeFraia, 2016; Sparn, 2015). Only in one instance was the intervention delivered internally (Bardon, 2015).

## Risk of bias within studies and level of study evidence

As shown in Table 2, among the four studies, where a cross-sectional design was used, three were assessed as “high quality” (Bardon, 2015; DeFraia, 2016, Sparn, 2015) and one was assessed as “moderate quality” (Kang et al., 2017). The case series study was assessed as “moderate quality” (Toukoleht et al., 2020) as was the qualitative survey (Sparn, 2015). All studies were classified as NHMRC level IV (i.e. the lowest level of evidence).

## Synthesis of results

### *Pre-incident interventions*

Three themes emerged from two studies on pre-incident interventions. *Development of worker resilience* (Bardon, 2015) and *development of leadership skills in CI management and recovery* was identified for factors relating to the host and *organisational preparedness* was identified for factors relating to the socio-political environment (Figure 2) (Bardon, 2015; DeFraia, 2016).

*Development of worker resilience* centred on the enhancing knowledge of staff and managers on what a CI is and what happens during and after a CI. This included enhancing knowledge on the psychological impact that single and cumulative exposure to CIs can have on workers, in particular emotional reactions such as stress. In addition to impact, studies suggested that staff and managers gain knowledge on strategies they could use to cope with the impact of exposure to CIs, the support networks they could draw on and external specialist resources they could access. Studies also identified education and training interventions for workers in leadership roles on how to manage a CIs and adequately support their staff throughout the duration of its impact (Bardon, 2015).

*Organisational preparedness* included the design, development and implementation of three key protocols/programs: CI response and management protocols (Bardon 2015); business and human continuity protocols (DeFraia, 2016); and peer support programs (Bardon 2015). It was also identified that staff and managers gain knowledge of policies on worker entitlements for leave, return to work and legal issues following a CI.

### *Incident interventions*

Three themes emerged from one study on incident interventions. *Worker support* was identified for factors relating to the host, *incident evaluation* was identified for factors relating to the agent and *organisational response* was identified for factors relating to the socio-political environment (Figure 2) (Bardon, 2015). *Worker support* related to compassionate and empathetic communication from managers during and immediately following a CI. *Incident evaluation* referred to the development of procedures on whether and how workers should perform emergency responses at the site of a CI, for example first aid. *Organisational response* related to the strict adherence to CI response and management protocols referred to in the pre-incident phase.

### *Post-incident interventions*

Six themes emerged from all included studies on post-incident interventions. *Intra- and extra-organisational facilitation of worker recovery* (Bardon, 2015; DeFraia, 2016; Kang et al., 2017; Sparn, 2015; Toukoleht et al., 2020) *support for staff in management and leadership roles* (DeFraia, 2016) and *facilitation of return to work* (Bardon, 2015; Sparn, 2015) was identified for factors relating to the host. *Intra- and extra-organisational and worker recovery* was identified for factors relating to the socio-political environment (Sparn, 2015; DeFraia, 2016) (Figure 2).

*Intra-organisational facilitation of worker recovery* related to interventions in place within the organisation for the immediate aftermath of a CI through to psychological support interventions that could be accessed as required. Studies suggested that immediately following a CI, there should be a requirement that workers are accompanied away from the CI site to a safe location where they are met by trained peers to offer support as soon as possible (Bardon 2015). Time off work following the CI was suggested by one study for a period of up to five days during which regular and compassionate contact is made by the worker's employer and members of the peers' program (Bardon 2015). In addition, it was suggested by another study that during this time, employers and peers endeavour to provide validation and understanding of feelings and reactions (Sparn, 2015). For groups of workers that experienced the same CI psychoeducation (DeFraia, 2016; Kang, et al. 2017, Sparn, 2015) could be offered in addition to an Employee Assistance Program (Bardon, 2015).

*Extra-organisational facilitation of worker recovery* related to interventions external to but facilitated by the worker's organisation. All studies identified de-briefing or counselling with a qualified clinician be attended by the worker within three days of the CI. Studies also applied a range of psychological reprocessing techniques including cognitive behavioural therapy (Bardon, 2015; Toukoleht et al., 2020), eye movement desensitization and reprocessing (Bardon, 2015; Sparn, 2015; Toukoleht et al., 2020), imaginerial rescripting (Toukoleht et al., 2020), and erasure and replacement of images (Toukoleht et al., 2020).

Other extra-organisational interventions included *support for staff in management and leadership roles* through consultation with an external provider to assist with the restoration of worker and organisational performance (DeFraia, 2016). To *facilitate return to work* two

studies suggested formal evaluation of the worker's fitness for work be performed by a mental health practitioner in collaboration with the worker's manager (Bardon, 2015; Sparn, 2015).

For factors relating to the socio-political environment *intra-organisational and worker recovery* interventions related to a post critical incident seminar presented at six months to two years after the CI (Sparn, 2015). *Extra-organisational and worker recovery* interventions from one study comprised a monitoring program for worker and organisational recovery with the aim of identifying whether additional interventions are required (DeFraia, 2016).

**Table 2: Study characteristics**

First author (Year)	Country	Methodology	Study design	NHRC Level of Evidence	Number of subjects participated	Quality assessment - Score	Quality assessment - Assessment
Bardon (2015)	Canada	Quantitative	Cross-sectional	IV	40	7 / 8	High
DeFraia (2016)	United States of America	Quantitative	Cross-sectional	IV	5,181	8 / 8	High
Sparr (2015)	United States of America	Mixed Methods	Cross-sectional Qualitative Survey	IV	52	7 / 8 6 / 10	High Moderate
Kang (2017)	Korea	Quantitative	Cross-sectional	IV	21	5 / 8	Moderate
Toukoleht (2020)	United States of America	Quantitative	Case series	IV	Not Applicable	5 / 10	Moderate

**Table 3: Study workplace intervention characteristics**

Author (Year)	Workplace setting	Intervention name	Intervention description	Intervention delivered by	Outcome measures
Bardon (2015)	Railway personnel	Critical Incident Response Program	<ul style="list-style-type: none"> <li>- On site intervention and incident management.</li> <li>- Leaving the site and post-incident employer help.</li> <li>- Outsourced clinical support.</li> <li>- Private help seeking.</li> </ul>	Rail operators	Worker level of satisfaction with Critical Incident Response Program
DeFraia (2016)	Varied (e.g. site managers, medical directors, human resource professionals, union representatives or other organizational officials.)	Critical Incident Response Unit	<ul style="list-style-type: none"> <li>- Distribution of supportive educational materials.</li> <li>- Interventions to support employees.</li> <li>- Assistance for managers and leadership.</li> <li>- Followup consultation to ensure ongoing organizational recovery.</li> </ul>	Staff from an external organisation referred to as occupational health practitioners.	Whether incident severity level influence organisations' decisions regarding response planning and types of interventions delivered to employees.
Sparr (2015)	Police force	Post Critical Incident Seminar	Multiday seminar that provides mental health treatment, peer support and social support.	Peers, psychologist, and other clinical staff	Post-traumatic stress, depression, and anxiety.
Kang (2017)	Factory producing textiles	Guidelines for early response to acute stress in the event of a major disaster at a workplace	Disaster response group counselling.	Psychologist, industrial hygienist, and occupational physician.	Impact of event and health.
Toukoleht (2020)	Military	Accelerated Resolution Therapy-Based Intervention	<ul style="list-style-type: none"> <li>- Mindful awareness and processing of emotions with bilateral eye movements.</li> <li>- Imaginal exposure and desensitization.</li> <li>- Imaginary rescripting of a new positive version for the traumatic event.</li> <li>- Erasure and replacement of disturbing images.</li> <li>- Virtual conversations with individuals who were involved in the traumatic event.</li> <li>- Processing of residual emotions and images.</li> </ul>	Psychiatrist	Acute stress and grief symptoms.

	<b>Host (Worker)</b>	<b>Agent (Exposure to Critical Incident)</b>	<b>Environment – Physical (Workplace / Incident Location)</b>	<b>Environment – Socio-Political Workplace Policies and Procedures</b>
<b>Pre-Incident</b>	<p><b>Develop worker resilience</b></p> <ul style="list-style-type: none"> <li>- Information and training for staff and managers on:               <ul style="list-style-type: none"> <li>- what happens during and after a CI.(Bardon)</li> <li>- stress and its effects.(Bardon)</li> <li>- typical emotional reactions and ways to cope with them.(Bardon)</li> <li>- the cumulative impact of experiencing multiple CIs.(Bardon)</li> <li>- support networks.(Bardon)</li> <li>- outsourced specialised resources.(Bardon)</li> </ul> </li> </ul> <p><b>Develop leadership skills in CI management and recovery</b></p> <ul style="list-style-type: none"> <li>- Training managers on how to support staff and manage CIs.(Bardon)</li> </ul>	-	-	<p><b>Organisational preparedness</b></p> <ul style="list-style-type: none"> <li>- Design and implementation of CI management protocols that account for reduction of risk factors and promotion of protective factors.(Bardon)</li> <li>- Planning both business and human continuity.(DeFraia)</li> <li>- Provision of information to staff members on:(Bardon)               <ul style="list-style-type: none"> <li>- protocols for time off (including the policy on salary).</li> <li>- return to work policies.</li> <li>- legal issues.</li> </ul> </li> <li>- Development and implementation of a comprehensive peer support programme which includes: careful recruitment of peers; regular training updates and follow-up).(Bardon)</li> </ul>
<b>Incident</b>	<p><b>Worker support</b></p> <ul style="list-style-type: none"> <li>- Supportive, compassion and empathetic communication from managers at the CI site.(Bardon)</li> </ul>	<p><b>Incident evaluation</b></p> <ul style="list-style-type: none"> <li>- Procedures for evaluation of the capacity of workers to proceed with emergency check at the CI site (e.g. first aid).(Bardon)</li> </ul>	-	<p><b>Organisational response</b></p> <ul style="list-style-type: none"> <li>- Strictly implemented CI response and management protocol.(Bardon)</li> </ul>
<b>Post-Incident</b>	<p><b>Facilitate worker recovery (internal)</b></p> <ul style="list-style-type: none"> <li>- Compulsory demobilisation (removal of staff member from the CI site and return to a safe place).(Bardon)</li> <li>- Peer support by trained peers offered rapidly after the CI.(Bardon)</li> <li>- Staff member taking time off work (24hrs-5days).(Bardon)</li> <li>- Regular and compassionate contact from employer and peers programme.(Bardon)</li> <li>- Validation and normalization of feelings and experiences, recognition of social support, and increased knowledge and understanding of feelings and reactions.(Sparr)</li> <li>- Psychoeducation in groups who have experienced same type of CIs.(DeFraia, Sparr, Kang)</li> <li>- Employee Assistance Program.(Bardon)</li> </ul>	-	<p>Short term interventions effective resource-limited deployed setting.(Toukoleht)</p>	<p><b>Organisational and worker recovery (internal)</b></p> <ul style="list-style-type: none"> <li>- Post Critical Incident Seminar (PCIS) (6 months to 2 years post incident).(Sparr)</li> </ul> <p><b>Organisational and worker recovery (external)</b></p> <ul style="list-style-type: none"> <li>- Monitoring worker and organisational recovery to determine need for additional interventions.(DeFraia)</li> </ul>

	<b>Host (Worker)</b>	<b>Agent (Exposure to Critical Incident)</b>	<b>Environment – Physical (Workplace / Incident Location)</b>	<b>Environment – Socio-Political Workplace Policies and Procedures</b>
	<p><b>Facilitate worker recovery (external)</b></p> <ul style="list-style-type: none"> <li>- Clinical de-briefing / meeting with psychiatrist within a few days / 96 hours after the CI.(Bardon, Toukoleht)</li> <li>- Supportive educational material.(DeFraia)</li> <li>- One on one counselling.(DeFraia, Sparn, Kang)</li> <li>- Cognitive Behavioral Therapy (CBT) / processing of residual emotions.(Bardon, Toukoleht)</li> <li>- Eye Movement Desensitization and Reprocessing (EMDR) to improve PTSD symptoms, social functioning, anxiety and impact of the event.(Bardon, Sparn, Toukoleht)</li> <li>- Mindful awareness and bilateral eye movements.(Toukoleht)</li> <li>- Imaginerial rescripting.(Toukoleht)</li> <li>- Erasure and replacement of images.(Toukoleht)</li> <li>- Virtual conversations.(Toukoleht)</li> </ul> <p><b>Support for organisation's management / leadership team</b></p> <ul style="list-style-type: none"> <li>- Assistance / consultation to managers and leaders to restore performance.(DeFraia)</li> </ul> <p><b>Facilitate return to work</b></p> <ul style="list-style-type: none"> <li>- Formal fitness to work evaluation of staff member in collaboration with manager and mental health support team.(Bardon, Sparn)</li> </ul>			

**Figure 2: Haddon's Matrix of interventions identified in studies**

#### Additional Papers:

Due to our inclusion criteria for this review, some studies may not have been included, but may be relevant to the development of CI training for MIC. Therefore, we have included a brief summary of these below.

*Brooks, S. K., Rubin, G. J., & Greenberg, N. (2019). Traumatic stress within disaster-exposed occupations: overview of the literature and suggestions for the management of traumatic stress in the workplace. British Medical Bulletin. Retrieved from <https://www.kcl.ac.uk/kcmhr/publications/assetfiles/2018/brooks2018d.pdf>*

This paper offers a literature review on the issue of supporting trauma-exposed employees. The authors report there remains much controversy in the literature as to what constitutes “best practice” when supporting employees in the workplace. While critical incident stress debriefing (CISD) is a common intervention used to prevention of PTSD in employees there is little evidence it is effective in preventing symptoms. In fact, as claimed by the authors, most high-quality research on CISD has shown this approach to be harmful. The National Institute for Health and Care Excellence (NICE) recommends that CISD should not be included as part of routine interventions. Rather active monitoring in the first month following exposure is recommended. This requires management to be well trained in recognising mental health problems in their employees.

*Ham, C. A. (2018). Identifying possible guidelines for addressing the unexpected death of a coworker in an academic workplace (Doctoral dissertation, Valdosta State University). Retrieved from [https://vtext.valdosta.edu/xmlui/bitstream/handle/10428/3070/ham-carol\\_dissertation\\_2018.pdf?sequence=1&isAllowed=y](https://vtext.valdosta.edu/xmlui/bitstream/handle/10428/3070/ham-carol_dissertation_2018.pdf?sequence=1&isAllowed=y)*

This qualitative study of 20 participants from two universities captured the experiences of respondents to the unexpected death of a colleague in an academic setting. Common themes identified by both staff and administrators highlighted trauma, notification, work and administration. The issue of trauma was raised in response to the suicide of a work colleague and the psychological reactions experienced by staff. Lack of acknowledgement by the workplace regarding the staff members’ death and the absence of appropriate counselling support for staff members was noted by respondents. With regard to notification, participants commented on the poor practices used by universities to communicate information about a colleague’s death. Respondents emphasised the importance of minimising any delay in informing organisational staff and ensuring this process was approached with sensitivity. For instance, prioritising communication with those who worked closest with the staff member before notifying the university as a whole. The theme of “work” covered issues of managing grief responses in the workplace whilst also maintaining productivity and the challenges of reassigning work to meet the academic needs of students. The final category “administration” focused on a range of issues including the need for campus wide training relating to grief and traumatic loss, specialised counselling services, possible formulation of cooperative agreements with other institutions who could provide academic support as well as the role administration should play in notification and in the division experiencing the loss.

Gulliver, S. B., Pennington, M. L., Leto, F., Cammarata, C., Ostiguy, W., Zavodny, C., ... & Kimbrel, N. A. (2016). *In the wake of suicide: Developing guidelines for suicide postvention in fire service*. *Death studies*, 40(2), 121-128. Retrieved from <https://www.tandfonline.com/doi/pdf/10.1080/07481187.2015.1077357>

The aim of this qualitative study was to develop standard operating procedures for suicide prevention in the fire service using feedback provided by 61 participants all of whom had experience working as a firefighter. Operational responsibilities include implementing a notification procedure which is congruent with existing policies, briefing of staff within 24 hours, setting protocols for social media, designating a team leader to co-ordinate response, assign staff members to act as liaison for family members, provide immediate family members with information on the availability of financial support along with funeral requirements and postvention follow-up support. Organisational responses to co-workers include assigning roles and activities for physicians, counselling units, employee assistance programs, designating a team of support or peer counsellors, short term responses include conducting an umbrella overview with peer counsellors or chaplains and checking in with members, long term activities include assigning a peer counsellor to the workplace, establishing a “family tree” of those work colleagues who are most vulnerable, prepare for and address emotions and behaviours as they arise, setting up meetings when ready to phase out the postvention process.

Adamson, C. (2015). *Best Practice in Responding to Critical Incidents and Potentially Traumatic Experience within an Organisational Setting*. In *Evidence Discovery and Assessment in Social Work Practice* (pp. 302-323). IGI Global.

This paper provides a community health case study and a literature review to discuss CI in the workplace and identify the key principles for best practice. Through an analysis of the literature, the author draws on three knowledge bases: 1. Critical incident (e.g. EAP), 2. Contributory knowledge base (e.g. crisis intervention theories etc.) and, 3. Social work knowledge (e.g. ecological approaches). Best practices are identified including emphasis on staff training in resilience and ensuring CI responses are congruent with other forms of organisational support. Furthermore, culturally appropriate intervention strategies should include components of prevention, planning and preparation, response and follow up and delivered within a Critical Incident Stress Management framework.

## Discussion

To our knowledge this paper represents the first review of interventions to respond to CI and suicide in the workplace. We conducted a systematic search on CIs and suicide in the workplace and evaluated the quality of the evidence. The results of this review demonstrate how scant the evidence-base is for individual and organisational interventions to prepare and respond to CIs. Nevertheless, there are some important lessons that can be drawn from the literature. On-site interventions offered to a large number of potentially exposed workers is likely indicated for severe incidents, while one on one counselling may be sufficient for less severe incidents (De Fraia, 2016). A variety of personnel from different agencies can be viewed positively, including police and local managers. However, the findings from Bardon

(2015) indicates that responses from managers can be either positive or negative – with ratings at the scene being more positive, and this falling in the days following the incident. When an incident occurs, the rapid removal of the crew leaving the site was important, with by far the majority reporting the average delay of 2 hours 41 mins being too long. Sites should expect staff exposed to CIs to take time off work (over 50% took three days off). Intensive and then follow up work where implemented in workplace disaster settings reported by Kang, et al. (2017), where intensive multi-day sessions were held with a one month follow up. However, the follow up was related primarily to outcome evaluation and did not have high participation. Even longer-term interventions may be required to attend to workers where the outcomes of exposure to traumatic events continue. Sparr (2015) reported on multi-day seminars provided to first responders who had exposure to trauma over longer periods (6 months – 2 years) and to assist them in working through their trauma story. This allowed for normalisation of the experience, as well as consideration of positive adaptive strategies. This may suggest that immediate, medium and longer term follow up could be considered. Meanwhile, Toukoleht et al. (2020) reported on an innovative intervention based on ‘Accelerated Resolution Therapy’ or ART which aimed to desensitise and reprocess rapid eye movement through mindfulness, re-scripting to erase and replace traumatic images. This intervention, albeit on a small scale, demonstrated success in achieving the stated aims.

At which point these interventions may be useful to apply to exposed workers was mapped to Haddon’s Matrix along a temporal line of pre-incident, incident, post-incident. At the same time the location to intervene is considered in concentric circles out from the worker, to the exposure agent, the physical environment and then to policies, procedures and the socio-political environment. Not surprisingly, by far the most evidence was aimed directly at the exposed worker. Almost no focus was on the environmental exposures and physical workplaces, however this may be an artefact of the search criteria we utilised, as there are clearly occupational health and safety requirements in most workplaces. Interestingly, the preparation for CIs was a focus of Bardon (2015), however, this was primarily information provision rather than specific training on what can be done to reduce the impact of the incident should one occur in the future.

Of the information that is available on impact on co-workers and organisational responses, these primarily consist of popular non-peer reviewed magazine articles featuring descriptions of unevaluated interventions. For instance, G.R.I.E.F., a Guided Response, Intervention and Evaluation for Fatalities, was developed by a social worker to help employees recover from exposure to workplace deaths (Walter, 2008). A further example is the 2013 publication ‘A Manager's Guide to Suicide Postvention in the Workplace: 10 Action Steps for Dealing with the Aftermath of Suicide’ (Carson J Spencer Foundation & Suicidology, 2013). Although non-peer reviewed it offers a detailed and practical approach to managing acute, short- and long-term phases in response to a suicide death. Publically available resources also include mental health webinars on workplace postvention such as those recently presented by Frey and Spencer-Thomas (2020). In this presentation, it is suggested that workplaces integrate suicide prevention into health and safety plans using nine practices such as increasing awareness of suicide prevention and cultivating a culture of caring for others in the

workplace. Interestingly, the presenters advocate for a “Stratified Suicide Prevention Program” to include gatekeeper training and a peer network that are trained in recognising and responding to employee suicidal behaviour. However, like the previous examples there is no evidence base as to how effective this model is in addressing suicide prevention or postvention in the workplace.

Across the grey and academic literature, one finding is commonly reported and that is that the presence of clear messaging and information about the incident is received positively, while poor communication increases distress. Gulliver et al., (2016) recommend drawing a ‘family tree’ to determine who needs which information and monitoring when. Such an activity is practical, easy to implement and a collaborative way to assess risk, or triage support in the early period following an event. This could be adapted to preventative work, and preparatory planning for future incidents.

While workplace deaths are investigated by the appropriate authorities, recommendations about specific interventions to support the workplace are not apparent among publicly available outcome from these authorities. For example, in our national search of Coroners’ findings we located the Inquest into the death of Colin Arthur GREAVES (2008, Coroners Court, Rockhampton). In this finding, when describing the impact of the employees’ death on his co-workers, the Coroner reported “Further, those two men and others were very affected by the incident with Mr Hepburn not returning to work and Mr Jones resigning from the ERT”. However, the coroner made no recommendations relating to providing support for the co-workers as witnesses to the event. This is not surprising as the purpose of Coroners’ recommendations is on the prevention of future similar deaths rather than postvention response. In addition, a small proportion of Coroners’ findings are publicly available.

Current models used to address exposure to trauma in the workplace include Critical Incident Stress Management (CISM), otherwise known as CISD or psychological debriefing. There is little evidence of the effectiveness of this approach. Rather many suggest this approach is not beneficial and can be harmful, including the US National Institute for Health and Care Excellence (NICE) recommends this method be avoided. By contrast, methods that include active monitoring post event are recommended. The details of what to monitor for are not explicit and should be a priority, with a triage type system to determine who may need more intensive support post-event and who will accommodate or be resilient to the event. Such a triage system, or risk matrix, could be populated to be site or industry specific utilising a matrix to identify when, where, and how to identify vulnerability.

### Strengths and Limitations

The major strength of this study was that a broad literature search was performed and a systematic approach was taken to minimise the likelihood that studies that met the eligibility criteria were missed. Two experienced reviewers screened the studies, extracted data and assessed study quality. However, this review is limited by several factors. First, as a rapid review it is time limited and to ensure it is contemporary a date limitation of the past five

years was applied. Thus, papers published prior to 2015 were not retrieved. However, including our prior review of evidence on postvention, which systematically reviewed all suicide bereavement and postvention evidence over a 50-year period to 2015 provides a solid foundation. Very few papers met our inclusion criteria. This limits the findings of this paper; however, it also demonstrates the very small evidence base for organisational responses to critical incidents and suicide. Of those papers included, the the evidence is generally poor, limited by study design (as per NHMRC evidence ranking) all at the lowest level. Quality of evidence reported utilising the JBI tools was of medium to high quality. Studies did not routinely include a comparison group which meant that the results were limited to the presence and levels of satisfaction with interventions and no associations between interventions and outcomes could be assessed. Furthermore, no intervention in the included studies were evaluated for impact on reductions in adverse outcomes on workers or organisations. Our review did not locate studies that consider transient workers or workers who work across multiple locations and how they experience CIs or suicide. No papers were longitudinal, thus how people experience workplace exposure to suicide and traumatic incidents over time remains unknown. The cumulative impact of multiple exposures also requires consideration. These will be important considerations for training for postvention in the construction industry.

## Implications

Despite the small number of studies in this review there was evidence that some interventions warrant consideration for an organisational approach to CIs. However, it should be noted that few of the studies evaluated these interventions and as a result additional examination of the effectiveness of interventions is required. This is specifically needed to establish evidence-based education and training: for workers on CI preparedness; and managers and senior leadership on support for workers exposed to CIs. The following five recommendations are for consideration and are intended to provide practical guidance to develop an organisational approach to preparation for, response to and recovery from CIs.

## Recommendations

### *Recommendation 1: Develop a Critical Incident Preparedness, Response and Recovery Plan*

Consistent with a multifactorial approach, interventions could be activated at the relevant temporal phase of CIs: preparedness, response and recovery at both the worker, management and whole of organisational level. These combined interventions could be documented, delivered and monitored through a detailed Critical Incident Preparedness, Response and Recovery Plan (CIPRRP). A CIPRRP could be developed in collaboration with appropriately qualified occupational health and safety practitioners, have representation at all levels of the organisations and include business and human continuity protocols. This will ensure that the CIPRRP is based on best practice principles of occupational health and safety and there is input from workers, managers and senior leadership to maximise investment in the plan. The

plan should be managed through a governance structure, be accessible to all staff to ensure transparency and be regularly reviewed (e.g. annual and/or following a CI) and updated.

Measures to evaluate whether a CI was managed in accordance with a CIPRRP should be included in the plan. This could be conducted for both simulated and actual CIs as a mechanism of examining adherence and to identify areas of improvements. Outcomes of the evaluation of simulated and actual CIs should be disseminated to all members of the organisation to maintain transparency and as a mechanism of organisational engagement. How, by whom and when such a plan is developed should be included in any training.

*Recommendation 2: Establish the evidence-base for peer-support programs*

Peer support programs have been implemented in a number of workplaces and were an intervention present in one of the included studies. Further examination of the elements of peer support programs and their effectiveness on contributing to worker recovery following exposure to a CI is required to determine whether it should be included in a CIPRRP. Where peer support is used, there is emerging evidence that normalisation of experiences are useful activities. However evidence for how benefits are monitored and potential challenges addressed need to be carefully considered.

*Recommendation 3: Develop and deliver evidence-based training on CI preparedness*

CI preparedness could also include that all members of the organisations receive practical and evidence-based training on the nature, impact and recovery from CIs. Additional training could be provided to managers and senior leadership on how to support workers exposed to a CI and that support is provided at every layer of the organisations. Evidence of participation and passing an assessment testing workers and managers knowledge could be linked to performance plans to maximise compliance by employees with poor engagement in occupational health and safety.

Consideration could also be given to senior leadership receiving regular external psychological support or at specified intervals following a CI. This will ensure that support is provided by senior leadership to managers that are supporting workers as well as for senior leadership as the impact of CIs can be felt beyond directly exposed workers. This training should ideally be undertaken at the time of induction to an organisation and also include regular CI simulations (with post-simulation debriefings) and refreshers.

*Recommendation 4: Develop and deliver evidence-based training on CI response*

The organisational expectations on workers and managers responses to CIs should be outlined in detail in the CIPRRP and be communicated via an education and training program preferably with practical activities and an assessment. Elements that could be considered for inclusion comprise:

- how workers should respond immediately prior to and during a CI, for example extra-and intra-organisational communication of the occurrence of a CI, provision of first aid to injured co-workers etc.

- extra-and intra-organisational communication by managers and senior leadership;
- how and what support will be provided to workers in the immediate period following the CI, including, transportation away from CI site (where relevant and possible), peer and professional psychological support and period of compassionate leave.
- how and what support will be provided to workers during the period of compassionate leave, specifically, peer and professional psychological support, human resource and legal considerations.

#### *Recommendation 5: Develop worker and organisational recovery protocols*

Studies identified a number of intra- and extra-organisational interventions to support recovery for workers exposed to and organisations impacted by CIs. The CIPRRP could include a suite of clinical and non-clinical psychological support programs that can be offered to individual and groups of workers. Organisations should offer access to psychological interventions immediately following exposure to the CI, throughout compassionate leave and for a period following return to work as willingness to engage may change over time. There is good evidence for the effectiveness of psychological reprocessing techniques, particularly for symptoms of post-traumatic stress.

At the organisational level, the CIPRRP could include a protocol that for actual CIs, a whole of organisation post CI seminar or debriefing be delivered to facilitate worker and organisational recovery and promote transparency in the response and recovery process. Protocols could also be included in the CIPRRP that input from external occupational health safety professionals be invited (as required) to assess organisational and worker recovery and provide any recommendations on future interventions required.

#### **Conclusions**

There is a profound lack of available evidence of other interventions aimed at preventing workplace trauma. This can lead to poor practices that could increase distress in an already vulnerable individual. Monitoring individuals in the period post incident has the most attention, however how and for whom this is done is not specified. Considering the pre-incident, incident and post-incident temporal pathway will assist in mapping when and where training to alleviate adverse outcomes may be considered. Similarly considering the individual through to the policy and procedural levels will assist in integration of training to support workers post CI or suicide event on-site or among a work crew.

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## APPENDICES

Appendix 1 – List of peak organisations included in the identification of eligible studies (searched completed on the 14 June 2020)

### Australia

Blackdog Institute <https://www.blackdoginstitute.org.au/research-areas/workplace/>

Beyond Blue <http://www.headsup.org.au/healthy-workplaces/for-employers>

Lifeline <https://www.lifeline.org.au/about-lifeline/resources/research-and-reports>

Trove <https://trove.nla.gov.au/>

Living Is For Everyone (LIFE) (<http://www.livingisforeveryone.com.au/Home.html>)

Life in Mind <https://lifeinmindaustralia.com.au/programs-resources/resources/p2>

### International

Google Scholar <http://www.google.com>

Grey Literature Report <http://www.greylit.org/home>

International Association for Suicide Prevention  
[https://iasp.info/suicide\\_and\\_the\\_workplace\\_resources.php](https://iasp.info/suicide_and_the_workplace_resources.php)

Mental Health Compass (<https://webgate.ec.europa.eu>)

RAND Corporation <https://www.rand.org/research.html>

Suicide Prevention Canada (<http://www.suicideprevention.ca/>)

The Suicide Prevention Resource Center Best Practice register (<http://www.sprc.org/bpr>)

Working Minds Suicide Prevention in the Workplace  
<https://www.constructionworkingminds.org/>

## Appendix 2: Screening Checklist

### Responses to Workplace Critical Incidents and Suicide – Inclusion/Exclusion Screening Checklist

1	Is the paper published in English between 2015 and 2020?	Yes Continue to Q2.	No EXCLUDE	Unsure Check with 2nd reviewer
2	Does the study appear to contain original data (qualitative/quantitative) or review papers that were reporting original data?	Yes Continue to Q3.	No EXCLUDE	Unsure Check with 2nd reviewer
3	Does the paper contain data relating to suicide or CIs (injury etc.) occurring within the workplace environment?	Yes Continue to Q4	No EXCLUDE	Unsure Check with 2nd reviewer
4	Does the paper contain data relating to suicide or CIs in the workplace and the impact on co-workers other than health professionals or first responders' response to patient or client suicide or the impact of CIs or suicide on bereaved families?	Yes Continue to Q5	No EXCLUDE	Unsure Check with 2nd reviewer
6	Does the paper include an evaluation of support services/interventions/programs when dealing with a workplace death or CIs?	Yes Proceed to data extraction	No EXCLUDE	Unsure Check with 2nd reviewer

Appendix 3: Example of a Search String used to identify records:

**Search String**

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*Medline (Web of Science)*

(suicid\*) OR (death) OR (critical\*) NEAR/5 (inciden\*) OR MH: (suicide) OR (death) OR (crisis intervention)

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AND (bereave\*) OR (grie\*) OR (mourn\*) OR (trauma\*) OR MH: Bereavement exp OR (psychological trauma) OR postvention

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AND (workplace\*) OR (workforce) OR (employ\*) OR (co-worker\*) OR (colleague\*) OR MH: (workplace) OR (employment)

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*Limited to English language, published between 2015-2020*