Best practice following hospital presentation for self-harm

A rapid literature review
Best practice following hospital presentation for self-harm: A rapid literature review.

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Chapter One: Introduction

Self-harm is a significant problem in Australia, with 8.0% of people in the community reporting that they had deliberately harmed themselves in a given twelve month period. A similar proportion of the community report that they have deliberately injured themselves (by means excluding poisoning) at some point in their lifetime. Self-harm is more prevalent in younger age groups, in females, and in people who identify as Aboriginal or Torres Strait Islander.

Although most people who engage in self-harm will not present to the emergency department, those who do are at heightened risk of repeated episodes of self-harm and suicide. In addition, retrospective research has found that 15.0% of individuals who take their own lives have presented at an emergency department for self-harm in the year prior to their death. Emergency departments therefore pose a crucial opportunity for intervention, and improving the care received by people following an episode of self-harm and/or a suicide attempt is a key national priority under Australia’s National Suicide Prevention Strategy and is also specifically highlighted in most state and territory’s suicide prevention strategies.

Although rates of self-harm in the community and in hospital admissions in Australia have been examined, it is currently unknown what proportion of people presenting at emergency departments for self-harm are actually assessed and/or admitted. Data from the United Kingdom, however, suggests that approximately one-half of the people presenting to emergency departments following an episode of self-harm are admitted and that, in hospitals with dedicated self-harm assessment teams, 60.0% of individuals receive a psychosocial assessment of suicide risk and treatment needs at presentation. In Australia, Hiles and colleagues found that over 90.0% of individuals presenting to emergency departments for self-poisoning were admitted and/or received a psychosocial assessment, although this is likely to be an over-estimate considering that any individual who presents with poisoning, regardless of severity, is assigned a high Triage category necessitating immediate assessment and treatment. Given that receiving a psychosocial risk/needs assessment has been associated with lower incidence of repetition of self-harm, it is concerning that not all presentations are assessed in Australia.

The period following discharge from hospital, emergency departments, and/or psychiatric inpatient services is one of the most high-risk periods for individuals who self-harm, with suicide rates peaking between one week and one month following discharge. As such, the delivery of effective interventions during this period is also crucial. A range of interventions designed to provide support to people at this time have been developed and evaluated, including postcard interventions, phone calls, and digital interventions. However, there is limited robust research into the effectiveness of these interventions.

The aim of this document is to synthesize the available evidence in order to ensure that future developments in the management of people who present to the emergency department for self-harm are based on the best available evidence. To this end, a series of three rapid reviews were conducted to:

1. Review existing monitoring systems for self-harm presentations to the emergency department;
2. Review studies regarding the assessment of these individuals; and

These are presented below in three chapters. Each chapter includes a brief introduction, the methodology employed, a summary of the results, and a brief summary discussion. A final chapter synthesizes the findings from each review into one discussion and set of recommendations to guide the future development of responses to reduce self-harm repetition and/or suicide in the period following discharge from hospital, emergency service departments, and/or psychiatric inpatient services.
Chapter Two: Identifying emergency department presentations for self-harm

Introduction

The identification of people who present to emergency departments with self-harm provides an important opportunity to provide support and/or treatment to this population who are at elevated risk of a range of negative outcomes.

To this end, emergency department monitoring systems have been established in many sites across the United Kingdom (UK), Ireland,25,26 and in one site in Australia located in Newcastle, NSW.20 These systems allow for the collection of real-time data on rates of hospital presentation for self-harm, assessment of the likelihood an individual will re-present at an emergency department, and provide an opportunity to develop and evaluate the effectiveness of interventions designed to improve clinical practice.20,25,27

As noted above in Australia, only one monitoring system has been established to track individuals presenting for deliberate self-poisoning in Newcastle, NSW.20 Currently, no monitoring systems exist in Victoria despite recommendations by the National Institute of Clinical Studies;28 the LIFE Framework;29 the Children’s Rights Report;30 and the Hunter Area Toxicology Service.20

The aim of this review was to examine the evidence pertaining to best practice with regard to the identification of individuals who present to emergency departments with self-harm.

Methodology

Electronic Bibliographic Search

We conducted a rapid review of studies examining emergency department (ED) monitoring systems for self-harm by systematically searching three electronic databases that index literature from a wide range of disciplines including medical science (EMBASE; Medline), and psychology (PsycINFO). All databases were searched from their respective inception dates until 18 August, 2016.

We used a three-tier search strategy to identify eligible studies (Table 1). At the first stage, keywords relating to suicidal ideation, self-harm, and suicidal behaviour were combined. At the second stage, keywords relating to monitoring were combined. At the third stage both sets of keywords were combined with keywords relating to hospital or emergency department settings. Keywords were minimally adapted to the requirements for each database. Wildcards and truncation were also used, where necessary, to increase the sensitivity of the search.

We also reviewed the reference lists of relevant prior reviews (ancestry searching) to identify further studies that may have been inadvertently omitted by the electronic bibliographic search. Those meeting the inclusion criteria were included in the review.
Table 1. Search strategy and number of studies retrieved per database.

<table>
<thead>
<tr>
<th>Tier</th>
<th>Keywords</th>
<th>Number of studies retrieved</th>
<th>EMBASE</th>
<th>PsycINFO</th>
<th>Medline</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Automutilation/ or suicidal behavior/ or Self-injurious behavior/ or self mutilation/ or suicide/ or suicidal ideation/ or suicide, attempted/ or self adj harm* or self adj poison* or self adj cut* or self adj mutilat* or parasuicide or self adj inflicted or self adj injurious or attempted adj suicide or suicidal</td>
<td>98,509</td>
<td>28,649</td>
<td>62,128</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>monitor* or screen* or sentinel or registry or register or surveill*</td>
<td>1,854,222</td>
<td>160,267</td>
<td>1,367,093</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td><em>emergency medicine/ or emergency service, hospital/ or emergency services, psychiatric/ or triage/ or accident adj3 emergency or emergency or hospital</em></td>
<td>523,731</td>
<td>46,394</td>
<td>453,036</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>#1 AND #2 AND #3</td>
<td>747</td>
<td>253</td>
<td>491</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>Limit #5 to English language</td>
<td>710</td>
<td>253</td>
<td>451</td>
<td></td>
</tr>
</tbody>
</table>

Study Inclusion Criteria

No restriction was placed on study design. Studies were therefore eligible for inclusion if they:

1. Were conducted in a Western, English speaking country;
2. Were published since 2000; and
3. Examined emergency department presentations.

Study Exclusion Criteria

The following types of studies were excluded:

1. Studies that focused on treatment, hospital admissions, general mental health concerns, and medical complications;
2. Studies examining retrospective emergency department data for self-harm without a corresponding monitoring system;
3. Studies examining monitoring systems for any injury, not specific to self-harm; and
4. Studies presenting retrospective emergency department data without ongoing monitoring.

Results

Using the electronic bibliographic search strategy outlined in Table 1, we identified a total of 1,414 records, comprising 710 from EMBASE, 253 from Medline and 451 from PsycINFO. Ancestry searching from other previously published reviews and inclusion of studies known by authors yielded an additional 52 records.

After removing duplicated records, this figure was reduced to 936. Once the abstracts and titles of these records were reviewed, a further 869 records were excluded as they were not relevant to the use of monitoring systems in identifying self-harm presentations at emergency departments. A further 22 records were excluded when the full text was reviewed as they did not meet criteria for inclusion in this review. This left a total of 45 studies eligible for inclusion in this review reporting on four existing registries: the Multicentre
Study of Self-Harm (Oxford, Manchester and Derby, United Kingdom)\textsuperscript{13}; The Irish National Registry of Deliberate Self-Harm\textsuperscript{17}; The Hunter Area Toxicology Service (HATS) Paracelsus database (NSW, Australia)\textsuperscript{20} and; The Bristol Self-Harm Surveillance Register (United Kingdom)\textsuperscript{13}.

The ongoing monitoring systems collect a range of demographic, clinical and service data, as shown in Table 2. Details of the data collection procedures (where available) are described below.

Table 2. Data collected by each of the included monitoring systems.

<table>
<thead>
<tr>
<th>Data collected</th>
<th>Multicentre Study of Self-Harm*</th>
<th>Irish National Registry of Deliberate Self-harm</th>
<th>Hunter Area Toxicology Service (HATS)</th>
<th>Bristol Self-harm Surveillance Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sociodemographic information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Self-harm/clinical information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Presentation details</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Drug and alcohol use</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Psychiatric information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Problems contributing to self-harm</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment/Admission</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Repetition</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Includes data from one hospital in Oxford, two in Leeds and three in Manchester in the United Kingdom.

**Multicentre Study of Self-Harm**

The UK-based Multicentre Study of Self-Harm was originally launched in 2000 as a collaboration between one hospital in Oxford, three in Manchester, and two in Leeds. These hospitals were selected to provide ethnic and socio-economic diversity and to more closely mirror the demographics of the broader UK population.\textsuperscript{25} This database therefore combines data from three monitoring systems:

1. The Oxford Monitoring System;
2. The Manchester Self-Harm Project, and;
3. The Leeds Registry.
Information from all of these sites is collected using a standard form, completed by psychiatric nurses and/or trained research assistants, for all persons presenting to the emergency departments of any one of the six participating hospitals following an episode of self-harm and/or attempted suicide. Using a unique identifier (NHS number), data from these three monitoring systems can also been linked to information on causes of death through the Central Health Register Inquiry System in the UK and Wales to track long-term outcomes following self-harm and/or attempted suicide.

Data from the Multicentre Study of Self-Harm has been used to monitor trends and changes in rates of self-harm and suicide over time in real time. Data from the Multicentre Study of Self-Harm has also been used to evaluate the impact of treatment initiatives and policy changes. Following the introduction of guidelines for the management of self-harm, for example, data from the Multicentre Study of Self-Harm found that the provision of a full psychiatric assessment following an episode of self-harm was associated with a 40.0% reduction in risk of further episodes of self-harm. Data from the Multicentre Study of Self-Harm has also been used to argue for legislative changes to pack sizes for paracetamol and for the withdrawal from sale of the paracetamol/dextropropoxyphene preparation “co-proxamol” after data from the Multicentre Study of Self-Harm suggested increased use of these compounds in deliberate self-poisoning episodes.

The Oxford Monitoring System

The Oxford Monitoring System was established in 1976. This system collects information from all patients presenting to the emergency department with any form of self-harm, regardless of the presence or absence of suicidal intent. It relies upon clinician assessment of whether an injury or poisoning was deliberately self-inflicted. If uncertain, a conservative approach is taken and patients are omitted from the system. The Oxford Monitoring System draws on two sources of data:

1. Assessment data from clinicians, and;
2. Routine clinical records.

Researchers in Oxford stress the importance of useful, relevant data collection by emergency department staff to collect information on non-assessed patients. Within this system, episodes are able to be linked, allowing for tracking of repeat presentations. Individual patient identifiers are also used to link hospital and mortality data.

On a daily basis clinical data are recorded on data sheets, which are then coded and entered into a computerised database. Non-assessed patients are identified via case notes within their computerised emergency department record.

The Manchester Self-Harm Project

The Manchester Self-Harm Project was established in 1997 and spans the emergency departments of three hospitals in Manchester. In each hospital, a standard brief assessment form is completed for each presenting patient. If an initial psychiatric assessment is conducted, the mental health specialist completes a more detailed assessment form. Patients are identified via examination of computerised emergency department records, which include the information gathered on the assessment forms.

The Derby Monitoring System

Derby’s monitoring system employs a computerised record system, with data from assessments entered directly onto the system by clinicians. Research from the Derby system incorporates data from two hospitals prior to 2009 and then the amalgamation of these hospitals into one from 2009 onwards. Information is collected from assessment records (for assessed patients) or from emergency department records by data collectors to identify cases not assessed.
The Leeds Registry

The Leeds Registry was originally established as part of the Multicentre Study of Self-Harm. This Registry collected data from two emergency departments located in Leeds in the UK. Presentations were identified by researches via searches of the emergency department computer system. Identified patients’ records were then checked. Information stored in the records of the specialist self-harm team and other hospital departments were used to supplement the electronic records. This system is no longer running, however studies conducted as part of the Multicentre Study of Self-Harm with data from Leeds have been included in the review. The last Multicentre study including Leeds was published in 2008.

Bristol Self-Harm Surveillance Register

The Bristol Self-Harm Surveillance Register operates separately from the Multicentre Study of Self-Harm. This register gathers information about all patients presenting for self-harm in one city hospital located in Bristol, UK. Patients are identified using electronic searches of the emergency department attendance records and manual searches of paper records. Details from both sources are then recorded in the register with information to allow tracking of repeat presentations over time.
Irish National Registry

The Irish National Registry was established in 2003 and, as of 2006, includes all emergency departments in Ireland; thereby forming the first national registry of self-harm world-wide. The Irish Registry employs Data Registration Officers who are independent from hospitals, receive standard training, and follow standardised procedures. In each hospital, paper or electronic records of emergency department attendance are checked manually by these officers. High levels of agreement have been found between officers (k = 0.95 – 0.97). The registry currently records data into a customised data entry and electronic transfer system housed on laptops. All episodes of self-harm are recorded regardless of suicidal intent or underlying motive.

Hunter Area Toxicology Service Paracelsus database

The Hunter Area Toxicology Service database was established in 1986 and incorporates psychiatric information from 1996. All presentations to the service, located in Newcastle and the Hunter Valley Area in New South Wales, an episode of self-poisoning are recorded in this database. Data are collected by medical staff on an admission sheet. Resulting data and any additional available information is entered into the database by trained personnel. All patients are admitted at the service, allowing greater time for assessment. To date, this is the only example of a monitoring system in Australia.

Impact of monitoring systems

Establishing monitoring systems has been linked to a number of policy and service-related benefits. For example they have allowed hospitals and researchers to examine the epidemiology of self-harm, timing of presentations, methods used in self-harm, links to early mortality, and repetition rates. This research has supported policy and practice changes and improved our understanding of self-harm. Findings from specific research initiatives into the different monitoring systems are outlined below. The systematic search undertaken for this rapid review identified 41 studies that utilise monitoring system data. The number of peer-reviewed research studies published using data from each monitoring system, in each area of interest is presented in Table 3. Note that some studies covered multiple research areas; as such these are counted in multiple rows.

The systematic search identified 45 studies that utilised monitoring system data. The number of studies published by each monitoring system, in each area of interest is presented in Table 3. Note that some studies covered multiple research areas; as such these are counted in multiple rows.

Epidemiological studies

The systematic search detected 13 studies that examined the epidemiology of self-harm in emergency departments in Ireland, the UK and Australia, which together have added significantly to the body of knowledge in this area.

Data from these studies has consistently reported higher rates of self-harm among females than males. Overall, the prevalence of any type of self-harm in emergency departments in the UK has been found to be between 441 and 587 per 100,000 persons for females; this compares to a range of 285 to 460 per 100,000 persons among males. In Ireland, overall rates range between 237 and 366 per 100,000 persons for females and 171 to 320 per 100,000 persons for males. Given that the Hunter Area Toxicology Service database only includes episodes of self-poisoning thus far, rates for Australia are only available for self-poisoning. Rates of between 162.7 per 100,000 persons for females and 95.4 per 100,000 persons for males have been found, however.

Differences in rates have been found by age, with rates tending to peak in younger age groups for both genders; approximately one-half of all presentations for self-harm are by people aged under 30 years. Irish studies have identified a peak for females aged between 15 to 19 years of between two to three times the overall national rate. For males, rates appear to peak between the ages of 20 to 24 years in Ireland,
with rates between two to four times the overall national rate for males. In the UK, rates have been found to peak before the age of 25.

Table 3. Number and type of research studies conducted by each system

<table>
<thead>
<tr>
<th>Method</th>
<th>Multicentre Study of Self-Harm</th>
<th>Irish National Registry of Deliberate Self-Harm</th>
<th>Hunter Area Toxicology Service (HATS) Paracelsus Database</th>
<th>Bristol Self-Harm Surveillance Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidemiology</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Methods of self-harm</td>
<td>18</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Timing of presentations</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Assessment and treatment</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Repetition</td>
<td>13</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mortality</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>17</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Research from monitoring systems has also explored societal factors and changes on rates of self-harm. For example, rates in Ireland have been found to be higher for areas with increased deprivation (lack of resources, employment and education) and social fragmentation (people living alone, not in relationships). The impact of this appears to vary with age, with deprivation having a greater effect on young people and social fragmentation on older people. The relationship between these factors and rates of self-harm also appears to be modified by type of area, with urban and suburban areas experiencing greater self-harm in response to these factors than rural areas. Similarly, rates in Manchester and Derby significantly increased during the recent 2008 global economic recession, the authors primarily attributed this to associated employment changes, especially amongst young people.

Methods of self-harm

Monitoring systems have allowed for tracking of self-harm methods used prior to presentation at emergency departments. A total of 22 studies indicate that, overwhelmingly, presentations tend to involve self-poisoning across existing English and Irish monitoring sites. Poisoning tends to be reported by around 80.0% of presentations in England (ranging from 74.6% to 89.3%). In Ireland, proportion of presentations with poisoning is slightly lower, ranging from between 68.0% to 70.4%.

Substances used in self-poisoning include minor tranquilisers or benzodiazepines, paracetamol and antidepressants. Proportion of self-poisoning presentations using these substances appears to vary by country. In Ireland, minor tranquilisers are most common (40.0 to 45.8%) followed by paracetamol (21.0 to 24.7%) and antidepressants (22.0%). In the UK, paracetamol is the most common substance used (31.0 to 52.9% of presentations), followed by antidepressants (21.0 to 24.5%) and minor tranquilisers (12.4 to 14.0%). In Australia, minor tranquilisers appear to be most common (33.0%), followed by paracetamol (28.0%) and antidepressants (27.0%). Authors examining the substances used in self-poisoning have noted that rates of self-poisoning using prescription medication usually parallels prescribing rates. For example, as rates of antidepressants prescribing increased so did the use of them in self-poisoning.

The second most commonly used type of self-harm found across locations is self-cutting, which has been identified in between 7.6 to 17.5% of presentations in English studies. Rates in Ireland were slightly higher and showed significant differences between males (16.0 to 21.4%) and females (10.4 to 15.1%).
The third most prevalent type of self-harm across studies is a mixture of self-injury and self-poisoning. This tends to occur in around 4.0% (3.1 to 5.1%) of presentations with rates appearing to be similar across the UK and Ireland. Other methods of self-harm were recorded by a minority of studies and tended to include methods such as hanging or head banging.

Methods used in self-harm were found to be related to gender, with a greater proportion of females using self-poisoning and males using self-injury. In addition, males tended to use alcohol around the time of the self-harm act more frequently than females.

Timing of emergency department presentation

Ongoing monitoring has allowed sites to track timing of presentations to inform staffing needs. Six studies have demonstrated that patients tend to present with self-harm and/or a suicide attempt outside business hours (9am to 5pm) with peaks in the early hours of the morning. This is particularly the case for patients with alcohol use, who tend to present during this time and more often on Sunday and Monday. Conversely, presentation rates tend to be lower on Saturdays and during the summer months.

Assessment and treatment

Results of 17 studies indicate that hospitals with self-harm monitoring systems in place primarily used psychosocial assessments to determine a range of clinical, sociodemographic, and historical factors that may impact a patient’s recovery. These assessments also provide an opportunity to gather data for research. They commonly also incorporate a measure of suicidal ideation such as the Suicidal Intent Scale (SIS). Overall, research examining current practices has found large variability between rates of patients receiving a psychosocial assessment from 41.1 to 93.0%, depending on admission procedures.

This variability also appears to be related to patient characteristics. Patients have been found to be less likely to receive an assessment if they present for self-cutting. Conversely, patients with self-poisoning are more likely to be assessed. Other factors found to be related to provision of psychosocial assessment include:

- Being admitted to a medical and/or psychiatric ward;
- Being female;
- Using both self-injury and self-poisoning;
- Being older than 55 years;
- Currently receiving psychiatric treatment; or
- Used an antidepressant in self-poisoning.

Patients less likely to be assessed presented outside of business hours, were seen to be uncooperative or difficult in the emergency department, and were aged between 20 to 34 years.

Research has also examined treatment and follow up care provided to patients who have self-harmed. Admission rates to general medical wards in the UK varied from 39.0% to 61.2% in four studies. In Australia, the Hunter Area Toxicology Service admits all patients presenting for self-poisoning to allow time for a thorough psychosocial assessment once the effects of ingested substances have reduced. Excluding those who self-discharged prior to treatment, their admission rate is 95.7%. Medical treatment provided to patients appears to vary by gender, age, means of arrival to the emergency department, comorbid alcohol use, and region. Similarly, outpatient referrals were less likely for patients without a fixed abode and those who had used self-injury other than cutting (e.g. jumping off high places, hanging, head banging). Thus far, research suggests that there is little association between the type of management a patient receives in an emergency department and subsequent repetition.
Repetition rates

Results of the search identified 19 studies examining rates of repetition. A systematic review and meta-analysis of repetition rates was conducted in 2014 identified the risk of repetition as 16.3% within one year of discharge, 16.8% within two years of discharge, and 22.4% within five years of discharge. Similar results were identified in individual studies, ranging from 13.6% to 30.0% presenting again at an emergency department within one year. Perry and colleagues noted that in Ireland, a small proportion of patients (1%) presented at least 10 times and accounted for 11% of overall presentations.

Risk factors for repetition identified by these studies included past suicidal behavior, current or past psychiatric treatment, being unemployed or registered unwell, presenting with self-injury or a combination of methods, current alcohol misuse, having ongoing suicidal plans, having hallucinations, being unmarried, living in an area with a greater proportion of persons of Caucasian ethnicity, having no fixed abode, and being psychiatrically admitted or referred for specialist mental health follow up at first presentation. Multivariate analysis of factors that may influence repetition rates found that for males, repetition was significantly more likely if they had a history of self-harm, a criminal record, or problems with alcohol. For females, risk was increased with a history of self-harm, a personality disorder diagnosis, current psychiatric treatment, or problems with alcohol.

It was noted that within a year, a third of patients presenting with self-harm changed the method used at subsequent presentations and one fifth of patients who initially presented with self-cutting presented again having used a method of self-harm with high lethality.

Risk of repetition was associated with having had a psychosocial assessment at English monitoring sites. For patients without a history of psychiatric treatment, the risk of a repeat episode was 51.0% lower for those who were assessed when controlling for age, gender, method, history of self-harm and location differences. For patients with a psychiatric treatment history, the risk of repetition was 26.0% lower for those who were assessed. Similar results were found by Kapur and colleagues, with a 40.0% reduction in risk of repetition if assessed. However, these results were only found in two out of three study locations. No significant impact was found for the third location.

Mortality

Monitoring systems have allowed for linkage with coroner’s reports and estimations of suicide rates after self-harm. The search identified 10 studies, conducted in the UK and Ireland that linked self-harm presentation to suicide deaths. Carroll and colleagues conducted a systematic review of mortality research for this population and found a pooled estimated incident rate of 1.6% at one year of discharge, 2.1% at two years of discharge, 3.9% at five years and 4.2% at ten years of discharge. Within the first year, results were higher for males (2.7% vs 1.2% for females) and older patients (2.4% vs 1.1% younger patients). Similar rates were found in an English longitudinal study, tracking patients for 15 years after presenting at an emergency department. Death by other causes has also found to be elevated in patients who have self-harmed, at three times the expected rate with approximately 30 years of life lost for both genders.

Compared to expected rates of suicide, young patients presenting to hospital for self-harm have been found to have a 10.5 times excess rate of suicide. For males, the single most significant risk factor for subsequent suicide was a history of self-harm and, for females, a history of self-harm and of psychiatric treatment.

Overall, rates of suicide for those presenting with self-harm have been calculated to be 371 per 100,000 persons. This rate is 34 times the age standardized rate for the UK (50 times higher for females and 29 times higher for males). Exploration of related factors found that risk of subsequent suicide was increased for patients not living with relatives and avoiding discovery at the time of self-harm. Interaction effects identified a significant relationship between suicide and alcohol misuse or past psychiatric treatment for patients under 35 years.

In Australia, a comparison of self-poisoning patients who subsequently took their own lives and a matched cohort did not identify any variables that independently predicted suicide. However, repeat presentations
using at least 70 tablets more than at initial presentation and a greater degree of coma on presentation was the best predictor of subsequent suicide. Similarly, research conducted in Leeds found those who were drowsy or unconscious at initial self-harm presentation were at greater risk of subsequent suicide. This research also found that self-cutting, urgent care provided at presentation and admission to hospital were associated with subsequent suicide. Finally, studies with shorter follow-up periods have also associated having no fixed abode, using hanging, living in an urban area (for older adults) and repeating self-harm (for females) with an elevated risk of suicide.

Impact on policy and practice

Research emerging from monitoring sites has provided insight into the health implications of socio-economic changes, management of staffing, improving services and policies.

In addition, ongoing monitoring and associated service changes have reduced costs and bed stays. For example, in Australia, implementing admission and psychosocial assessment for all patients and contact with a multidisciplinary central team has resulted in 518 bed days and $467,950 saved per year compared to other Australian hospitals.

This type of monitoring can help to fill the gap in knowledge between community samples, admission rates and suicide rates, providing more opportunities for intervention.

Comparison of national emergency department admission data in the UK and multicentre monitoring data found that the national prevalence estimates are approximately 60% below actual presentation rates.

Finally, as shown in the following chapter, monitoring systems provide an opportunity to audit practice and patient outcomes before and after service changes such as implementation of protocols or standardised assessments.

Discussion

Examination of the literature showed four established systems of monitoring self-harm presentations to emergency departments that are currently in operation. These systems are:

1. The Multicentre Study of Self-Harm (Oxford, Manchester and Derby);
2. The Bristol Self-Harm Surveillance System;
3. The Irish National Registry of Self-Harm, and;
4. The Hunter Area Toxicology Service based in Newcastle, Australia.

These systems routinely collect data on self-harm presentations, their treatment and the patients’ sociodemographic characteristics, psychological history and any repetition of self-harm. Together they have allowed for service development, policy change and clinical improvements.

As a result of these systems, research has been conducted into epidemiology, method of self-harm, timing, assessment and treatment, repetition rates, and mortality.

Epidemiology

The establishment of continually active monitoring systems has allowed researchers, services and clinicians to assess population-level rates and changes. This provides valuable insight into an under-researched area, providing information regarding the relationship between known suicide rates, hospital admission data and self-reports in the community. Although work has previously suggested that many patients with self-harm are not admitted to hospital and/or psychiatric services, this work has been limited owing to failure to systematically collect this information. Collecting emergency data on this scale therefore provides opportunities for change and support on a systemic level. For example, by understanding that rates of self-
harm increase during periods of economic disadvantage and unemployment, services can prepare for an increase in patients during a recession or provide additional support to buffer these effects. Collecting this information has also enabled examination of the risk factors for emergency department treated self-harm and provide insight into the types of patients most in need of support or treatment.

Method of self-harm

Examining methods used in self-harm has highlighted that across sites, self-poisoning is the most common method used followed by self-harm and a combination of both methods. Exploration of the specific means has identified patterns in presentations, such as increases in self-poisoning by prescription medications that mirror increases in prescribing patterns. This research has also allowed for examination of demographic differences between patients presenting with various types of self-harm and the relative associated risks.

Timing of presentations

Continually active monitoring systems, which can enable near real time tracking of changes in the timing of self-harm presentations, has led to the identification of peak periods, commonly outside business hours, in the early hours of the morning. Patterns have also been found that link increases to presentations accompanied by alcohol use, age or means of self-harm. This has the potential to influence service planning and staffing, ensuring that emergency departments are appropriately staffed at the busiest times. This in turn could influence the proportion of patients assessed, care provided and referrals made.

Assessment and treatment

A large variability in the proportion of patients receiving a psychosocial assessment was found across sites. This difference was primarily attributable to differing service protocols and patient characteristics. In a hospital with a protocol governing admission of self-harm patients, almost all patients were assessed. This led to reduced bed days and substantial financial saving. In most hospitals, this is not general practice and patients who do not need to be medically admitted are typically discharged home.

Patient characteristics were also found to be related to likelihood of receiving a psychosocial assessment with those who had engaged in self-cutting, were perceived as difficult by staff, were younger, or had presented outside of business hours less likely to be assessed. Unfortunately, much epidemiological work suggests that these patients groups are at an elevated risk of repetition of self-harm and subsequent suicide. Failure to assess these patients means that opportunities to intervene are reduced.

Repetition rates

Reported rates of repetition were variable, however, a meta-analysis identified that 16.3% of patients present to an emergency department again after self-harm. It was also noted that a small proportion of patients (1.0%) present many times, and account for a substantial proportion of the overall number of presentations (12.0%). These rates suggest that repetition of self-harm is reasonably common and that early intervention is needed to reduce re-presentation. Repetition rates were also found to be linked to a variety of both stable and modifiable factors. Identification of these factors opens up the possibility of intervention and systematic approaches to self-harm prevention. For example, referring patients who have self-harmed and who are at increased risk of suicide due to drug and alcohol or housing issues, may help to reduce the risk of future harm.

It was also noted that contradictory results were found with regard to the impact of psychosocial assessments on subsequent self-harm. Although it is currently inconclusive whether these psychosocial assessments reduce repetition, thorough assessment provides an opportunity for referral to relevant services that may be able to assist with managing risk factors. This is discussed in more detail in Chapter Three below.
Mortality

Finally, standardised systems of monitoring have also allowed for linkage of patients who present with self-harm to coroner’s data to investigate mortality rates in those who engage in self-harm and/or attempted suicide. This has identified that people who self-harm are at an increased risk of death by suicide at a rate 34 times the expected general community rate. They have also been found to be at an increased risk of premature death by other causes, with an estimated 30 years of life lost per person. These results highlight the risks associated with self-harm and the opportunity that emergency department presentations provide to intervene.

In summary

This chapter has summarised those systems that currently exist for the identification of people who have presented for self-harm to emergency departments. These systems have led to a range of benefits including improved understanding of prevalence and service need, identification of risk factors for future self-harm, assessment of the impact of management strategies and increased knowledge of mortality post self-harm. It is important to note that only one monitoring system exists in Australia and it collects data on self-poisoning presentations only; this is the Hunter Area Toxicology Service database located in New South Wales. However, a second system is currently in development in the North-West region of Melbourne, Victoria. This work is led by Orygen.

The World Health Organization (WHO) has recently developed a practice manual for establishing and maintaining monitoring systems for self-harm.25 This manual outlines processes for ensuring complete case ascertainment and emphasises the importance of staff involvement and engagement. It also provides recommendations for core variables which include patient demographics, timing and type of self-harm and, whether the patient was assessed and/or admitted. Additional variables that ideally should also be collected include: mental health history, suicide intent, socioeconomic information and current concerns that the individual has presented with. Where possible this should be supplemented with hospital admission data and mental health records where appropriate. Some of these variables are particularly important in the Australian context. For example ethnicity has not routinely been well recorded in Australian systems despite the elevated risk in our Indigenous population. Monitoring systems provide an important opportunity to rectify this and improve data collection and recording mechanism for all Australians.

Adoption of the WHO practice guidelines provides an opportunity to standardize data collection and form linkages between systems. This could allow for tracking of presentations by the same individuals at different hospitals as well as linkages with other national and state datasets such as mortality databases. Emergency departments introducing monitoring systems are likely to need adequate resources and support from research staff. Partnerships with research institutions have been used internationally to support these systems and avoid burdening busy emergency department staff.

Overall, robust monitoring systems to identify people who present for self-harm can be used to improve understanding of the needs and care of this population and to provide a foundation for service evaluation and improvement. Identification of people at risk, however, is only one part of the process. The next key step is to ensure people get robust psychosocial assessment to evaluate their needs and provide appropriate treatment. Best practice with regard to assessment of risk is discussed in Chapter Two below.
Chapter Three: Assessment of patients who have self-harmed in the Emergency Department

Introduction

Psychosocial assessment on presentation to hospital for self-harm is a key component of effective clinical management. As outlined in Chapter Two of this document, however, many people who present to the emergency department for self-harm do not receive a robust assessment. Moreover there is a lack of research providing rigorous data regarding the exact proportion of individuals presenting to the emergency department who do and do not receive an assessment.

For those who do receive an assessment, there is often variation in the particular psychosocial assessment tools used and uncertainty exists regarding the best scales for evaluating risk of repetition. Indeed a recent review asserted that in fact no risk assessment scale in particular can be recommended for routine clinical use, and all scales should be used in combination with more thorough clinical assessment.

The purpose of this review was to identify and examine studies that have investigated what proportion of people who have presented to the emergency department with self-harm receive an assessment, as well as studies examining the effectiveness of assessment and screening tools.

Methodology

Electronic Bibliographic Search

We conducted a rapid review of studies examining assessment in the emergency department of patients presenting with self-harm or suicidal ideation by systematic searching three electronic databases that index literature from a wide range of disciplines including medical science (EMBASE; Medline), and psychology (PsycINFO). All databases were searched from their respective inception dates until 18 August, 2016.

We used a three-tier search strategy to identify eligible studies (Table 4). At the first stage, keywords relating to suicidal ideation, self-harm, and suicidal behaviour were combined. At the second stage, keywords relating to assessment and screening were combined. At the third stage both sets of keywords were combined with keywords relating to hospital or emergency department settings. Keywords were minimally adapted to the requirements for each database. Wildcards and truncation were also used, where necessary, to increase the sensitivity of the search.

We also reviewed the reference lists of relevant prior reviews (ancestry searching) to identify further studies that may have been inadvertently omitted by the electronic bibliographic search. Those meeting the inclusion criteria were included in the review.

Study Inclusion Criteria

Studies were included if they:

1. Were conducted in a Western, English speaking country;
2. Were published after 2000; and
3. Were set in an emergency department/s.
Table 4. Search strategy and number of studies retrieved per database.

<table>
<thead>
<tr>
<th>Tier</th>
<th>Keywords</th>
<th>EMBASE</th>
<th>PsycINFO</th>
<th>Medline</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Automutilation/ or suicidal behavior/ or Self-injurious behavior/ or self mutilation/ or suicide/ or suicidal ideation/ or suicide, attempted/ or self adj harm* or self adj poison* or self adj cut* or self adj mutilat* or parasuicide or self adj inflicted or self adj injurious or attempted adj suicide or suicidal</td>
<td>98,408</td>
<td>41,972</td>
<td>62,068</td>
</tr>
<tr>
<td>#2</td>
<td>Measurement/ or individual testing/ or psychological assessment/ or questionnaires/ or risk assessment/ or assess* or screen* or risk or risk adj assess* or assess* adj risk or psychosocial adj assessment</td>
<td>555,607</td>
<td>110,046</td>
<td>207,748</td>
</tr>
<tr>
<td>#3</td>
<td><em>emergency medicine/ or emergency service, hospital/ or emergency services, psychiatric/ or triage/ or accident adj3 emergency or emergency or hospital</em></td>
<td>203,777</td>
<td>21,439</td>
<td>68,545</td>
</tr>
<tr>
<td>#4</td>
<td>#1 AND #2 AND #3</td>
<td>518</td>
<td>172</td>
<td>155</td>
</tr>
<tr>
<td>#5</td>
<td>Limit #5 to English language</td>
<td>473</td>
<td>163</td>
<td>144</td>
</tr>
</tbody>
</table>

Study exclusion Criteria

No restriction was placed on study design. The following studies were excluded:

1. Studies that focused on treatment, hospital admissions, general mental health concerns, and medical complications; and
2. Studies examining individual factors related to self-harm but not the assessment process.

Results

Using the electronic bibliographic search strategy outlined in Table 4, we identified a total of 780 records, comprising 473 from EMBASE, 144 from Medline, and 307 from PsycINFO. Ancestry searching from other previously published reviews yielded an additional five records.

After removing duplicated records, this figure was reduced to 619. Once the abstracts and titles of these records were reviewed, a further 579 records were excluded as they were not relevant to the assessment following presenting for self-harm to an emergency department. A further 16 records were excluded when the full text was reviewed as they did not meet criteria for inclusion in this review. This left a total of 24 studies eligible for inclusion in this review.

Included studies spanned three areas: psychosocial assessment, risk assessment/ screening and, audits of current practice.

Studies examining psychosocial assessment following self-harm (n=9) identified that the proportion of patients with self-harm receiving an assessment varied by hospital and patient’s sociodemographic and clinical characteristics. Research also identified the impact of psychosocial assessment on rates of repetition. Results are presented in Table 5.
Eight studies examined risk assessment and screening following self-harm. These studies tested the utility of the Manchester Self-Harm Rule, ReACT rule, SAD PERSONS, Patient Safety Screener, Self-Injury Questionnaire and a battery of screening measures. For the most part these studies examined the sensitivity and specificity, as well as the positive predictive value of the various screening tools in order to assess how effective they were in terms of accurately being able to identify those people genuinely at risk of repetition. Results are presented in Table 6.

Finally, seven audits of current practice were identified. These studies reported on the different measures used, the quality of assessment, and the use of protocols in the emergency department. Results are shown in Table 7.
Table 5: Psychosocial assessment of patients who have self-harmed (n=9)

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Number of ED presentations for self-harm, (% female)</th>
<th>Results</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barr et al, 2005</td>
<td>UK</td>
<td>n = 4,329 (52.4% female)</td>
<td>Examined all self-harm presentations over a five-year period. At first presentation, <strong>54.1% received a psychosocial assessment</strong> from a psychiatrist, psychiatric liaison nurse or both. Significant differences were found between patients who were assessed and those who were not. Assessed patients were older (mean age 35.6yrs vs 33.24yrs), used poisoning as a means of self-harm, lacked social support, had known mental health problems, current alcohol problems or had past contact with mental health services. Patients receiving an assessment on their first presentation were no more or less likely to make a single repeat presentation. However, those presenting for three or more episodes were less likely to have been assessed on their first episode.</td>
<td>Used routinely collected data, limits scope.</td>
</tr>
<tr>
<td>Bennewith et al, 2005</td>
<td>UK</td>
<td>n = 2,780 (54.5% female)</td>
<td><strong>A psychosocial assessment was conducted for 59% of episodes.</strong> Where a reason for no assessment was documented, 57% left before completion of treatment, 43% the patient was discharged before assessment. Of discharged patients, advice of mental health services was sought for approximately a third of presentations, for another 14.1% there was consideration of risk factors. For 13.6% of episodes, patients were discharged with no reason provided. Patients who self-discharged were more likely to be male, using drugs or alcohol, attending outside office hours and not being admitted to hospital. Patients discharged without an assessment were more likely to be younger (under 45 years), not report any previous self-harm and not admitted to a hospital bed.</td>
<td>None listed</td>
</tr>
<tr>
<td>Bergen et al, 2010</td>
<td>UK</td>
<td>n = 13,966 (58.2% female)</td>
<td>More than half of the sample received a psychosocial assessment upon first presentation. <strong>For patients with no history of psychiatric treatment, the risk of a repeat episode was 51% lower for those who were assessed.</strong> This result controlled for age, gender, method, history of self-harm and location differences. <strong>For patients with a history of psychiatric treatment, the risk of repetition was 26% lower for those assessed,</strong> with the same variables controlled for. Patients with a history of self-harm were 55% more likely to have a repeat episode than those without. Patients with no previous history of self-harm or psychiatric treatment were least likely to repeat within 100 days (11% of non-assessed patients, 6% of assessed). <strong>The most likely to repeat were those with a history of self-harm and psychiatric treatment. Of these patients, 36% of these patients who weren’t assessed repeated within 100 days and 28% who received an assessment.</strong></td>
<td>Lack of diagnostic information. Determined history of self-harm from past data (last 3 years), which excludes self-harm that was not treated in a study ED. Some missing data in history of psychiatric treatment.</td>
</tr>
<tr>
<td>Hickey et al, 2001</td>
<td>UK</td>
<td>n = 246 (56.5% female)</td>
<td>Examined characteristics of patients leaving the ED without a psychosocial assessment. Of those who presented for self-harm and were not admitted during the study period, 41.1% had a psychiatric assessment. Patients were less likely to be assessed if they were aged 20 – 34 years or male. At first episode, non-assessed patients were</td>
<td>Inability to get full follow-up information from GPs. Unable to match for other possible</td>
</tr>
</tbody>
</table>
Significantly more likely to have a history of self-harm, presented for self-injury, presented outside business hours, showed difficult behaviour in the ED, and were uncooperative with physical examination or treatment and to have left before physical treatment could be completed. Non-assessed patients were also significantly less likely to have any further healthcare arrangements beyond a letter to their GP. During the follow up period, three times as many non-assessed patients had a further episode of ED treated self-harm than matched assessed patients. In addition, significantly more non-assessed patients accessed outpatient treatment in the following year.

### Hurry & Storey, 2000

**UK**  
**n** = 107 hospitals

Surveyed psychosocial assessment practices in EDs. Most hospitals (84%) reported that young people presenting for self-harm were usually assessed. However, **specialist assessment was standard procedure in only 44% of hospitals**. In two thirds of hospitals, specialist assessment was conducted by a psychiatrist. Case notes reviewed showed that 42.5% of young patients received a specialist assessment in the ED or the ward. Young patients who were admitted were significantly more likely to be assessed than non-admitted patients. The presence of a specialist self-harm team did not significantly impact rates of assessment. Similarly, the presence of guidelines did not impact rates of assessment. Conversely, hospitals with psychiatric departments were more likely to provide specialist assessment to young patients. Most hospitals provided psychosocial assessment conducted by a non-specialist staff member. Quality of these assessments were compared to those conducted by specialist staff. General staff were significantly less likely to assess a patients’ psychiatric history, mental state, social situation, precipitating event, severity of intent or risk of repetition. Patients with suicidal intent, at risk of subsequent attempts, past psychiatric care or depressive symptoms were more likely to be assessed by a specialist. Conversely, young patients using street drugs were significantly less likely to be seen by a specialist.

### Kapur et al, 2002

**UK**  
**n** = 604 (54.6% female)

Patients who had not received a psychosocial assessment were significantly more likely to present again for self-poisoning within a year than those assessed when controlling for history of self-poisoning, psychiatric history, substance dependence, gender, age, lethality and self-discharge from hospital.

### Kapur et al, 2008

**UK**  
**n** = 7,344 (57% female)

Proportion of patients receiving a psychosocial assessment varied by hospital, ranging from 42% to 71%. Sociodemographic factors associated with a significantly increased likelihood of receiving an assessment were female gender, older age (above 55 years), employed or registered sick/disabled. Clinical characteristics associated with an increased likelihood of receiving an assessment were current psychiatric treatment and admission to a medical ward. Conversely, patients who had used self-cutting, presented out of business hours or self-discharged were significantly less likely to receive an assessment. For patients who had self-poisoned, those who had used antidepressants for self-harm were significantly more likely to be assessed. Use of paracetamol or benzodiazepine did not impact assessment rate. **Provision of a psychosocial assessment did not significantly impact upon confounding variables. Uncertain about the generalisability of results.**

Relied on case notes for information about patient characteristics. Lacked detailed data on the process of specialist assessment. No measure of patient outcomes. Restricted to one area of the UK. Short follow up period. Did not identify repetition outside of a hospital context. Some data more likely to be gathered for assessed patients. Caution needed in generalising to other locations. Did not control for differences between those assessed and non-assessed.
Compared psychosocial assessment of older and younger patients who had self-harmed. Older patients were less likely to have self-harmed in the past or to have past or current contact with mental health services. This may be due to a greater degree of missing data for older patients. Older patients were more likely to be admitted to hospital. A significantly higher proportion of older patients received a psychosocial assessment compared to younger patients. Age differences were found when the older age bracket was broken into smaller intervals. Patients older than 65 years were significantly more likely to be assessed than the younger age group or those aged 55 – 64 years. Attendances for self-poisoning were more prevalent in the older age group than younger patients. Of patients who had self-poisoned, older patients were significantly more likely to be assessed than younger patients. Older patients were significantly more likely to be offered psychiatric aftercare than younger patients. Of those offered aftercare, older patients were significantly more likely to attend appointments.

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>n</th>
<th>Gender</th>
<th>Psychosocial Assessments</th>
<th>Aftercare</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marriott et al, 2003</td>
<td>UK</td>
<td>266 (53.8% female)</td>
<td></td>
<td>Compared psychosocial assessment of older and younger patients who had self-harmed. Older patients were less likely to have self-harmed in the past or to have past or current contact with mental health services. This may be due to a greater degree of missing data for older patients. Older patients were more likely to be admitted to hospital. A significantly higher proportion of older patients received a psychosocial assessment compared to younger patients. Age differences were found when the older age bracket was broken into smaller intervals. Patients older than 65 years were significantly more likely to be assessed than the younger age group or those aged 55 – 64 years. Attendances for self-poisoning were more prevalent in the older age group than younger patients. Of patients who had self-poisoned, older patients were significantly more likely to be assessed than younger patients. Older patients were significantly more likely to be offered psychiatric aftercare than younger patients. Of those offered aftercare, older patients were significantly more likely to attend appointments.</td>
<td></td>
<td>None reported</td>
</tr>
<tr>
<td>Russell et al, 2010</td>
<td>UK</td>
<td>675 (56.4% female)</td>
<td></td>
<td>Psychosocial assessments were conducted by psychiatrists in 25% of first episodes and by community psychiatric nurses in the remainder of cases. Psychiatrists and psychiatric nurses differed in the aftercare they offered to patients. Psychiatrists were three times more likely to admit patients for psychiatric inpatient care and more likely to use statutory community services. Nurses were more likely to refer to voluntary services. Approximately a third of assessed patients repeated within the follow up period (1 year – 2.5 years).</td>
<td></td>
<td>Non-experimental design. Did not include patients who left hospital before assessment.</td>
</tr>
</tbody>
</table>
Table 6. Risk assessment and screening in the emergency department (n=8)

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Participants</th>
<th>Screening Tool/ Risk Rule</th>
<th>Study Aims</th>
<th>Results</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper et al, 2006</td>
<td>UK</td>
<td>9,086 patients presenting to ED for self-harm</td>
<td>Manchester Self-Harm Rule</td>
<td>Examined the utility of the Manchester Self-Harm Rule in identifying patients at risk of repetition of self-harm</td>
<td>Of all treated episodes, 77% received an assessment. Assessments were conducted by ED clinicians for 51.8% of episodes and by psychiatric staff for 39.5% of episodes. Assessment was completed by both disciplines for the remaining episodes. The Manchester Self-Harm Rule was applied, assessing patients as high risk if they report any of the following: history of self-harm, previous psychiatric treatment, benzodiazepine use in this episode or current psychiatric treatment. The study identified risk of repetition with a sensitivity of 94% and a specificity of 25%. This indicates that although the majority of true cases were identified, the rule demonstrated a reduced ability to correctly identify patients at lower risk of repetition.</td>
<td>Accuracy of results depends on completeness of database. Patients who used self-cutting maybe under-represented. Results may not apply to those who do not wait for treatment or are treated in the community. Inter-rater reliability was not assessed.</td>
</tr>
<tr>
<td>Petrik et al, 2015</td>
<td>USA</td>
<td>92 ED staff</td>
<td>N/A</td>
<td>Qualitative study of practitioner perspectives of suicide risk assessment in the ED.</td>
<td>Barriers identified to undertaking risk assessments with patients were time pressures, limited privacy, patients’ unwillingness to participate and, communication difficulties with other practitioners. Facilitators of risk assessment were administering questions in a direct and conversational manner, utilising a routine standardised method and, collaborating with other professionals.</td>
<td>Collection of data via an online survey limited the emotional valence conveyed in an interview setting. Sampling method and participant self-selection may limit generalisability.</td>
</tr>
<tr>
<td>Bolton et al, 2012</td>
<td>Canada</td>
<td>4,019 patients presenting to ED for self-harm</td>
<td>SAD PERSONS (SPS) &amp; Modified SAD PERSONS (MSPS)</td>
<td>Assessed and compared the utility of the SPS and MSPS</td>
<td>This study compared patients presenting for general psychiatric difficulties and those presenting for suicide attempts. Sensitivity and specificity reported relate to future suicide attempt presentations within 6 months. Results identified a large false-negative rate, indicative of a failure to detect many cases with an elevated risk of repetition. Specificity was adequate, suggesting that the measures were able to correctly identify patients at lower risk of repetition.</td>
<td>Outcome measure was ED presentations for suicide attempts, may find different predictive value for suicide. Possible that some participants completed suicide. Unmeasured factors may have influenced results</td>
</tr>
<tr>
<td>Boudreaux et al, 2015</td>
<td>USA</td>
<td>951 patients presenting for self-</td>
<td>Patient Safety Screener (PSS), 2 item and 3</td>
<td>Compared the utility of two versions of the</td>
<td>Responses to the Patient Safety Screener two and three question versions were compared to the Beck Scale for Suicidal Ideation (BSSI). Both screens showed high agreement with the BSSI, with the two-item screener exhibiting an overall</td>
<td>Did not gather participants at all hours, biased to daytime presentations. Participants limited to those who were</td>
</tr>
</tbody>
</table>

25
harm (58% female)  item versions  PSS  Kappa of 0.94 and the three-item, an overall Kappa of 0.95. The two and three item screeners were better able to identify lifetime suicide attempt than suicidal ideation. In addition, the three-item screener showed significantly stronger agreement with the BSSI on suicidal ideation.

canada 83 patients presenting for self-harm (51.8% male)  self-injury questionnaire (siq)  assessed the validity of the siq  participants presenting for self-harm completed multiple self-report measures including the self injury questionnaire (siq). results indicate that the siq demonstrated strong consistency between concepts measured ($\alpha = 0.83$). in addition, each of the five siq scales were clearly distinguishable from each other and internally consistent in concept measured. when compared to another measure of suicide intent (the suicide intent scale), results of the siq demonstrated a weak alignment with sis concepts and a weak ability to distinguish between measurement of different concepts. this suggests that while the scale includes items measuring an integrated concept, it is not able to accurately measure this concept or be clearly distinguishable from unrelated concepts.

Canada 157 patients presenting for self-harm (51% male)  battery of scales including: drug and alcohol screening test (dast); manchester self-harm rule (mshr); global severity index (gsi); barrett impulsiveness scale (bis)  evaluated potential predictors of repeat self-harm presentations using a battery of scales  patients presenting for suicidal ideation or self-harm were invited to compete a battery of measures and followed up three months post presentation. significant predictors of future self-harm were: overall barrett impulsiveness scale (bis) and the brief symptom inventory (bsi). within a regression model, the bis overall score and subscales of instability and attentional impulsivity all significantly predicted future self-harm. in addition, the high-risk category of the drug abuse screening test was a positive predictor. these results controlled for patients’ history of self-harm, education, age, and presentation with or without ideation.

UK 126 patients presenting  sad persons  compared the outcomes of  results showed that the sadpersons scale was inadequate for predicting repetition, admission or referral to secondary care. the scale failed to identify healthy enough to participate. consent process informed participants that they would have additional assessment if screened positive. screens validated against the bssi rather than actual behaviour.

Santamaria et al, 2006

Santa Mina et al, 2006

Randall, Rowe and Colman, 2012

Saunders et al, 2013
For self-harm (57% female) patients presenting for self-harm based on SADPERSONS scores in high and low-moderate risk ranges, 4/5 self-harm patients requiring admission, half requiring referral and 93% of those who went on to repeat self-harm. Overall, self-harm presentations were referred to the service for assessment.

<p>| Steeg et al, 2012 | UK | 18,680 patients presenting for self-harm | ReACT Self-Harm Rule | Developed and tested a new clinical decision making rule | The ReACT Self-Harm Rule evaluates recent self-harm (within a year), living alone or homelessness, cutting as a method and treatment for a current psychiatric disorder. The presence of one or more of these factors indicates a higher risk of repetition in the next 6 months. Similar specificity and sensitivity were found for both genders and all ages. Overall, the ReACT Self-Harm Rule was able to correctly identify the majority of patients at risk of future self-harm or suicide but also incorrectly classified patients at low risk of repetition as high risk. It was noted that it more accurately discriminated low-risk patients aged under 35 years than older patients. Comparison with the Manchester Self-Harm Rule indicated that ReACT had a greater ability to detect low-risk patients. | Didn’t differentiate between types or severity of cutting. |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Participants</th>
<th>Assessment type</th>
<th>Study aims</th>
<th>Results</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper et al, 2007</td>
<td>UK</td>
<td>8,825 patients presenting for self-harm</td>
<td>Clinical risk assessment Manchester Self-Harm Rule</td>
<td>To compare the accuracy of clinical risk assessment compared to the Manchester Self-Harm Rule</td>
<td>Results indicated that the Manchester Self-Harm Rule performed better than the global clinical risk assessment by clinicians and mental health specialists at predicting future risk. This suggests that integration of the rule into clinical assessment could improve the accuracy of assessment.</td>
<td>None reported</td>
</tr>
<tr>
<td>Dennis et al, 2001</td>
<td>UK</td>
<td>2,253 patients presenting for self-harm</td>
<td>Psychosocial assessment with structured checklist</td>
<td>This study described an audit of ED records for patients presenting with self-harm at two time periods, before and after service improvements.</td>
<td>Following the integration of a structured checklist to assess patients, 40.4% of files contained the checklist. It was fully completed in 73% of cases. Significant improvements in documentation were found for consciousness level, psychiatric history, medical history, past self-harm, threats of self-harm, chronic alcohol use, illicit drug use, suicide intent and risk of further self-harm. Between audit dates, there was also a significant increase in rates of assessment (16.5% to 26.5%) and admission to psychiatric inpatient wards.</td>
<td>Not known if improving assessment of patients with self-harm improves outcomes.</td>
</tr>
<tr>
<td>Hughes &amp; Kosky, 2007</td>
<td>UK</td>
<td>100 randomly selected files of patients who had presented for self-harm</td>
<td>Assessment pro forma</td>
<td>Audit of assessment and treatment of patients presenting with self-harm at two time periods, before and after service improvements.</td>
<td>After an initial audit, an assessment proforma was developed and added to clinical note templates. At the second time point, files demonstrated greater documentation of capacity to consent, willingness to stay for treatment, obvious mental illness, Australian triage tool used, patient mood and, medical and psychiatric history. In addition, fewer patients were discharged without being seen by a specialist and fewer patients self-discharged. A greater proportion of patients also received a risk assessment.</td>
<td>Unclear if patients included in the audit are representative of the population. Patients studied before and after the pro forma were not matched.</td>
</tr>
<tr>
<td>Lepping et al, 2006</td>
<td>UK</td>
<td>623 patients presenting for self-harm</td>
<td>Assessment pathway</td>
<td>Examined impact of an assessment pathway on administration of assessments</td>
<td>Development of the assessment pathway that involved articulated roles for staff, assessment of patient willingness to wait for assessment, extended risk assessment, psychosocial assessment and referral to their general practitioner or community mental health. Following introduction of the pathway, administration of psychosocial assessments rose from 57% to 85% (over two years). The proportion of assessments conducted within 24 hours also rose and after the pathway, was implemented most were seen by a mental health specialist (92% compared to 59%). After commencement of the assessment pathway, 81% of forms were completed at triage with 6% mostly</td>
<td>Unable to collect data to show an association between the pathway and reduced presentations for self-harm. Data do not allow for follow up for</td>
</tr>
</tbody>
</table>
completed. A further 71% of psychosocial assessments were completed and 10% mostly completed.

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Size</th>
<th>Methodology</th>
<th>Findings</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone &amp; Szmukler, 2002</td>
<td>UK</td>
<td>70 randomly selected files of patients who had presented for self-harm</td>
<td>Comparison of two audits spanning two years, one after doctors received training in risk assessment.</td>
<td>One significant difference found with an increase in assessment of risk of self-harm between the two time points from 14% to 35%.</td>
<td>None reported</td>
</tr>
<tr>
<td>Whyte &amp; Blewett, 2001</td>
<td>UK</td>
<td>100 randomly selected files of patients who had presented for self-harm</td>
<td>Audit of assessments conducted in the ED at two time points: 1994 and 1999.</td>
<td>Between audits, specialist assessments following self-harm significantly improved in all areas including documentation of the act of self-harm, precipitating factors, alcohol use, degree of planning, social circumstances, past psychiatric history, patient’s mental state, ongoing suicide risk and plan of action. There was also a significant improvement in documentation by ED non-specialist staff with increases in documentation of the act of self-harm, whether alcohol was used, past psychiatric history, patient’s mental state and ongoing suicide risk.</td>
<td>Case series are relatively small and researchers were not systematically blinded.</td>
</tr>
<tr>
<td>Quinlivan et al, 2014</td>
<td>UK</td>
<td>32 hospitals</td>
<td>Range of standardised measures and hospital developed protocols</td>
<td>Reviewed scales used by ED staff to assess risk following self-harm</td>
<td>Most hospitals had a protocol for immediate risk assessment on presentation (87.5%). Guidelines for needs assessment were available in 21.7% of the hospitals. Referral policies were present in 46.9% of hospitals and 14.6% had a guideline or checklist to determine which patients should be referred. Most hospitals had mental health services to assess patients following self-harm 96.9%. Most commonly, hospitals used their own structured proformas (40.6%). Staff at 37.5% of EDs used published scales and two thirds of these were used in conjunction with locally developed proformas. The most frequently used scale was the SAD PERSONS, being used in 28.1% of hospitals. Hospitals that used published scales as a component of their risk assessments had a lower median rate of repetition 6 months post presentation.</td>
</tr>
</tbody>
</table>
Overall these studies explored psychosocial assessments, risk and screening and audits of current practice. Key findings for each area are presented below.

Psychosocial assessments

Rates of psychosocial assessments conducted were found to be between 42% and 71%. This variability was reportedly due to hospital practices as well as patient characteristics. Sociodemographic variables associated with an increased likelihood of assessment included being female, older, employed, registered sick or disabled or, lack of social support. Clinically, assessed patients tended to present within business hours, use self-poisoning, were subsequently admitted to a ward, had current alcohol problems or had a history of or were currently receiving psychiatric treatment. Conversely, patients who had cut themselves, presented outside of business hours, self-discharged, were viewed as uncooperative or difficult by staff or, had a history of self-harm were less likely to be assessed. This highlights an important gap in treatment as patients with these characteristics are more likely to present again and more likely to die by suicide.

Provision of a psychosocial assessment had varying impacts on rates of repetition, from no significant impact to a 51% reduction. It is unclear why these differences have been found however as a full psychosocial assessment involves examination of difficulties or areas of need, conducting an assessment may provide opportunities for referral. Indeed, Hickey and colleagues’ research found that non-assessed patients were less likely to have further healthcare arrangements beyond a letter to their general practitioner. Further research is needed to establish whether the benefit of psychosocial assessments involves appropriate referrals.

Risk assessment and screening

Research examining the use of established measures and decision making tools in the emergency department post self-harm found mixed results.

Examination of the Manchester Self-Harm Rule and the ReACT Self-Harm Rule decision making tools indicated that both rules were able to correctly identify cases at risk of future self-harm. However both showed low specificity, classifying low risk patients as high risk. When both rules were compared, the ReACT Rule was better able than the Manchester Self-Harm Rule to detect low risk cases.

The following individual scales have also been evaluated and compared to validated scales:

- **SAD PERSONS**: This was examined in two studies and results indicated that in one study it performed with adequate specificity but inadequate sensitivity, correctly identifying those not at risk of self-harm but missing several patients at risk. Conversely, another study found that it demonstrated adequate sensitivity but inadequate specificity, missing between 50 and 93% of patients at risk of future self-harm.

- **Patient Safety Screener (PSS)**: Evaluation of the two and three item versions found that it was consistent with patient results on the Beck Scale of Suicidal Ideation. The screener was also better able to detect future suicidal behaviour than ideation.

- **Self-Harm Intent Questionnaire (SIQ)**: Validation of the scale found that it measured a cohesive concept but had a reduced ability to distinguish between other, unrelated concepts and limited similar results with related measures.

In research assessing a battery of measures for their predictive value, two measures emerged as predictive of future self-harm. Significant predictive scores were found for the Barratt Impulsiveness Scale and its subscales of instability and attentional impulsivity and, high risk scores on the Drug Abuse Screen Test.
Audits of current practice

The majority of research in this area examined assessment quality and rates before and after a service change. Four studies found improvements in proportions of patients receiving assessments and the quality of assessment conducted following changes. The service changes involved implementation of a structured assessment checklist, the use of an assessment proforma or development of an assessment pathway. For the hospital implementing an assessment pathway with clearly defined roles and tasks at each stage of patient care, improvements were found in the proportion of patients receiving a risk assessment at triage, proportion assessed within 24 hours, overall rates of assessment and rate of patients being assessed by a mental health professional.

Research also examined current practice at a range of hospitals in the UK. This research found that almost all hospitals had protocols for assessment following self-harm and mental health services available. In addition, 40.6% had their own structured protocols for assessment. Overall, a third of hospitals used published scales in their assessment procedures and two thirds of these used published scales as part of a broader assessment. The most frequently used scale was the SAD PERSONS. Hospitals that used published scales in assessment had a lower median rate of repetition.

In summary

In summary, exploration of assessment in emergency departments following self-harm found that common practice involves psychosocial assessments, screening tools or a combination of both. Research examining the validity and predictive value of screening measures has found that these tools show limited clinical utility. Although contradictory results have been found of the impact of psychosocial assessment on future self-harm, a thorough assessment provides the opportunity for intervention and the identification of risk factors for clinicians to consider. Audits of current practice before and after a service change enables researchers to monitor impacts and improve service delivery.

Guidelines for emergency department care of this population recommend the provision of a psychosocial assessment to all patients who present with self-harm. 76,102 Assessment of all patients, regardless of sociodemographic profile, method of self-harm and timing of presentation will also ensure that high-risk patient groups who are less likely to be assessed and are more often likely to engage in further self-harm (such as those who self-cut) receive a psychosocial assessment.

Review of the literature highlighted that screening tools and standardised risk assessment measures alone are not effective in predicting future risk of harm. Although psychosocial assessments have been related to varying rates of repetition, administration of a comprehensive assessment provides avenues for reducing patient risk factors. Ongoing research into useful best practice in assessment is currently underway in Australia and the UK. Results of this research will be able to guide practice and if successful, reduce rates of repeat presentations.

Findings also highlighted the importance of routine clinical audits in evaluating and improving service delivery to this population. By pairing audit results with implementation strategies such as barrier analyses, changes can be more successfully implemented. This includes strategies such as staff and patient consultation, consideration of population and setting factors specific to each hospital, education and training, and continual service evaluation. 103
Chapter Four: Effectiveness of interventions during the immediate post-discharge period

Introduction

Although a number of promising outpatient psychological interventions, such as cognitive-behavioural therapy, have been found to effectively reduce repetition of self-harm and suicide, around one half of persons who die by suicide do so in the period preceding their first outpatient appointment. Most studies, for example, demonstrate that suicide rates peak between one week and one month following discharge from hospital and/or inpatient psychiatric services. Those discharged from general hospitals, rather than psychiatric inpatient services, are particularly likely to die by suicide in the months following discharge, and yet, are less likely to receive referrals for ongoing outpatient psychiatric treatment during this period.

The development of post-discharge interventions that can bridge this peak risk period are therefore a crucial component to any effective systems-based suicide prevention strategy, and are specifically highlighted in the World Health Organization’s (WHO) Preventing Suicide: A Global Imperative report as well as beyondblue’s recent The Way Back Support Service: Take Action After A Suicide Attempt report, and the National Mental Health Commission’s National Review of Mental Health Programs and Services.

The aim of this review was to identify and examine randomised controlled trials of post-discharge interventions for the prevention of repetition of self-harm and/or suicide in those recently discharged from hospital, emergency departments, and/or psychiatric inpatient units.

Methods

Electronic Bibliographic Search

We conducted a rapid review of interventions for the prevention of suicidal behaviour in the immediate post-discharge period by systematic searching three electronic databases that index literature from a wide range of disciplines including medical science (EMBASE; Medline, PubMed), and psychology (PsycINFO). All databases were searched from their respective inception dates until 31 August, 2016.

We used a two-tier search strategy to identify eligible randomised controlled trials (Table 8). At the first stage, keywords relating to suicidal ideation, self-harm, and suicidal behaviour were combined. At the second stage, these were combined with keywords relating to post-discharge bridging interventions using standard Boolean operators. Keywords were minimally adapted to the requirements for each database. Wildcards and truncation were also used, where necessary, to increase the sensitivity of the search.

We also reviewed the reference lists of relevant prior reviews (ancestry searching) to identify further studies that may have been inadvertently omitted by the electronic bibliographic search.

Study Inclusion Criteria

All randomised controlled trials of interventions of bridging interventions offered within the immediate post-discharge period for the prevention of repetition of self-harm and/or suicide were eligible for inclusion in this review if:

1. All participants had presented to emergency departments, hospitals, or inpatient psychiatric services following an episode of suicidal ideation, self-harm, or an attempted suicide;

2. All participants had been discharged to the community from emergency department, hospital, or inpatient psychiatric services;
3. Participants had been randomly allocated to receive either the intervention of interest or a ‘control’ treatment (e.g., treatment as usual [TAU]);

4. The intervention targeted end users with suicidal behaviour (i.e., not training interventions which aim to improve the recognition of suicidal persons in the community but which target gatekeepers, and not end users themselves), and;

5. Outcome data on suicidal ideation, further episodes of self-harm, further episodes of attempted suicide, or suicide deaths were reported.

Additionally, (and as in Chapters Two and Three) given the purpose of this rapid review is to guide the development of bridging post-discharge interventions for the prevention of repetition of suicidal behaviour in Australia, we placed two further restrictions on this search:

1. Eligible studies had to be published in English, and;
2. Were conducted in a Western, high-income country.

### Table 8. Search strategy and number of studies retrieved per database.

<table>
<thead>
<tr>
<th>Tier</th>
<th>Keywords</th>
<th>Number of studies retrieved</th>
<th>EMBASE</th>
<th>Medline</th>
<th>PubMed</th>
<th>PsycINFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>((exp suicide/) OR (exp suicide attempt/) OR (exp suicidal ideation/) OR (exp auto-mutilation/) OR (“self harm*”) OR (“self injur*”) OR (“self destruct*”) OR (“self immolat*”) OR (“self cutt*”) OR (“self poison*”) OR (“overdos*”) OR (“suicid* plan”) OR (“suicid* threat”) OR (“suicid* gesture”))</td>
<td>117,589</td>
<td>49,582</td>
<td>54,620</td>
<td>41,835</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>(“primary care”) OR (“stepped care”) OR (“post discharge*”) OR (post hospital*) OR (“outpatient”) OR (“brief intervent*”) OR (“contact intervent*”) OR (“follow up intervent*”) OR (“crisis support”) OR (“crisis intervent*) OR (“discharge* plan”) OR (“telephone contact”) OR (“telephone intervent*”) OR (“text message”) OR (“electronic message”) OR (“postal contact”) OR (“postal intervent*”) OR (“postcard”) OR (“general practi*”) OR (“family practice*”))</td>
<td>506,308</td>
<td>222,875</td>
<td>427,901</td>
<td>92,788</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>#1 AND #2</td>
<td>7,006</td>
<td>2,833</td>
<td>3,075</td>
<td>2,899</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>limit #3 to English language</td>
<td>6,246</td>
<td>2,514</td>
<td>2,920</td>
<td>2,709</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>limit #4 to randomised controlled trial</td>
<td>330</td>
<td>180</td>
<td>285</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

### Study Exclusion Criteria

As the period immediately following discharge from emergency departments, hospital, and/or psychiatric inpatient care represents a peak risk period for suicide, this review focuses on interventions which bridge the immediate period following discharge. As a consequence, randomised controlled trials of the following approaches were excluded:

1. Screening and/or triage protocols. The effectiveness of these interventions were instead considered in greater detail in Chapter Two of this report;
2. Prolonged outpatient psychosocial treatment interventions, such as cognitive behavioural therapy (including so-called ‘third-wave’ therapies, such as dialectical behaviour therapy and mentalisation). The effectiveness of these interventions is instead considered in two recent Cochrane Collaboration systematic reviews and meta-analyses,\textsuperscript{112,114} and;

3. Pharmaceutical (drug) treatments. The effectiveness of these interventions was recently examined in a Cochrane Collaboration systematic review and meta-analysis.\textsuperscript{118}

Results

Using the electronic bibliographic search strategy outlined in Table 8, we identified a total of 3,504 records, comprising 330 from EMBASE, 180 from Medline, 285 from PubMed, and 2,709 from PsycINFO. Ancestry searching from other previously published reviews yielded an additional six records.

After removing duplicated records, this figure was reduced to 3,191. Once the abstracts and titles of these records were reviewed, a further 2,899 records were excluded as they were not relevant to the evaluation of bridging interventions for the prevention of repetition of self-harm and/or suicide in the immediate post-discharge period. A further 255 records were excluded when the full text was reviewed as they did not meet criteria for inclusion in this review. This left a total of 40 studies eligible for inclusion in this review.

The characteristics of these trials are outlined in detail in Table 9. Individual case studies have also been included throughout this section to further highlight the specific intervention components, which characterise these varied approaches.

Self-Directed Approaches

A number of self-directed (also referred to as self-help) interventions, utilising both digital (e.g., websites, native-interface applications) and analogue (e.g., books, pamphlets) platforms have been developed. These interventions typically comprise between five and 14 modules of an evidence-based psychosocial therapy, and most commonly cognitive-behavioural therapy, which the participant is free to complete at his or her own pace.\textsuperscript{119}

Digital interventions

Recent work suggests that young people in particular cite a preference for seeking help to seek support and to manage suicidal feelings online.\textsuperscript{120} This has led to the development of a number of post-discharge self-help interventions for the self-management of depressive symptoms\textsuperscript{121,122} and suicidal ideation.\textsuperscript{1,123,124}

Only one ongoing randomised controlled trial evaluation of a culturally-adapted digital application for young Indigenous Australians was identified by this rapid review.\textsuperscript{1} However, eligible participants for this trial are not required to have presented to hospital and/or psychiatric inpatient services following an episode of severe suicidal ideation and/or suicidal behaviour. This trial was therefore not eligible for inclusion in the present rapid review.

Nevertheless, further details on content and the proposed evaluation framework for this intervention are provided in Case Study 2, given the relative novelty of this intervention. Outcomes from this trial are not expected until the second half of 2018, however.

A recent systematic review and meta-analysis of digital self-help interventions for the prevention of suicidal ideation and/or self-harm using broader inclusion criteria than the present rapid review, moreover, identified only 12 studies that evaluated the effectiveness of these interventions on suicidal outcomes,\textsuperscript{117} the majority of which were designed for the self-management of depressive symptoms.\textsuperscript{123,125-131} Only three programs identified by this review were developed specifically for the self-management suicidal ideation,\textsuperscript{132-134} and only one was developed for the self-management of self-harming behaviour.\textsuperscript{135}

Additionally, none of these studies recruited participants following discharge from hospital and/or psychiatric inpatient services, however. Instead, participants were typically recruited through community advertisements...
or via online social networking websites. To date, there has been no work comparing the demographic and clinical characteristics – including diagnostic profile, symptom severity, suicide risk, and prognosis – of participants recruited through community-based advertisements and/or online social networking websites with those of participants recruited following hospital and/or psychiatric inpatient treatment for suicidal behaviour.

There is some evidence to suggest that those who present to hospital for suicidal behaviour may differ in important ways from those who do not. Persons who engage in self-poisoning, for example, are more likely to present to hospital as compared to those who engage in self-injury.\textsuperscript{9,136} Males\textsuperscript{137,138} and those who do not report suicidal intent at the time of the self-harm episode\textsuperscript{136,139} and those who have no prior history of psychiatric treatment\textsuperscript{136} are also less likely to present to hospital and/or mental health services following an episode of suicidal behaviour. Results from these evaluations may therefore not be generalisable to those who receive hospital and/or psychiatric inpatient treatment for suicidal behaviour.

CASE STUDY 2: A culturally-adapted digital self-directed intervention for Indigenous young Australians

iBobbly (a name derived from a greeting used by Indigenous persons in the Kimberley region) is a culturally-adapted, native-interface mobile-telephone application (‘app’) which seeks to reduce the frequency and intensity of suicidal ideation young indigenous persons between 18 and 30 years of age living in rural and remote communities in Australia.\textsuperscript{1} Based on acceptance and commitment and mindfulness-based cognitive behavioural-based therapeutic approaches, the app consists of three self-paced modules which participants are free to complete at their own pace:

- **Module 1.** Participants are taught to identify and categorise their thoughts by firstly listing their current thoughts and then swiping these thoughts into baskets at the bottom of the screen to classify these. They are then asked to identify the thought that is currently causing them the most distress and to associate this thought with the feelings and behaviours it causes to help them identify the links between thoughts, feelings, and behaviours. The module concludes with a list of strategies the participant can use to help them defuse from their thoughts.

- **Module 2.** Participants are taught several strategies to help them better regulate their emotions, including mindfulness, acceptance, and self-soothing techniques. This module also introduces participants to several recommended culturally-relevant distress tolerance strategies, such as spending time in nature.

- **Module 3:** Participants are asked to identify values they would like to achieve and are assisted in developing a series of goal-directed behaviours they can use to help them achieve this. Participants are also provided with an individualised crisis action plan based on their answers to the different tasks throughout the three modules.

This intervention is currently being evaluated for its effectiveness in reducing suicidal ideation, psychological distress, and depression symptoms. Other outcomes assessed include: health and social care service use, and number of consultations with a general practitioner, psychiatrist, psychologist, mental health crisis team, and crisis telephone contacts.

The evaluation of post-discharge digital self-help interventions for the prevention of suicide and self-harm remains an area in which future research is required before these interventions can be recommended for wide scale implementation.\textsuperscript{140} In addition to data on the effectiveness of these interventions with respect to key primary outcomes relating to the repetition of self-harm and suicidal behaviour, these evaluations should also include measures of:

- **Treatment adherence.** Work suggests digital self-help interventions may be associated with poorer treatment adherence as compared to traditional face-to-face interventions.\textsuperscript{141}
Adverse, non-suicidal cognitive outcomes. As mentioned previously, interventions which incorporate aspects of mood monitoring should incorporate outcomes relating to negative affect and in future given suggestions that mood monitoring may lead to increased negative affectivity and rumination in some vulnerable patients.  

Analogue Interventions  

In contrast to digital interventions for suicide prevention, there have been few evaluations of analogue (i.e., book, pamphlet) self-directed interventions for the prevention of suicidal behaviour in either the community or in persons discharged from hospital and/or psychiatric inpatient services.  

This rapid review identified only one randomised controlled trial of a bibliotherapeutic approach in which participants recently discharged from hospital services following an episode of self-harm received between two and six sessions of cognitive behavioural therapy, delivered over a six week period, designed to assist patients to better manage negative emotions and thinking patterns. Although this intervention was found to be associated with a reduction in the proportion of patients repeating self-harm during the follow-up period (55.6% vs. 71.4%), this was a predominately clinician-driven intervention; only 27.8% of participants allocated to the intervention received almost all treatment input from the intervention booklets alone.  

For this reason, this intervention is not considered in further detail in Table 9. The evaluation of unguided analogue self-help interventions for suicide prevention lags behind that of digital self-help interventions, despite the fact that books on a variety of evidence-based interventions, including cognitive-behavioural therapy and third-wave techniques (such as dialectical behaviour therapy and mindfulness), have been published. These interventions are therefore not recommended for wide scale implementation at present.

Clinician-Directed Approaches  

Contact interventions  

Contact interventions, for example, sending patients postcards, are distinct from other forms of post-discharge interventions in that they are, typically, not conducted by mental health specialists (e.g., psychiatrists or psychologists), and can therefore be readily integrated into services with limited mental health resources. These interventions typically provide ongoing contact and offer participants the opportunity to reconnect with clinical services during times of distress if required (either implicitly or explicitly). The intent of these types of interventions is therefore to provide social support and to encourage future help-seeking, rather than providing participants with a fully worked-up psychological therapeutic intervention.

Postcards  

Three randomised controlled trials have investigated the effect of sending regular postcards over the 12 months post-discharge. The largest of these trials, conducted in Newcastle, Australia, found that postcards may be associated with a significant reduction in the number of repeat episodes of self-harm over the 12-month post-discharge period. This effect also appeared to be maintained up to four years later. Postcards did not appear associated with a significant reduction in the proportion repeating self-harm during this period, however.

To date these interventions have not sought to actively engage suicidal patients with psychological treatment or act as direct conduits to outpatient psychological treatment. Their effectiveness is therefore likely to be limited, particularly in countries such as Australia, with relatively comprehensive triage systems which ensure patient who engage in self-harm receive a psychosocial assessment of treatment needs and are provided with referral to specialist mental health, addition, personality disorder, and/or social services as required.

Additionally, this rapid review identified only one randomised controlled trial which incorporated a process evaluation to investigate how participants used the information contained in the postcards. The authors of this trial found that over one-half had tried at least one of the recommended self-management strategies (e.g.,
consulting self-help resources on cognitive behavioural therapy or using relaxation techniques to cope with distress) during the one-year post-discharge follow-up.

Future studies of these interventions should therefore include process evaluations to provide greater insight into the possible mechanisms of action of these interventions, thereby improving our understanding as to not only the sub-group/s of patients for whom these interventions may be most effective, but also the clinical conditions under which these interventions may be most beneficial.

CASE STUDY 3: Postcards from the Hunter Area Toxicology Service, Newcastle, Australia

The Hunter Area Toxicology Service, described in greater detail in section 1, sent participants discharged from the service following an episode of self-poisoning a series of eight postcards over a 12-month intervention period. Postcards were mailed to participants in sealed envelopes one, two, three, four, six, eight, 10, and 12 months following their discharge from the service.

Each postcard featured a standard (non-personalised) message wishing participants well in their recovery and inviting participants to write to the toxicology service if they wished to for any reason. Postcards were intended as an expression of ongoing support and to encourage participants to seek help, rather than acting as direct conduits to outpatient treatment.

At each time point, the postcard intervention was not associated with a significant reduction in the proportion of participants representing to clinical services following a repeat episode of self-poisoning. However, a significant reduction in the number of repeat self-poisoning episodes was observed, particularly in females with a history of frequent (three or more) self-poisoning repetition prior to the commencement of the intervention. The intervention was also associated with significant reductions in psychiatric admissions leading to a reduction of 2,565 bed days.

The authors conclude that the intervention offers significant cost savings for the general hospital and psychiatric hospital care systems as the intervention can easily be integrated into existing services and, given its relative low intensity, can be offered to all participants presenting to clinical services for self-harm. Additionally, the authors estimate the cost of stationary, maintenance of a mailing database, staff costs, and postage is less than $15 AUD per person making this a highly cost-effective strategy for maintaining contact with patients during the post-discharge period.

Letters

Four randomised controlled trials, including one that is still ongoing, have investigated the effectiveness of sending letters to patients during the post-discharge period on a variety of outcomes, including repetition of self-harm and completed suicide.

Given that one in four patients report their general practitioner was their most significant source of care during the immediate post-discharge period, in one randomised controlled trial letters were also sent to the patient’s general practitioner. In this trial, general practitioners were additionally sent consensus-based guidelines for the management of suicidal behaviour, as outlined in greater detail in Case Study 5.

Although some argue that sending regular letters show promise in reducing suicide rates, much of this evidence-base rests on a misinterpretation of the results from one of these trials. A recent editorial, for example, concluded that “[p]rovision of letters was associated with a lower risk of suicide in the first two years of the study...although the effect diminished over the 15-year follow-up period.” Given that the intervention was delivered over a period of five years, the first two years of the study actually represents the mid-treatment assessment, whilst the 15-year follow-up period actually translates to a 10-year follow-up period. A further systematic review and meta-analysis mistakenly analyzes data from the five year post-intervention assessment as being from the longest (i.e., 10 year) follow-up period.

Reanalysing the data from the original study, the authors of this rapid review instead find no evidence that the letter intervention in this trial was associated with a significant effect on the proportion of participants
dying by suicide at either the 5-year post-intervention assessment (3.9% vs. 4.6%; odds ratio 0.83, 95% confidence interval 0.44 to 1.59) or at the 10-year follow-up assessment (6.4% vs. 5.7%; odds ratio 1.12, 95% confidence interval 0.66 to 1.91), in line with the other randomised controlled trials that have been conducted to date which find that although these interventions may increase the proportion of patients receiving a health care contact this, in turn, is not associated with a significant reduction in repetition of suicidal behaviour.148,150

A recent Cochrane Collaboration systematic review and meta-analysis of psychosocial interventions to prevent the repetition of self-harm following hospital treatment for suicidal behaviour similarly concluded there is little evidence to support the effectiveness of letter interventions at present.114

CASE STUDY 4: Sending caring letters to patients

In the original trial of this intervention, participants discharged from psychiatric inpatient services following treatment for depression and/or severe suicidal ideation and who refused ongoing outpatient psychiatric treatment received a series of 24 letters mailed to their home address over a period of five years. These letters were initially sent monthly for the first four months post-discharge, then every two months for the next eight months, and finally, every three months for the remaining four years.

Each letter featured a standard (non-personalised) message wishing participants well in their recovery and inviting them to write to the service if they wished to for any reason. As with the postcard intervention described in Case Study 3, letters were intended as an expression of ongoing support and to encourage participants to seek help, rather than acting as direct conduits to outpatient treatment.

Although suicide rates were lower in the group that received these letters, as compared to the control group, over the four years of the intervention, they were not significantly different. The authors did, however, conclude their intervention was effective in increasing help-seeking and improving service negotiation and re-entry.

Post-hoc process evaluations with participants, for example, indicated that had the study authors not contacted them, they would not have sought help from hospital-based or psychiatric services out of embarrassment or fear of not knowing which service to contact. Additionally, by the conclusion of the five year intervention, around one-fifth of participants still made regular contact with the service after receiving their letter.

Data from one of these trials, however, revealed that 25 suicides (0.8%) occurred before project personnel could organise postage of the first letter, suggesting that the timing of this intervention did not adequately bridge the peak post-discharge suicide risk period.150

In contrast to most postal interventions highlighted in this rapid review the letters used in one recent quasi-experimental study from the United Kingdom did not invite participants to make contact with clinicians from the inpatient psychiatric service as this was felt to be inappropriate given the context of the local mental health service in which community-based services, and not inpatient services, were responsible for organising and managing post-discharge care.154 These letters, mailed at one and two weeks and at one, two, four, six, nine, and 12 months following discharge from inpatient psychiatric treatment services, instead outlined care arrangements, reminded participants about follow-up appointments, and contained information on local support groups, crisis telephone numbers, and mental health crisis services participants could use at times of distress.
Process evaluations following the conclusion of this pilot study, however, suggested that for some participants these contact-based follow-up interventions may serve as a negative reminder of their hospital admission which, in turn, could explain findings from some randomised controlled trials of an increase in repetition of suicidal behaviour following the implementation of these interventions. Further trials of this intervention strategy should therefore include process evaluations to clarify the mechanism of action of these letters, and further, to assist with the identification of clinically relevant sub-groups of patients who may benefit from this relatively low-intensity treatment approach.

CASE STUDY 5: Sending letters to general practitioners to improve communication between the tertiary and primary health care systems

In the largest trial of this approach, participants registered with one of 98 general practices in Bath or Bristol in the United Kingdom, and who were discharged from a general hospital following treatment for an episode of self-harm received a letter from their general practitioner inviting them to make an appointment for a consultation. The participant’s general practitioner also received a letter from the research team informing them of the circumstances of the self-harm episode and details of the treatment received in hospital.

General practitioners also received a copy of guidelines, developed with the consensus of the research team, containing recommendations for the aftercare of suicidal persons in primary care. These guidelines contained information on what they should assess during their consultation with the participant, including:

- Information on circumstances of the self-harm incident;
- Description of the precipitating event;
- Assessment of psychiatric co-morbidities;
- Evaluation of the patient’s current suicide risk;
- Information on referral sources for those found to be at imminent risk of suicide;
- Development of a management plan, and;
- Suggestions on treating substance use and associated illnesses.

These guidelines also contained recommendations to develop a long-term follow-up treatment plan in consultation with the patient which addresses their personal treatment needs.

Following receipt of the intervention, the authors found that the proportion of participants representing to hospital following a repeat episode of self-harm was slightly higher in the intervention group (21.9% vs. 19.5%). There was no significant difference between groups in the number of repeat episodes of self-harm per person (0.48 vs. 0.37), or in the number of days until the first repeat episode (104.9 vs. 109.5). Post-hoc sub-group analyses did, however, suggest that this intervention may be effective in those with a history of multiple episodes of self-harm and harmful in those without this history. The intervention did, however, appear to be effective in facilitating contact. Over one-half (57.5%) of those in the intervention group received the letter inviting them to a consultation; in the control group, conversely, only 15.1% of general practitioners initiated contact with their patients. The authors conclude that although these letters increased the use of general practice services this, in turn, was not associated with a significant reduction in repetition of suicidal behaviour.

Text Messages

Contacts interventions via text message may be particularly appealing for young people as these interventions are more consistent with the communications preferences of this age group.\(^{155}\)
One ongoing randomised controlled trial is currently evaluating the effectiveness of sending regular text messages intended to replicate both the content of the traditional postal (postcard and letter) contact-based interventions on repetition of self-harm. Participants in this trial will receive a series of nine text messages, sent to their personal mobile telephones. The first of these messages will be delivered within 48 hours of discharge from hospital and/or inpatient psychiatric care with the remaining eight messages delivered at days eight and 15, and at one, two, three, four, five, and six months’ post-discharge. Text messages will include a personalised salutation, information on the contact details of the patients’ monitoring doctor (general practitioner and/or treating psychiatrist as appropriate), details on upcoming outpatient appointments, and will also provide the telephone number of a dedicated 24-hour crisis telephone hotline service.

A pilot non-randomised evaluation of this intervention investigated the technical feasibility and acceptability of sending these messages. In this evaluation only four messages, sent within 48 hours of discharge and again at eight, 15, and 30 days’ post-discharge, were delivered. The authors found that the majority of participants (93.3%) successfully received all messages. These participants also reported that the entire message had been successfully downloaded from the server and were readable.

Process evaluations, moreover, indicated that the majority of participants (93.3%) were pleased to receive the messages, particularly the first message sent within the first 48 hours of discharge, although all indicated that they felt the intervention should be maintained for greater than one month post-discharge. All participants also indicated that the time chosen to send these messages, 1pm, was acceptable.

In addition to further investigating the feasibility and acceptability of this intervention, this randomised controlled trial will also investigate whether receiving regular text messages leads to a reduction in suicidal ideation scores, the proportion of participants reattempting suicide, the number of suicide reattempts per person, and the proportion dying by suicide at two time points: (1) post-intervention, and; (2) following a seven-month follow-up period. Cost-effectiveness analyses will also be included to investigate the costs of implementing the text message service into routine clinical practice. Outcomes for this trial are not expected until early 2020, however.

**Telephone Calls**

Two randomised controlled trials investigated the effectiveness of regular telephone calls in the immediate post-discharge period for the prevention of repetition of self-harming and/or suicidal behaviour. In these trials, between 7.0% and almost one-half (46.6%) reattempted suicide within the first month following discharge before the first telephone contact was made, suggesting that telephone contact by itself is unlikely to adequately bridge the peak post-discharge suicide risk period.

Additionally, in one trial around one-third of participants could not be contacted by telephone, which the authors credit as the major reason their intervention was found to be ineffective in protecting against repetition of suicidal behaviour during the follow-up period. This suggests that telephone contact should be considered as only one possible contact strategy within a broader arsenal of post-discharge interventions.

It is important to note that for both of these trials of telephone contact, calls lasted between 20 and 45 minutes. This duration was deemed to be necessary to ensure that rapport can be established and to give participants a chance to feel ‘listened to’. Some researchers have therefore theorised that overly brief telephone calls may not be sufficient to establish rapport and may, in fact, increase self-harming behaviour in some vulnerable persons as a consequence. If this strategy were to be recommended for wide spread implementation, it is therefore important that a similar call duration is utilised.

A recent non-randomised study evaluated the cost-effectiveness of telephone calls over the first month following discharge from hospital for severe suicidal ideation and/or self-harm. The authors calculated the average direct cost of these telephone calls to be $56.07±$17.17 (USD) with a range of between $11.38 (USD)
and $139.64 (USD) per person per month. The return on investment for every $1 (USD) spent on telephone line rental, wages, and administrative costs per person per month, moreover, was between $1.76 (USD) for those with private health insurance and $2.43 (USD) for Medicaid recipients. This was primarily driven by reduced rehospitalisation costs.

The call centre reporting the greatest cost, however, implemented aspects of case management, rather than providing support only, and also attempted to contact patients a minimum of five times within the first month post-discharge whereas the other services included in this study averaged two telephone contacts per person over the month. The authors therefore conclude that the cost of these interventions is higher, and therefore the return on investment will be lower, for those services that seek to provide psychotherapeutic intervention as opposed to follow-up contact alone.

Multimodal Contact Interventions

Single modality contact interventions have generally found that contact cannot be established for a significant proportion of patients. A number of multimodal follow-up contact interventions, have therefore been developed to address this. These interventions typically combine two or more contact modalities, for example postal and telephone contacts, and are thought to improve the reach and accessibility of interventions offered via one contact modality only.

Three randomised controlled trials of these multimodal contact interventions, including one that is still ongoing, were identified by this review. In one of these trials, the intervention was not associated with a significant effect on either the proportion reattemping suicide or in the number of reattempts per person by the conclusion of the intervention. A second, pilot evaluation, however, found that the intervention was associated with a three-fold increase in the proportion of participants engaging in a repeat episode of self-harm at the post-intervention assessment (34.4% vs. 12.5%). The intervention was also associated with an almost six-fold increase in the total number of repeat episodes of self-harm over this period (41 episodes vs. 7 episodes). Adjusting for baseline clinical factors, such as history of self-harm prior to enrolment and history of psychiatric treatment, did not materially affect this result.

Although the authors of this second trial conclude their trial was a pilot study which was likely underpowered with respect to the suicidal behaviour outcomes assessed, nevertheless, until further, adequately powered randomised controlled trials are undertaken, there remains a possibility that these types of multimodal contact intervention are associated with a true increase in the risk of self-harm repetition. These interventions are therefore not recommended for widespread implementation at the present time.

Emergency cards

Three randomised controlled trials investigated the effectiveness of sending emergency cards, also referred to as “green” cards, which allow patients to either readmit themselves on demand to hospital-based and/or inpatient psychiatric services and/or make contact with psychiatric service providers during times of distress. These interventions are designed to actively facilitate future help-seeking by making patients aware that they can self-present to mental health and/or hospital based services at times of distress, rather than waiting until they have actually engaged in a further episode of suicidal behaviour to present to these services.

In the original trial of this intervention, participants discharged from hospital following treatment for an episode of self-harm, and predominately self-poisoning, received an emergency card outlining the number of a dedicated crisis telephone service participants could ring at times of distress. The card could also be

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* Using exchange rates from September 2016, implementation of this intervention would cost approximately $73.27±22.44 (range: $14.87 to $182.49) Australian dollars per person per month.

† This equates to between $2.30 (for those with private health insurance) and $3.18 (for Medicare beneficiaries) Australian dollars per person per month.
surrendered at presentation to the emergency service department in exchange for an on-demand admission to a psychiatric ward. A ‘booster’ card was sent at three weeks post-discharge. Patients’ general practitioners also received a copy of these cards. These cards emphasised the importance of seeking help early. Participants were encouraged to either contact the dedicated telephone number or self-represent to the emergency department as soon as they experienced distress or suicidal thoughts, rather than ruminating on these thoughts and waiting until they had actually engaged in suicidal behaviour before making contact with treatment services. These interventions were not associated with a significant reduction in repetition of suicidal behaviour across the post-discharge period in these three trials.

CASE STUDY 6: Messages from Manchester

A sentinel data monitoring system has been in continuous operation in three general hospitals in Manchester, United Kingdom since 2000. Between November 2010 and May 2011, all patients presenting to the emergency department of any one of these three hospitals for treatment following an episode of self-harm were enrolled into a randomised controlled trial of a multimodal intervention combining postal and telephone contacts.

Within days of discharge, participants were mailed an information leaflet listing local and national sources of help (e.g., information on crisis telephone numbers and services) available to them at times of distress. Within two weeks of discharge, participants were contacted by telephone to check they were aware of the contact details for their primary care and/or specialist mental health service providers. These contacts were designed to ensure participants were aware of the sources of help available to them and to check they were linked in with appropriate primary and/or mental health treatment services as required. Over the 12 months following discharge, participants were also mailed a series of six postcards in sealed envelopes at one, two, four, six, eight, and 12 months post-discharge.

Each postcard featured a standard (non-personalised) message wishing participants well in their recovery and inviting participants to make contact with any of the helping organisations listed on the information leaflet. Postcards were intended as an expression of ongoing support and to encourage participants to seek help, rather than acting as direct conduits to outpatient treatment.

Telehealth interventions

Some work suggests that routine daily monitoring of suicidal ideation may be more effective in predicting repetition of self-harm as compared to point-in-time risk estimates made at admission to hospital. Only one randomised controlled trial identified by this rapid review investigated the effectiveness of a telehealth symptom monitoring approach on repetition of suicidal behaviour, however.

In this trial, military veterans discharged from a veterans psychiatric inpatient ward following treatment for schizophrenia with comorbid suicidal ideation were provided with a device which can be preprogrammed to include daily pre-recorded psychoeducation sessions, information to support positive lifestyle change, and monitoring of clinical symptoms, including suicidal ideation, via the inclusion of validated psychometric questionnaires. This device has a large, easy to read screen and four buttons that patients can use to record their responses to these questions.

This intervention consisted of a series of 90 telehealth contacts delivered once per day over a three month period. These monitoring sessions were delivered as a series of multiple-choice questions in which participants were asked to rate the extent to which they currently feel depressed, have suicidal thoughts, and have death wishes. Participants were also asked about their experience of ongoing schizophrenia symptoms (e.g., hallucinations and delusions), alcohol and/or drug use, and to rate their medication adherence.

Participants’ responses were then electronically transmitted to the patient’s treating clinician who, in turn, contacted patients deemed to be at risk of further suicidal behaviour on the basis of their answers to various symptom monitoring questions. In particular, those who responded positively to any question enquiring after
suicidal thoughts and/or behaviours were contacted. Additionally, participants who did not access the telehealth service within 24 hours of their last response were also contacted by clinical staff to ensure they were safe.

By the conclusion of the three-month post-intervention assessment, intention-to-treat analyses found no evidence of a significant treatment effect for this intervention on suicidal ideation scores (Average suicidal ideation scores at the end of treatment: 2.4±5.5 vs. 2.9±6.7; mean difference -0.4, 95% confidence interval -4.7 to 3.8). Post-hoc analyses did, however, suggest evidence of a trend towards a higher rate of remission from suicidal ideation, defined as having a score on the Beck Suicide Ideation Scale of equal to zero, in the intervention group.

CASE STUDY 7: beyondblue’s Way Back Support Service

In 2014 beyondblue launched the Way Back Support Service in Darwin, Northern Territory. This intervention is designed to address a current service gap in the prevention of suicidal behaviour by ensuring that persons discharged from hospital-based services following an episode of self-harm remain connected with treatment services.

Participants discharged from hospital following treatment for suicidal behaviour receive a series of multimodal contacts, comprising face-to-face, telephone, and email contacts, over the first three months following discharge. These were delivered according to need and can vary from a one-off contract to multiple contacts over this period.

The first contact, delivered no more than 48 hours post-discharge, is designed to assist patients to develop a safety plan and set their treatment goals. The content of this contact is designed to provide support, coaching, and motivation to assist patients to build the skills and motivation to stay alive.

Throughout the three month post-discharge period, counsellors also regularly check in with patients to ensure they remain linked in with both informal and formal support networks that promote their recovery and may include referrals to outpatient mental health treatment services, housing services, financial counselling, study assistance, and family assistance as necessary. This intervention therefore focusses on health and wellbeing promotion more generally, rather than narrowly focusing on the prevention of suicidal behaviour and mental illness relapse.

In 2015, a second evaluation of this intervention was launched in several locations in New South Wales. Outcomes from these two evaluations are not anticipated until 2017.

Additionally, despite the relatively aggressive outreach protocol implemented in the case of non-compliance (i.e., non-compliant participants were directly contacted by telephone by clinical personnel and were encouraged to remain compliant with the intervention), just over one-third (36.0%) of participants did not complete all three months of the intervention.

Process evaluations with a sub-set of the original participants (14/16; 87.5%) suggested that the around one-third (38.6%) found the intervention provided participants with a sense of social connection and of being ‘listened to’. Participants also reported that the intervention engendered a sense of hope and optimism about the future. A minority of participants (15.9%), however, found the intervention unhelpful. In particular, these participants did not like the impersonal nature of the intervention. Others expressed frustration at having to answer daily questions about suicidal ideation when these symptoms were not abating. The potential for these interventions to increase suicide risk in some vulnerable persons, particularly given suggestions from previous work that mood monitoring may lead to increased negative affectivity and rumination in some vulnerable patients.\(^{142}\)

Treatment adherence enhancement interventions

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Patients who engage in suicidal behaviour can be difficult to engage in ongoing psychiatric treatment. \textsuperscript{170} Approximately one-half of suicidal persons either refuse to engage with outpatient psychiatric treatment altogether or drop out of treatment following the first session. \textsuperscript{171} Rates of non-adherence with outpatient psychiatric treatment are particularly high in young people up to 18 years of age. \textsuperscript{172} Non-adherence with ongoing outpatient psychiatric treatment therefore represents one of the most significant barriers to effective suicide prevention.

A total of five randomised controlled trials investigated the effectiveness of adherence enhancement interventions designed to improve post-discharge engagement with outpatient psychiatric treatment by providing participants with sessions to address motivation, attitudes, and preconceptions towards outpatient psychiatric treatment. \textsuperscript{173-176} Although these studies found that these adherence enhancement interventions resulted in better adherence with outpatient treatment, this did not appear to be associated with a clinically significant reduction in repetition of self-harm, in line with conclusions from a recent Cochrane systematic review and meta-analysis. \textsuperscript{114}

**Outreach interventions**

A second approach to improving engagement and adherence with outpatient psychiatric services is exemplified by outreach interventions. Although frequently confused with adherence enhancement approaches and case management, outreach interventions are designed to link patients in with treatment by either providing this in their home, or, by providing patients with direct assistance (either financial and/or physical) to attend outpatient treatment appointments. \textsuperscript{177} This approach is therefore distinct from both treatment adherence enhancement approaches, which only seek to provide patients with information about outpatient treatment options and to counter negative attitudes towards treatment which may influence adherence, and case management approaches in which services delivered by multiple providers (e.g., mental health, personality disorder, addiction, and social services) are coordinated by a designated case manager.

Although there have been a number of trials of outreach interventions for the prevention of repetition of suicidal behaviour, \textsuperscript{177,178} only one of these evaluations investigated the effectiveness of an intervention in the immediate post-discharge period. \textsuperscript{179} Participants in this trial received a one-off community-based outreach appointment occurring within 48 hours of discharge from a mental health nurse designed to assess the patient’s need for further mental health, medical, and/or addiction treatment services and to facilitate referral to these services as required. Although the intervention led to improvements in the proportion of patients who were linked in with treatment services post-discharge, there was no significant difference between groups in terms of suicidal ideation scores or any other symptomatic outcomes measured at the follow-up assessment.

One further randomised controlled trial of an outreach intervention investigated the cost-effectiveness of this approach. \textsuperscript{180} Participants discharged from pediatric hospital following an episode of suicidal behaviour received a series of two outreach appointments with a multidisciplinary treatment team comprising psychiatrists, psychiatric nurses, social workers, education specialists, and an art therapist. Appointments occurred within 24 and 72 hours of discharge, and family members were invited to take part in these meetings as appropriate, and were designed to ensure the patient’s treatment needs had been assessed, and that referrals to appropriate outpatient treatment services and community resources had been arranged as required. At the six-month follow-up assessment, the authors found that outpatient treatment service use was similar between the intervention and control groups. Additionally, although the intervention was associated with a significant reduction in the number of hospital admissions to the original treating hospital (0.22±0.51 vs. 0.48±0.63), this was offset by a similar number of hospital admissions to other regional hospital over this period. The intervention was therefore not associated with a significant reduction in costs (-$991.00, 95% confidence interval -$5,580.00 to +$3,598.00).
General Practitioner Management Interventions

A large number of individuals who are at risk of suicide may never come into contact with the specialist in- or outpatient mental health services. In contrast, many people have contact with general practitioner (GP) services in the year prior to their suicide; recent work, for example, suggests that around one-fifth (18.6%) of those who died by suicide have had contact with mental health services, compared to almost one-half (46.4%) who had contact with their general practitioner. The primary care setting therefore presents an excellent environment for the early identification and assessment of suicide risk in this population.

General practitioner management approaches therefore seek to facilitate referral to a patient’s general practitioner and may be useful, particularly for those participants who are not in need of intensive outpatient psychiatric treatment.

Only one trial identified by the present rapid review investigated the effectiveness of an intensive post-discharge treatment coordinated and conducted by the patient’s general practitioner. No significant difference in the proportion repeating self-harm was found in this trial at the post-intervention assessment according to hospital-recorded episodes of repeat self-harm. According to self-reported measures, however, some evidence of a significant increase in repetition of self-harm was observed.

The average duration of general practitioner-patient consultations in Australia has remained relatively stable over the past decade – between 13.8 and 14.8 minutes per patient. It is presently unclear, however, whether this time frame would enable general practitioners to adequately establish rapport with acutely distressed persons whilst providing patients with a chance to feel ‘listened to’.

If adequate rapport cannot be established, it is unlikely that patients will discuss their suicidal feelings with their general practitioner. Survey data from 159 general practitioners in the United Kingdom who treated patients within one year of their suicide, for example, suggests that only 14.5% of patients expressed suicidal thoughts at their final consultation. Furthermore, there was no significant difference by the timing of this final consultation: 56.5% of patients seen within a one week prior to their suicide reported suicidal thoughts to their general practitioner compared with 43.5% for those whose final consultation was between one month and one year prior to their suicide.

Further trials, which incorporate process evaluations, are therefore necessary to: (1) establish the acceptability of general practitioner management to acutely suicidal persons, and; (2) establish what contact duration is desirable for this patient group before this intervention could be recommended for widespread implementation.

Brief Outpatient Treatment Interventions

Given that around one-half of patients discharged from hospital and/or psychiatric inpatient services will either fail to attend outpatient treatment altogether or will withdraw from outpatient treatment between one week and one month post-discharge, a number of “brief” outpatient treatment interventions have recently been developed.

Presently, there is no definitive definition of a “brief” outpatient treatment approach. Some researchers suggest that brief interventions tend to be characterised by around 10 sessions of psychotherapy. To satisfy the requirements of this rapid review with regards to evidence relating to the effectiveness of interventions offered in the immediate post-discharge period, moreover, we only included those interventions delivered intensively over up to one month following discharge. Outpatient treatment interventions delivered for a period greater than approximately one month were therefore excluded from the present rapid review.

Interested readers are instead referred to two recent Cochrane systematic reviews and meta-analyses, one in adults and a second in children and adolescents, which considers the evidence base for the effectiveness of these more prolonged outpatient treatment approaches in greater detail.
A total of 11 randomised controlled trials, including one that is ongoing, investigated the effectiveness of brief outpatient treatment interventions for the prevention of suicidal behaviour over approximately a one-month post-discharge period. These interventions adopted a variety of treatment approaches, including a brief alcohol screening intervention, therapeutic assessment, emotion-regulation training, and a family intervention. In general, these interventions were found to be associated with a significant reduction in suicidal behaviour at the post-intervention assessment. Few of these trials have evaluated outcomes at medium (i.e., six months) and long (i.e., 12 months) follow-up, however. Similar to a recent editorial, however, we found these interventions were broadly defined and included those from disparate therapeutic approaches. The potential mechanism of action of these interventions is therefore not well conceptualised at present.

Only one trial, conducted in multiple centers located in five low- to middle-income countries (hence not eligible for inclusion in this rapid review), investigated the possible mechanism of action of these brief outpatient treatment interventions. The authors conclude that these brief outpatient interventions may act as temporary support networks for suicidal patients who, typically, do not have effective social support.

**CASE STUDY 8: A culturally-adapted multimodal intervention for Indigenous New Zealanders**

Te Ira Tangata, which translates as ‘the life force’, is a multimodal package of treatment interventions designed to be specifically relevant to persons engaging in suicidal behaviour who self-identify as of Maori ethnicity. The intervention consists of five management strategies:

- **Telephone contact.** Patients received up to two telephone contacts in the first two weeks following discharge from hospital. Contacts were designed to provide assertive follow-up to ensure patients to remind participants of the treatment plan recommended at discharge and/or to suggest new treatment options for those who have dropped out of treatment.

- **Postcards.** A series of eight postcards were mailed, in sealed envelopes, one, two, three, four, six, eight, 10, and 12 months’ following discharge. Postcards contained a standard (non-personalised) message wishing patients well in their recovery and inviting them to make contact with the service should they wish to for any reason. Postcards did not act as a direct conduit to ongoing outpatient care.

- **Brief outpatient treatment.** Patients also received between four and six sessions of brief problem-solving therapy in the four weeks following discharge.

- **General practitioner management for physical health concerns.** Patients received vouchers entitling them to a free consultation with their general practitioner for a physical health check-up. Consultations primary addressed alcohol and drug use, smoking, and cardiovascular health behaviours.

- **Brief cultural assessment.** Conducted by members from the Maori community, each patient received a cultural assessment designed to increase engagement in Maori cultural activities during the post-discharge period, to increase patients’ sense of belonging, and to improve patients’ pride in their community.

**Multimodal Interventions**

Three RTCs evaluated the effectiveness of multimodal interventions which combined aspects of contact interventions and brief psychotherapy treatment approaches. Three randomised controlled trials investigated the effectiveness of multimodal interventions, including one in which the treatment approach was...
significantly culturally adapted to be of greater relevance and acceptability to Indigenous patients in New Zealand, \(^{209}\) were identified by this rapid review.

One further intervention evaluated the effectiveness of a multimodal intervention in adolescents, between 14 and 19 years of age, presenting to emergency departments for treatment for suicidal ideation and/or behaviour. \(^{210}\) In this trial, adolescents received an emergency card listing telephone numbers of various crisis hotlines they could call during times of distress, a motivational interview of between 35-45 minutes with a mental health professional designed to review participants’ treatment goals, a hand written follow-up mailed two days following discharge containing a personalised message wishing them well in their recovery and encouraging them to review their treatment action plan, and a telephone contact five days following discharge to assist them in implementing their treatment action plan.

At the two-month follow-up assessment, this intervention was found to be associated with a significant reduction in depression scores. There was no such reduction in suicidal ideation or hopelessness scores, however. Additionally, the intervention was not associated with increases in treatment-seeking. Nevertheless, the authors conclude this intervention shows promise.

**Group-Based Interventions**

To combat the social isolation experienced by many people who engage in self-harm, several randomised controlled trials have evaluated the effectiveness of group-based interventions. \(^{211, 212, 213}\) Only one of these, however, offered treatment during the immediate post-discharge period. \(^{214}\) In this trial, patients discharged from hospital based services following a suicidal crisis (i.e., suicidal ideation and/or behaviour) received nine hours of hospital-based group therapy per day over a two week period. As hospitalisation was day-based (also referred to as “partial”), i.e., participants were free to return home in the evenings and at weekends, this intervention approach is most appropriately conceptualised as an outpatient intervention; hence this trial was therefore eligible for inclusion in this rapid review.

Sessions were unstructured, but were guided by the principles of problem-solving therapy which focused on identifying the connection between the precipitating incident and relevant past experiences. The goal of treatment was therefore to develop participants’ insight into the connection between past experiences (e.g., experiences of physical or sexual abuse), present feeling states, and suicidal behaviour. Sessions also addressed psychoeducation, interpersonal problem-solving deficits, and maladaptive behaviour. Participants were free to return home each night and at the weekends. By the conclusion of the 24-month follow-up period, however, this intervention was not associated with a significant reduction in suicidal ideation scores as measured using either the Modified Scale for Suicidal Ideation (1.0±2.4 vs. 0.0±0.0) or the suicidal ideation sub-scale of the Suicide Probability Scale (10.8±5.8 vs. 9.0±1.4).

Given the findings of one Australian trial of a similar group-based approach in adolescents, \(^{212}\) albeit using a more prolonged format of outpatient therapy delivered over a six-month intervention period rather than over the immediate post-discharge period, in which one participant in the group-based therapy shared confidential information on another participant on a web blog, this approach is not recommended at the present time, particularly in adolescents.

**Stepped Care Models**

Stepped care treatment models are multi-component, staged systems comprising a hierarchy of evidence-based interventions from the least intensive and/or restrictive to the most intensive and/or restrictive. Figure 1 presents a schematic of how such model could work within the existing mental health care system in Australia.

There have been few randomised controlled trial evaluations of stepped care models, either for the prevention of mental illness more broadly, or for the prevention of suicide in persons discharged from hospital-based and/or psychiatric inpatient services following treatment for suicidal thoughts and/or behaviours. This rapid review, for example, was unable to identify any trial which met inclusion criteria for this review.
One quasi-experimental evaluation of stepped care models for the prevention of suicide in community-dwelling populations was identified.\textsuperscript{215} Following an increase in suicides rates amongst the elderly, this stepped care model was implemented in one town in rural Japan. Persons aged 65 years and older were invited to attend a public mental health workshop in which they received psychoeducation to increase awareness of the signs and symptoms of depression, and the link between depression, social isolation, and suicide in the elderly. Participants were also encouraged to complete a self-report depression screening questionnaire which was collected by mental health professionals at the conclusion of the workshop. Those who screened positive for depression were contacted by their general practitioner to arrange a consultation to enable a more comprehensive mental health assessment was undertaken. Participants diagnosed with depression by their general practitioner were then either referred to a general practitioner with experience in treating depression in older persons, or alternatively, were referred for a psychiatric consultation by a psychiatrist as required.

Figure 1. Illustration of a stepped care model for mental health promotion.\textsuperscript{1}

\begin{figure*}[h]
\centering
\includegraphics[width=\textwidth]{stepped_care_model.png}
\caption{Illustration of a stepped care model for mental health promotion.\textsuperscript{1}}
\end{figure*}

\begin{itemize}
\item **What we need to achieve?**
\begin{itemize}
\item Focus on promotion and prevention by providing access to information, advice and self-help services.
\item Enhance early intervention by improving access to low cost, evidence-based alternatives to face-to-face services.
\item Provide and promote access to lower cost, lower intensity face-to-face services.
\item Increase service access rates to maximise the number of people receiving evidence-based interventions.
\item Improve access to adequate primary mental health care interventions to maximise recovery, prevent relapse, and prevent escalation in symptoms, and provide wrap-around, coordinated secondary and/or tertiary care for people with complex treatment needs.
\end{itemize}
\end{itemize}

\begin{itemize}
\item **What services are relevant?**
\begin{itemize}
\item **Well population**
providing access to information, advice and self-help services.
\item **At risk groups**
providing access to low cost, evidence-based alternatives to face-to-face services.
\item **Mild mental illness**
lower intensity face-to-face services.
\item **Moderate mental illness**
The number of people receiving evidence-based interventions.
\item **Severe mental illness**
Interventions to maximise recovery, prevent relapse, and prevent escalation in symptoms, and provide wrap-around, coordinated secondary and/or tertiary care for people with complex treatment needs.
\end{itemize}
\end{itemize}

\textsuperscript{1} Figure adapted from the Australian Government Report into PHN Primary Mental Health Care Flexible Funding Pool Implementation Guidance Report available from: https://www.health.gov.au/internet/main/publishing.nsf/Content/2126B045A8DA90FDCA257F6500018260/$File/1PHN%20Guidance%20-%20Stepped%20Care.PDF
The authors compared suicide rates in the community that received this intervention compared to a neighboring control population which did not. Over the 10-year implementation period, there was a 70.0% reduced risk of suicide in females aged 65 years and older. There was no evidence of a significant reduction in suicide rates amongst males aged 65 years and older following the implementation of this program, however. In fact, suicide rates for males in this age group remained essentially unchanged across the 10-year implementation period.

Discussion

Evidence for the Effectiveness of Self-Directed Interventions

No randomised controlled trial of an analogue intervention met criteria for inclusion in this rapid review. Additionally only one trial evaluation of a digital self-directed intervention aimed at members of the general population reporting suicidal thoughts (i.e., not those discharged from hospital and/or psychiatric inpatient units following treatment for suicidal ideation and/or behaviour) is currently underway; although outcomes from this trial are not expected until the latter half of 2018.1 There is therefore little to guide the implementation of these intervention approaches at present, particularly for those receiving hospital and/or inpatient treatment for severe suicidal ideation and/or behaviour.

Evidence for the Effectiveness of Clinician-Directed Interventions

Contact interventions

A recent Cochrane Collaboration systematic review and meta-analysis concluded there is little support for contact interventions.114 particularly in countries, such as Australia, with relatively comprehensive, integrated community-based mental health services.113 Additionally, given the findings of one randomised controlled trial of multimodal contact interventions of an increased risk of repetition following receipt of this intervention,162 future work is required before these interventions can be recommended for wide scale implementation. Evaluations of these types of interventions should also consider the role of attitudes towards clinical treatment services, help-seeking intentions, and actual help-seeking behaviour following receipt of the intervention given suggestions that these types of interventions may work by reducing the threshold for help-seeking and/or improved engagement with clinical services which may, in turn, have resulted in the increased rate of representation observed in the intervention group in one of these trials.162

Emergency cards

Provision of an emergency (also sometimes referred to as “green”) card, enabling participants to access on demand inpatient hospital and/or psychiatric treatment services, was not associated with a significant reduction in repetition of suicidal behaviour in any of the trials included in this rapid review. In line with the results from a recent Cochrane systematic review and meta-analysis,114 this rapid review would suggest there is little evidence to promote the wide scale implementation of this intervention approach presently.
Telehealth interventions

A recent trial of a treatment intervention approach in which participants were provided with device to enable daily monitoring of depression and suicidal ideation symptoms found no evidence of a significant difference between groups in suicidal ideation scores at the post-intervention assessment. Post-hoc sub-group analyses, however, suggested the intervention may be effective in those with a history of attempting suicide. The relative novelty of this intervention means it is difficult to reach firm conclusions as to the likely effectiveness of this intervention approach at present.

Treatment adherence enhancement interventions

Although treatment adherence enhancement approaches were associated with increased numbers of participants attending outpatient treatment services, this did not appear to be associated with a consummate reduction in suicidal behaviour. This would suggest that although adherence enhancement interventions may result in better engagement with outpatient psychiatric treatment, adherence may be a necessary, but not sufficient, pre-condition for the prevention of repeated suicidal behaviour in this population.

Outreach interventions

This rapid review identified only randomised controlled trials of a post-discharge assertive outreach intervention in which participants received an in-home visit to review their treatment needs and to arrange ongoing mental health, personality disorder, addictions, social services, and other treatment as necessary. This trial evaluated the effectiveness of this intervention in terms of services use and cost-effectiveness only, however. There is therefore currently little evidence to guide the implementation of these services at present.

The Victorian Suicide Prevention Framework (2016-25) is investing $27 million Australian dollars to implement outreach interventions. From February 2017, the Victorian government will implement a number of different assertive outreach models in six health services locations across the state (Albury-Wodonga Health, Barwon Health, Alfred Health, Maroondah Health, Peninsula Health, and St. Vincent’s Health). All persons presenting to any of these hospitals following a suicide attempt will receive assertive outreach for up to three months post-discharge. The development and implementation of these outreach models is based on the national approach, and is consistent with the guidance and recommendations contained in the NHMRC Centre of Research Excellence in Suicide Prevention (CRESP) Care After a Suicide Attempt: A Report for the National Mental Health Commission, beyondblue’s The Way Back Support Service: Take Action After A Suicide Attempt report, and the National Mental Health Commission’s National Review of Mental Health Programs and Services. An evaluation protocol for this project will help establish evidence-base for this treatment approach.

General practitioner management interventions

Only one randomised controlled trial identified by the present rapid review investigated the effectiveness of an intensive post-discharge treatment approach coordinated and conducted by the patient’s general practitioner, however, no significant difference in the proportion repeating self-harm was found according to hospital-recorded episodes of repeat self-harm. According to self-reported measures, however, some evidence of a significant increase in repetition of self-harm was observed which the authors interpret as evidence that although this intervention may not lead to a significant decrease in absolute rates of repetition, there may be a reduction in medical severity with the consequence that although self-reported episodes were increased, the number of episodes requiring treatment in the hospital decreased. Further work is required to


investigate this conclusion, however, before this treatment approach can be recommended for wide scale implementation.

Multimodal interventions

Whilst emerging evidence would suggest these types of interventions may be effective in reducing the proportion of participants who engage in repeated episodes of self-harm, particularly over the short-term (i.e., between three and six months’ post-discharge), the largest trials of this intervention approach used Zelen’s post-consent design in which participants are free to withdraw from the trial or swap treatment assignment groups prior to giving their consent to be included in the trial.\textsuperscript{208,209} This design can introduce selection bias if those who do not provide consent differ in important ways from those who do. Indeed, in both of these trials, around one-half of participants refused to provide consent on learning to which group (i.e., intervention or control) they had been assigned and, additionally, such patients were significantly more likely to have a history of multiple episodes of self-harm and could therefore be expected to have worse prognosis as compared to those who did provide consent to be included.

Further work is therefore necessary to ensure results of these trials are generalisable to all persons discharged from hospital and/or psychiatric inpatient services following an episode of suicidal ideation and/or behaviour, and not just those without a history of multiple prior episodes of self-harm.

Stepped care models

This rapid review was unable to identify an eligible trial evaluation of a stepped care model for the prevention of suicidal behaviour during the post-discharge period. COORDINATE is a stepped care approach, currently under development in a South Eastern New South Wales Primary Health Network.\textsuperscript{19} As yet, however, is not clear whether outcomes from this program will be evaluated empirically. An evaluation protocol should also be added to this project to investigate the effectiveness of this approach with respect to repetition of suicidal behaviour to help establish an evidence-base for this treatment approach.

Limitations of included trials

Because of the nature of interventions being considered this section, the review differed from those above in that it only considered randomised controlled trials. However several limitations of the included trials should be noted. Principally, most studies were underpowered with respect to their primary outcome, repetition of suicidal behaviour. Statistical power is a function of three factors:

1. The expected rate of repetition of self-harm and/or suicide under ‘usual treatment’ conditions (i.e., the rate of repetition in the control or TAU group);
2. The size of the difference in repetition rates between the intervention and control groups following treatment, and;
3. Decisions regarding acceptable levels of Type I\textsuperscript{11} and Type II\textsuperscript{33} error.\textsuperscript{217}

Most studies typically set the Type I error rate at 0.05 (i.e., there is a 5.0% probability of incorrectly finding a treatment effect where one exists) and the Type II error rate at 0.20 (i.e., there is a 20.0% probability of missing a treatment effect where one exists.\textsuperscript{218} With respect to the repetition of self-harm under ‘usual treatment’ conditions, recent work suggests a 12 month self-harm repetition rate of 16.3%,\textsuperscript{9} whilst evidence

\textsuperscript{11} Further information on this program is available from: http://www.coordinare.org.au/news/regional-strategy-and-stepped-care-model/
\textsuperscript{11} Type I error refers to the probability of rejecting a null hypothesis (e.g., that there is no difference in outcome between the intervention and control groups following treatment) that is actually true. This is also sometimes referred to as the “alpha or $\alpha$ level”.
\textsuperscript{33} Type II error refers to the probability of falsely rejecting a null hypothesis (e.g., that there is no difference in outcome between the intervention and control groups following treatment) that is actually false. This is sometimes referred to as the “beta or $\beta$ level”.
from a recent Cochrane systematic review and meta-analysis found that cognitive behavioural therapy, the psychosocial outpatient therapy found to be associated with the largest reduction in repetition of self-harm according to the review, reduces the 12 month self-harm repetition rate by 3.3%. Using these numbers, a minimum of 1,862 participants would be needed in each trial arm to detect a significant effect. For suicide, moreover, a minimum of 8,757 participants would be required in each trial arm to detect a significant treatment effect with an Type I error rate of 5.0% and a Type II error rate of 20.0% given recent findings suggesting a suicide rate under usual treatment conditions of 1.6%, and that cognitive behavioural-based therapy reduces this by 0.05%. Most trials included in this rapid review, however, included an average of 371 participants (range: 24 – 3,006).

In summary

Overall this rapid review identified a total of 40 studies that together investigated the effectiveness of interventions for the prevention of self-harm, attempted suicide, or completed suicide in the immediate post-discharge period. These ranged in intensity from contact interventions to those comprising a short course of a relatively intense psychosocial therapy; typically cognitive behavioural therapy or problem-solving therapy. The review also highlighted the role of technology in post-discharge care, which may provide an opportunity to bridge the gap between discharge and follow up support. Although there is currently a lack of evidence regarding effective digital interventions for delivery in the post-discharge period, they have showed some promising results and are highly acceptable, in particular among young people.

As a consequence of the limitations outlined above, definitive conclusions as to the likely effectiveness of interventions for the Victorian context cannot yet be drawn. Nevertheless, absence of evidence regarding the effectiveness of post-discharge interventions for the prevention of repetition of self-harm and/or suicide should not be interpreted to suggest that nothing works for this population. Instead, findings from this rapid review do provide valuable information to guide the future direction of providing support to people following discharge from an emergency department or hospital following self-harm.

Valuable opportunities exist within the Victorian Suicide Prevention Framework (2016-25) to pilot integrated, systems-based stepped care models in the immediate post-discharge period in larger-scale trials around Victoria. The addition of an evaluation protocol to these models will enable different approaches to be evaluated rigorously and will help to overcome some of the past research limitations. Evaluation could include consultation with patients to ensure interventions meet the needs of this patient group. This could also incorporate cost-effectiveness analyses, to establish an evidence base for the cost-effectiveness of these interventions. Although recent estimates suggest that self-harm costs the Australian economy around $17.5 billion Australian dollars each year in direct hospital admission and associated costs, it is presently unclear whether these interventions represent value for money in terms of reducing these costs. A final area for investigation is the psychological mechanisms of action in these intervention, which, for many, has not previously been evaluated. It is therefore unclear exactly how these interventions may work and for which sub-group/s of patients.

Although there have been no randomised controlled trials of a brief, post-discharge focused, stepped care approach, some models of this approach are available. These models combine outreach and treatment adherence enhancement approaches with a six month course of outpatient problem-solving therapy coupled with continuity of care throughout the duration of the intervention period. This intervention showed promise in reducing both the proportion of participants repeating self-harm and the number of repeat episodes per person over the follow-up period. Despite the current lack of research into stepped care models for suicide prevention, this approach provides multiple, systematic opportunities for intervention that could impact individuals at different levels of suicide risk.

Regardless of type of intervention, collaborative care and person-centred approaches can be used to improve communication with individuals, support people and health professionals. Although this rapid review did not identify any eligible randomised controlled trial of a collaborative care and/or person-centred approach, emerging work suggests that services that involve family members and/or other support persons, as well as
those which encourage collaboration between and across service sectors (e.g., psychiatric, substance misuse, education and social services) may hold promise for reducing repetition of self-harm and suicide. Particularly for young people who engage in self-harm, these developments should also consider involving parents (if appropriate) as they typically play an important role in both initiating treatment and in support the young person to attend treatment sessions. 220
<table>
<thead>
<tr>
<th>Author &amp; Date</th>
<th>Region &amp; Country</th>
<th>Participants</th>
<th>Intervention Description</th>
<th>Main Finding(s)</th>
<th>Limitation(s) &amp; Methodological Bias(es)</th>
<th>Conclusion(s)</th>
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<tr>
<td>Beauvais, 2010</td>
<td>Christchurch, New Zealand</td>
<td>327 participants (66.1% female), aged 16 years and older, discharged from the psychiatric emergency service at one general hospital following an episode of self-harm or attempted suicide (76.7% had engaged in self-poisoning).</td>
<td><strong>Postcards:</strong> Series of six post-cards mailed in sealed envelopes to participants two and six weeks, and again at three, six, nine, and 12 months following discharge. Postcards included a message encouraging participants to contact the psychiatric emergency service should they wish to for any reason.</td>
<td>Analyses adjusting for baseline imbalances between the postcard and control groups suggested no significant reduction in either the proportion of participants representing following an episode of self-harm or attempted suicide, or the number of repeat episodes per person.</td>
<td>Despite randomisation there was a significant difference between the postcard and control groups with participants in the postcard group having significantly lower rates of self-harm in the 12 months preceding trial entry. When analyses adjusted for this difference, postcards were no longer associated with a significant treatment effect. Outcomes were based on hospital representation; repeat episodes of self-harm in the community therefore would not have been recorded.</td>
<td>Postcards do not appear effective in reducing either the proportion repeating self-harm or the number of repeat episodes of suicidal behaviour over the 12 month post-discharge period. Further trials are required to investigate whether such postcards may be effective for specific sub-groups of patients not captured by the broad inclusion criteria used in this particular trial.</td>
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<tr>
<td>Carter, 2005</td>
<td>Newcastle, Australia</td>
<td>772 participants (67.9% female), aged 16 years and older, discharged from a regional toxicology following an episode of self-poisoning.</td>
<td><strong>Postcards:</strong> Series of eight postcards mailed in sealed envelopes to participants at one, two, three, four, six, eight, 10, and 12 months’ following discharge. Further information on the content of these postcards is provided in Case Study 3.</td>
<td>Although there was no significant reduction in the proportion of participants representing following an episode of self-poisoning, there was a significant reduction in the number of repeat episodes in the postcard group. Sub-group analyses by gender suggested</td>
<td>Only those engaging in self-poisoning were the subject of this intervention; results cannot be translated to those who engage in self-injury (and for whom rates of completed suicide following treatment are particularly elevated). Sub-group analyses by sex and</td>
<td>Postcards resulted in a halving of the number of repeat episodes over the 12 month intervention period. Effects with regards to reduced frequency of repetition were also observed in two subsequent papers following the conclusion of a one-year and four-year follow-up.</td>
</tr>
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</table>
that postcards may be more effective for women, and particularly those with three or more episodes of self-poisoning prior to inclusion in the study. Repeater status were post-hoc and therefore violated principles of randomisation. Caution should be used when interpreting these findings. Outcomes were based on hospital representation; repeat episodes of self-harm in the community therefore would not have been recorded.

| Robinson, 2012 | Melbourne, Australia | 164 participants (64.6% female), between 15 and 24 years of age, discharged from a community mental health service due to resolution of psychiatric symptoms, and with a history of suicidal threats, ideation, self-harm, and/or a suicide attempt. | Postcards: Series of 12 postcards mailed in sealed envelopes to participants each month for 12 months. Postcards included a message of support, reminded participants about sources of help discussed during treatment, and outlined one of 6 evidence-based self-help strategies. Control: Any form of treatment received at baseline, which could include support from a school counsellor, general practitioner, private psychologist or psychiatrist. | There was no significant reduction in the proportion of participants reporting suicidal ideation, repetition of self-harm, or suicidal thoughts at either the 12-month post-intervention assessment or at the six-month follow-up. There was also no significant difference between groups in terms of number of repeat episodes of self-harm. There was also no evidence of significant reduction in depression, hopelessness, or suicidal intent scores. | 35.6% of participants could not be contacted. Selection and detection bias therefore cannot be ruled out. Results may also be underpowered due to this high attrition rate. |

| Bennewith, 2002 | Bristol and Bath, United Kingdom | 1,932 participants (58.8% female), between 16 and 95 years of age, registered | Letters: Following discharge from hospital a letter was sent to each participant’s general practitioner. | There was no evidence of a significant reduction in the proportion repeating self-harm. | Although no significant reductions were observed for any suicidal behaviour outcome assessed, a questionnaire administered at the 12 month post-intervention assessment suggested the majority of participants (75.0%) liked receiving the messages and 63.0% reported trying at least one of the six self-help strategies. Almost half (42.0%) also mentioned that they frequently referred back to the messages during times of distress. |

**Contact Interventions: Letters**
Kingdom with one of 98 regional primary care practices, discharged from hospital following an episode of self-harm. Informing them of the self-harm incident, a copy of guidelines for the aftercare of persons who engage in self-harm developed by consensus between the authors of the trial, and a letter to forward to the patient encouraging him/her to make contact.

**Control:** Process evaluations suggested less than half (40.4%) were referred for specialist mental health treatment. Around 56.9% consulted their general practitioner post-discharge, however, general practitioners themselves had initiated contact with only 15.1% of participants.

In the 12 months following discharge. There was also no significant difference between groups in terms of number of repeat episodes of self-harm or in the mean number of days until the first repeated episode of self-harm. **Post-hoc analyses by repeater status at the index hospitalisation (i.e., comparing those with no history of self-harm prior to enrolment vs. those with a history of multiple episodes of self-harm prior to enrolment) suggested letters may be beneficial in those with a history of multiple episodes of self-harm and may increase repetition risk in those without this history.**

**Luxton, 2014** California and New York, USA

<table>
<thead>
<tr>
<th>Letters: Series of 13 emails sent monthly for the first four months following discharge, then every two months for the next eight months following discharge, and finally every three months for the remainder of the two year intervention. Emails include personalised messages reminding participants of activities they enjoyed whilst being treated, advice to take up these activities again, and a message encouraging them to contact the</th>
<th>This RCT is ongoing. Results are not yet available.</th>
</tr>
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<tbody>
<tr>
<td>Target sample size will be 4,730 persons (proportion female not specified), 18 years of age and older, active duty military, veteran, retiree, national guard, or reserve status, discharged from psychiatric inpatient care following symptomatic exacerbation and suicidal behaviour.</td>
<td>N/A.</td>
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psychiatric inpatient service should they wish to for any reason.

**Control:** Referral to usual care services as required.

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Size</th>
<th>Average Age</th>
<th>Description</th>
<th>Intervention Details</th>
<th>Outcomes</th>
</tr>
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<tbody>
<tr>
<td>Motto, 1976</td>
<td>San Francisco, USA</td>
<td>3,006 adults (55.8% female), with an average age of 33.9 years (range not reported), discharged from psychiatric inpatient services following symptomatic exacerbation and suicidal behaviour and who refused referral to mental health services for ongoing outpatient treatment.</td>
<td>Letters: Series of 24 letters mailed monthly for the first four months following discharge, then every two months for the next eight months following discharge, and finally every three months for the remainder of the five year intervention. Letters featured a standard (non-personalised) message wishing participants well in their recovery and inviting participants to make contact with the service for any reason should they wish to.</td>
<td>Although suicide rates were lower in the letters group compared to the control group over the first four years of the intervention, they were not significantly different. The intervention may, by itself, not adequately protect against the increased risk of suicide in the post-discharge period; 25 suicides (0.8%) occurred before project personnel could organise postage of the first letter.</td>
<td>The authors conclude that although a significant effect for letter-based contact interventions remains to be determined, their relative low cost in terms of funds, time, space, and personnel resources means they represent a clinically meaningful method of linking patients who tend to avoid existing health care structures in with sources of help.</td>
<td></td>
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<tr>
<td>Motto &amp; Bostrom, 2001</td>
<td>San Francisco, United States of America</td>
<td>3,005 adults (55.8% female), with an average age of 33.9 years (range not reported), discharged from hospital following symptomatic exacerbation and suicidal behaviour and who refused referral to mental health services for ongoing outpatient</td>
<td>Letters: Series of 13 letters mailed monthly for the first four months following discharge, then every two months for the next eight months following discharge, and finally every three months for the remainder of the two year intervention. Letters featured a standard (non-personalised) message wishing participants well in their recovery and inviting participants to make contact with the service for any reason.</td>
<td>Suicide rates were not significantly lower in the letters group compared to the control group by the five-year post-intervention assessment (3.9% vs. 4.6%) and at the conclusion of a 15-year follow-up period (6.4% vs. 5.7%). This study did not include a follow-up evaluation; it is therefore unclear whether this intervention would be associated with significant effects in the absence of these letters over a longer time frame.</td>
<td>The suicide rate in the control group over both years of the intervention was approximately twice that of the intervention group. This was the first study to demonstrate that low intensity, postal contact interventions can significantly reduce suicide mortality rates over the post-discharge period.</td>
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treatment. reason should they wish to.

Control: Referral to usual care services as required.

The authors also report their intervention contributed to improved help-seeking as patients often turned to project personnel for help re-entering the health care system.

<table>
<thead>
<tr>
<th>Contact Interventions: Text Messages</th>
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<tr>
<td><strong>Berrouiquet, Various cities, France 2015</strong></td>
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<tr>
<td>Target sample size will be 530 participants, aged 18 years and older, discharged from EDs or psychiatric inpatient units following a suicide attempt and who were hospitalised for less than 7 consecutive days.</td>
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<tr>
<td><strong>Text messages:</strong> A series of nine text messages will be sent to participants' mobile telephones within 48 hours of discharge, again at eight and 15 days, and finally, at one, two, three, four, five, and six months' following discharge. Messages will feature a personalised message wishing participants well in their recovery and will remind participants of the contact information for their monitoring doctor’s name and contact information, and dates of upcoming scheduled appointments.</td>
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<tr>
<td><strong>Control:</strong> Referral to usual care services as required.</td>
</tr>
<tr>
<td>This RCT is ongoing. Results are not yet available.</td>
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<td>N/A.</td>
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<th>Contact Interventions: Telephone Calls</th>
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<tr>
<td><strong>Cedereke, Lund, Sweden 2002</strong></td>
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<tr>
<td>Target sample size will be 216 adults (66.2% female), with an average age of 41.0 years (SD 18.0 years), discharged from a medical emergency inpatient treatment unit.</td>
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<tr>
<td><strong>Telephone contact:</strong> Two telephone calls at four and eight months' post-discharge, lasting between 20 and 45 minutes, designed to increase motivation for treatment. Patients were encouraged to remain compliant with the majority (59.8%) of participants receiving both telephone contacts. 18.7% received only one contact (typically the final contact). At the four-month follow-up, The relatively small numbers of events in the intervention group in relation to treatment contact types may increase the likelihood of false positive findings.</td>
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<tr>
<td>These contacts were intended to increase motivation for treatment, however, no significant difference in terms of psychiatric treatment attendance was observed at.</td>
</tr>
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following a suicide attempt.

treatment or to make contact with mental health services if they had dropped out from treatment.

Control: Referral to usual care services as required.

assessment, there was no significant between groups in either the proportion reattempting suicide or the number of suicide reattempts. The telephone contact group did, however, experience significant improvements in suicidal ideation scores.

Control: Referral to usual care services as required.

Telephone contact: Telephone call either at one month or at three months’ post-discharge. Calls were made by psychiatrists with at least five years’ experience in treating suicidal persons. Calls were designed to remind participants of the treatment plan recommended at discharge and/or to suggest new treatment options for those who have dropped out of treatment. Patients in crisis at the time of the call were provided with an appointment at the ED in which they had originally been treated. The patient’s general practitioner was also informed of the content and outcome of these calls.

Control: Referral to usual care services as required. In most cases, this involved referral back to the general practitioner only.

There was no significant difference between the three groups (i.e., control vs. contact at one month vs. contact at three months) in the proportion dying by suicide at the conclusion of the follow-up period. There was a significant difference between those in the control group and those contacted at one month in terms of the proportion reattempting suicide, however, for those contacted at three months there was no significant effect for telephone contact on this outcome.

The control condition did not adequately control for any non-specific effects of telephone contacts.

The authors conclude that contacting participants at one, but not three, months following discharge may help to reduce the proportion of patients who reattempt suicide. They also conclude that telephone contact offers an effective method of detecting those at high risk of suicide and for facilitating timely referral to emergency care.

<table>
<thead>
<tr>
<th>Vaiva, 2006</th>
<th>Northern France</th>
<th>605 adults (72.9% female), between 18 and 65 years of age, discharged from EDs following an attempted suicide by drug overdose.</th>
<th>Telephone contact: Telephone call either at one month or at three months’ post-discharge. Calls were made by psychiatrists with at least five years’ experience in treating suicidal persons. Calls were designed to remind participants of the treatment plan recommended at discharge and/or to suggest new treatment options for those who have dropped out of treatment. Patients in crisis at the time of the call were provided with an appointment at the ED in which they had originally been treated. The patient’s general practitioner was also informed of the content and outcome of these calls.</th>
<th>There was no significant difference between the three groups (i.e., control vs. contact at one month vs. contact at three months) in the proportion dying by suicide at the conclusion of the follow-up period. There was a significant difference between those in the control group and those contacted at one month in terms of the proportion reattempting suicide, however, for those contacted at three months there was no significant effect for telephone contact on this outcome.</th>
<th>The control condition did not adequately control for any non-specific effects of telephone contacts.</th>
<th>The authors conclude that contacting participants at one, but not three, months following discharge may help to reduce the proportion of patients who reattempt suicide. They also conclude that telephone contact offers an effective method of detecting those at high risk of suicide and for facilitating timely referral to emergency care.</th>
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<tbody>
<tr>
<td>Year</td>
<td>Location</td>
<td>Participants</td>
<td>Multimodal Intervention</td>
<td>Control</td>
<td>Findings</td>
<td></td>
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<tr>
<td>Kapur, 2013</td>
<td>Manchester, United Kingdom</td>
<td>65 adults (proportion female not reported), 18 years of age and older, discharged from EDs following an episode of self-harm.</td>
<td>Information leaflet listing local and national sources of help mailed soon after discharge, two telephone calls within the first two weeks post-discharge, and a series of six postcards mailed in sealed envelopes to participants one, two, four, six, eight, and 12 months’ following discharge. Further details on the content of these contacts is provided in Case Study 6.</td>
<td>Referral to mental health, social services, and/or voluntary sector services as required. Care was available from a mental health liaison nursing team or duty psychiatrists (after hours).</td>
<td>There was a significant increase in the proportion of participants representing following self-harm at the 12 month post-intervention assessment (34.4% in the intervention group compared to 12.5% in the control group). There was also a significant increase in the number of repeat episodes of self-harm (41 in the intervention group compared to 7 in the control group). This is a pilot RCT which may have been underpowered with respect to the suicidal behaviour outcomes assessed. Only one-half of the eligible patients were randomised. Outcomes were based on hospital representation; repeat episodes of self-harm in the community therefore would not have been recorded. The authors conclude there is a possibility that this type of intervention may be associated with a true increase in the risk of repetition, despite the fact that this trial may have been underpowered and that further studies are therefore required before this intervention should be scaled up to routine clinical practice. They also conclude that the intervention might have reduced the threshold for help-seeking and/or improved engagement with clinical services which, in turn, may underlie the increased rate of representation in the intervention group.</td>
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<tr>
<td>Mouaffak, 2015</td>
<td>Paris, France</td>
<td>320 adults (73.9% female), 18 years of age and older, discharged from the ED following a suicide attempt after a stay of less than 72 hours.</td>
<td>A letter, mailed to participants within days of discharge, containing details of upcoming outpatient appointments and a crisis card with the number of a dedicated, 24 hour crisis telephone service. Further letters were mailed one, six and 11 months’ following discharge encouraging them to contact the service should they wish to for any reason. Participants also received three telephone calls, at two weeks’ and at</td>
<td></td>
<td>There was no significant difference between groups in either the proportion that reattempted suicide, or the number of suicide reattempts per person by the conclusion of the 12 month follow-up. Post-hoc subgroup differences suggested no evidence of an effect by repeater status. Sub-group analyses by repeater status were post-hoc and therefore violated principles of randomisation. Results of these analyses should therefore be interpreted with caution. The authors conclude that a mixed multimodal postal and telephone contact intervention is unlikely to significantly reduce the proportion of suicide reattempt or in improving healthcare engagement.</td>
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one and three months’ post-discharge in which they were reminded of the treatment plan recommended at discharge and/or to received suggestions of new treatment options for those who have dropped out of treatment. The patient’s general practitioner also received their hospitalisation report and an outline of the intervention program by letter within one week of the patient’s discharge to facilitate communication between the tertiary and primary health care systems.

**Control:** Participants allocated to control received routine clinical care.

| Vaiva, 2011 | Various locations, France | Target sample size will be 900 participants, aged 18 years and older, discharged from EDs following a suicide attempt. | **Intervention:** Participants will receive a crisis card with the number of a dedicated 24 hour crisis telephone hotline, two telephone contacts at 10 and 21 days’ post-discharge to assess whether patients are linked in with outpatient services and, if not, to assist in referring participants to these services, and a series of four postcards, mailed in sealed envelopes at two, three, four, and five months’ post-discharge to non-adherent and/or distressed patients containing a personalised salutation, a included a message of support, and encouraging the patient to contact the service should | This RCT is ongoing. Results are not yet available. | N/A. | N/A. |
they wish to for any reason.

**Control:** Participants allocated to control received routine clinical care. For most this will be referred back to their general practitioner for management.

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### Emergency Cards

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>Cotgrove, 1995</td>
<td>London, UK</td>
<td>105 participants (85.7% female), between 12 and 17 years of age, discharged from child and adolescent EDs following a suicide attempt.</td>
<td><strong>Emergency card:</strong> Participants received a token enabling them to admit themselves on demand to hospital without question.</td>
<td>The rate of repetition of suicide in the intervention group was half that of the control group (6% vs. 12%). This difference was not statistically significant, however. In one center there was an error in randomisation with five participants receiving the emergency card only after a substantial delay. Data from these participants were included in the control group which may have biased results towards the null. The authors conclude that emergency cards are used appropriately by young people to readmit themselves to hospital enabling them to learn more adaptive coping mechanisms during times of distress.</td>
</tr>
<tr>
<td>Evans, 1999</td>
<td>Bristol, UK</td>
<td>827 adults (55.6% female), 18 years of age and older, admitted to general hospitals following an episode of self-harm.</td>
<td><strong>Emergency card:</strong> A card containing the number of a dedicated telephone service that provided direct access to an on-call psychiatrist who could be reached at any time on demand. The card was valid for use up to 6 months post-discharge. <strong>Control:</strong> Referral to mental health services as required.</td>
<td>There was no significant reduction in the proportion repeating self-harm, number of repeat episodes per person, time to the first repeat episode, or the proportion dying by suicide. Sub-group analyses by repeater status, however, suggested the cards may, in fact, increase repetition in those with a history of multiple episodes prior to study enrolment. In a subsequent paper, this apparent effect had diminished to non-significance. Sub-group analyses by repeater status were post-hoc and therefore violated principles of randomisation. Results of these analyses should therefore be interpreted with caution. Routine health service information sources were used to determine repetition of self-harm which may have underestimated the true extent of this behaviour. The authors conclude this study was sufficiently powered to detect a significant effect on suicidal behaviour outcomes had one existed. They therefore conclude that an emergency card intervention is unlikely to be effective in reducing suicidal behaviour in the post-discharge period; indeed they note that neither of the participants in the intervention group who died by suicide had made use of the card.</td>
</tr>
</tbody>
</table>
by the conclusion of a 6 month follow-up period.

| Morgan, 1993 | Bristol, UK | 212 adults (proportion female not reported), 18 years of age and older, discharged from EDs following an episode of self-harm. | **Emergency card:** At discharge participants received a card which encouraged the patient to seek help and outlined telephone numbers to use during times of distress and gave the patient the option of surrendering the card in exchange form an on-demand crisis inpatient admission if required. A ‘booster’ card was sent at 3 weeks post-discharge. Patients’ general practitioners also received a copy of these cards. | There was no significant reduction in the proportion repeating self-harm over the one-year follow-up period. When actual self-harm repetition was combined with suicidal threats, however, rates were significantly lower in the emergency card group. There was no evidence of increased service use, and particularly general hospital service use, between groups. | This RCT included only patients without a history of self-harm prior to their index admission. Results therefore cannot be generalised to those who have a history of multiple episodes of self-harm. | The authors conclude their results suggest that emergency card interventions may lead to reductions in demands for hospital use and can be easily implemented into existing services without the need for additional resources. |

| Kasckow, 2016 | Pittsburgh, USA | 51 adult military veterans (5.9% female), 18 years of age and older, discharged from a veterans inpatient psychiatric ward following treatment for schizophrenia or schizoaffective disorder, and who screened positive for current suicidal ideation according to treatment allocation. | **Intervention:** Participants received the HealthBuddy® device (provided by Bosch HealthCare, INC) which enabled them to access daily pre-recorded psychoeducation sessions addressing: (1) mood monitoring; (2) information on when and how to contact their clinician during times of distress and/or symptomatic fluctuations. Participants were also taught how to access daily pre-recorded messages offering strategies for how to manage suicidal ideation. | There was no evidence of a significant difference between groups in suicidal ideation scores at the post-intervention assessment. Post-hoc sub-group analyses, however, suggested the intervention may be effective in those with a history of attempting suicide. | This RCT was underpowered with respect to the clinical outcomes of suicidal behaviour assessed. Neither participants nor clinical personnel were blinded to treatment allocation; detection and information bias therefore cannot be ruled out. Sub-group analyses by suicide method were not conducted. | The authors conclude that application of a telehealth clinical monitoring system holds promise in efforts to monitor suicide risk in clinical populations. |
to scores on the Beck Scale for Suicidal Ideation were included. provided with crisis telephone numbers to use if they reported having suicidal thoughts/plans. attempt status were post-hoc and therefore violated principles of randomisation. Results of these analyses should therefore be interpreted with caution.

**Control:** Intensive case monitoring. It is unclear what this comprised, however.

### Treatment Adherence Enhancement Interventions

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Participants</th>
<th>Intervention</th>
<th>Control</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Asarnow (2011)</td>
<td>Los Angeles, USA</td>
<td>181 adolescents (69.1% female), between 10 and 18 years of age, discharged from EDs following severe suicidal ideation, an attempted suicide, or both.</td>
<td>Intervention: A one-off face-to-face crisis intervention session and telephone contact, made within 48 hours of discharge, with additional telephone contacts at one, two, and four weeks’ post-discharge (as required) to: (1) review expectations for treatment; (2) address treatment misconceptions; (3) review factors that might impede treatment attendance, and; (4) make a verbal contract to attend a minimum number of outpatient treatment sessions.</td>
<td>Control: Intensive case monitoring. It is unclear what this comprised, however.</td>
<td>Participants randomised to the intervention were significantly more likely to be linked in with outpatient treatment services, however, there were no significant effects for this intervention on the proportion reattempting suicide, dying by suicide, or reporting suicidal ideation at follow-up. This RCT was underpowered with respect to the clinical outcomes of suicidal behaviour assessed. Authors also did not assess clinical and functional outcomes immediately post-intervention. The authors conclude their results support the efficacy of compliance enhancement approaches in linking suicidal youths to outpatient mental health treatment following discharge from ED services.</td>
</tr>
<tr>
<td>Grupp-Phelan, 2012</td>
<td>Cincinnati, USA</td>
<td>24 adolescents (71.2% female), between 12 and 17 years of age, discharged from pediatric emergency and rated as at high risk of suicide</td>
<td>Intervention: A one-off appointment with a social worker to: (1) outline available mental health resources in the community; (2) review expectations for treatment</td>
<td>Control: Referral to mental health services as required.</td>
<td>Participants in the intervention group were not significantly more likely to schedule at least one appointment with outpatient services, although they were more likely to Potential for selection bias exists owing to the large nonparticipation rate in this study; 70.0% of those participants initially approached declined</td>
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</table>
according to scores on the abbreviated Columbia Suicide Scale. and address misconceptions; (4) arrange a specialist mental health evaluation; (5) provide telephone reminders of upcoming outpatient appointments.

**Control:** Referral to outpatient or telephone-based services as required.

**Intervention:** A one-off appointment, lasting one hour, to:
1. review expectations for treatment;
2. address treatment misconceptions;
3. review factors that might impede treatment attendance, and;
4. make a verbal contract to attend a minimum number of outpatient treatment sessions.

**Control:** Referral to mental health services as required.

Participants in the intervention group engaged in fewer repeat episodes of self-harm, however, there was no significant difference between groups in the proportion repeating self-harm or dying by suicide by the 6 month follow-up assessment. The intervention was also not associated with an improvement in the number of treatment sessions attended or on the proportion of participants who prematurely terminated outpatient treatment.

**Control:** Referral to mental health services as required.

This study was underpowered with respect to the clinical outcomes of suicidal behaviour assessed.

The authors conclude that compliance enhancement approaches may be useful, but only if there are enough resources devoted to ensuring young people have adequate access to a range of stepped care services to overcome barriers to treatment access.

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**Spirito, 2002**
**Rhode Island, USA**
63 adolescents (94.1% female), between 12 and 18 years of age, discharged from the ED or pediatric ward of a children’s hospital following a suicide attempt.

**Intervention:** Patients received a home visit by a community mental health nurse to assess reasons for non-compliance with outpatient treatment, treatment needs, and whether the original post-discharge plan satisfactorily

There was no evidence of a significant difference in the proportion repetition of self-harm or dying by suicide over the 1-year follow-up period.

Process evaluations were not conducted; the mechanism by which the home visits improved compliance is therefore unknown.

Although a significantly greater proportion of participants in the intervention group were compliant with outpatient treatment during the 1 year follow-up period, the authors...
addressed these needs.

**Control:** referral to mental outpatient health services as required.

Conclude this may not be sufficient to lead to a meaningful reduction in suicidal behaviour.

### Outreach Interventions

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Description</th>
<th>Intervention</th>
<th>Control</th>
<th>Results</th>
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<tbody>
<tr>
<td>Currier, 2010</td>
<td>Rochester, USA</td>
<td>120 adults (56.7% female), 18 years of age or older, discharged from EDs following treatment for suicidal thoughts, plans, and/or behaviours.</td>
<td><strong>Intervention:</strong> A one-off community-based outreach appointment occurring within 48 hours of discharge designed to assess the patient’s need for further mental health, medical, and/or addiction treatment services and to facilitate referral to these services as required.</td>
<td><strong>Control:</strong> Referral to an outpatient mental health service with a mandate to offer the first outpatient appointment within five days of discharge.</td>
<td>Although the intervention led to improvements in the proportion of patients who were linked in with treatment services post-discharge, there was no significant difference between groups in suicidal ideation scores or any other symptomatic outcomes measured at the follow-up assessment. The sample was diagnostically heterogeneous. The RCT was underpowered with respect to the clinical outcomes of suicidal behaviour assessed. The authors also used intention-to-treat methods despite a high rate (63.3%) of attrition. The authors conclude that a one-off outreach appointment can be used to make rapid contact with suicidal patients in the community. However, establishing contact in the community (versus the outpatient clinic alone) does not appear to be more effective at improving symptomatic outcomes.</td>
</tr>
<tr>
<td>Latimer, 2014</td>
<td>Montreal, Canada</td>
<td>286 adolescents (percent female not reported), between 12-17 years of age, discharged from the ED following an episode of suicidal ideation, self-harm, and/or attempted suicide.</td>
<td><strong>Intervention:</strong> A series of two outreach appointments with a multidisciplinary treatment team comprising psychiatrists, psychiatric nurses, social workers, education specialists, and an art therapist within 24 and 72 hours of discharge. Sessions were designed to ensure the patient’s treatment needs had been assessed, and that referrals to appropriate outpatient treatment services and community resources had been arranged as required.</td>
<td></td>
<td>At the six-month follow-up assessment, outpatient treatment service use was similar between the intervention and control groups. The intervention was therefore not associated with a significant reduction in costs (-$991.00, 95% confidence interval -$5,580.00 to +$3,598.00). Only cost-effectiveness analyses were conducted. As this study was an open pragmatic randomised trial, participants were free to pursue other, non-experimental therapies as desired. Participants in the control group, moreover, were free to peruse experimental-type therapies as desired. This could have biased estimation of effectiveness towards the null. The authors conclude that the multi-disciplinary outreach approach is unlikely to be cost-effective in its current form as participants tended to seek treatment from hospital, even if this meant going to a hospital outside the catchment area. They suggest that better addressing the concerns of parents through the therapeutic intervention, so that they are less likely to seek hospitalisation for their child</td>
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</table>
### General Practitioner Management Interventions

**Grimholt, Oslo, Norway 2015**

- **202 adults (55.0% female), between 18 and 75 years of age, discharged from hospital following an episode of self-poisoning, and who had the contact details of a named general practitioner in their medical notes were included.**

- **GP management:** Systematic follow-up including a consultation within one week of discharge, at least one consultation each month for the first three months post-discharge, and two further consultations over the next three months.

- **Control:** Referral for in- or outpatient mental health treatment as required.

At the post-intervention assessment, GP management was not associated with significant reductions in suicidal ideation scores, suicide reattempts, or repetition of self-harm according to hospital admission records. However, a significant increase in self-reported episodes of self-poisoning was observed.

This was a pragmatic RCT in which GPs were not specifically trained in the management of suicidal persons. Variations within each treatment group in the kind of treatment and amount of contact received may explain the lack of effect observed. The authors conclude that the most reliable measure of repetition of self-poisoning is the number of admissions to hospital, for which no significant difference between groups was found. Results regarding a possible increase in self-reported self-poisoning therefore requires replication before possible mechanisms for this discrepancy can be hypothesised.

### Brief Outpatient Treatment Interventions

**Comtois, Seattle, USA 2011**

- **32 adults (62.0% female), between 19 and 62 years of age, discharged from psychiatric emergency and/or liaison psychiatry services following a suicide attempt, and without appropriate ongoing outpatient psychiatric care arrangements at discharge were included.**

- **Collaborative Assessment and Management of Suicidality (CAMS):** 12 sessions, delivered over an average of 13.5 weeks, of a brief psychological intervention designed to assist patients to develop a crisis plan. The first of these sessions occurred within one day following discharge.

- **Control:** Outpatient psychiatric case management and as needed medication management for between one and three months (as required) followed by discharge to primary care services.

At the 12-month follow-up assessment, patients receiving CAMS had significantly reduced suicidal ideation scores, psychological distress, and hopelessness.

Patients in the CAMS group received, on average, a greater number of treatment sessions. This may have affected outcomes above and beyond the specific effect of the therapeutic content of the CAMS intervention. The authors conclude CAMS is effective in reducing suicidal ideation, and psychological distress, and that these reductions are still evident up to 12 months post-intervention.
<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Size</th>
<th>Intervention Details</th>
<th>Control Details</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Crawford, 2010</td>
<td>London, UK</td>
<td>103 adults (48.5% female), aged 18-65</td>
<td><strong>Brief Alcohol Treatment:</strong> An appointment card for a single session next-day appointment with an alcohol nurse specialist. This session, lasting around 30 minutes, covered the adverse effects of excessive alcohol consumption, advice about reducing consumption, and reviewed further addiction services treatment options. Patients also received an informational flyer outlining the health effects of excessive alcohol consumption, and contract details for national alcohol telephone helplines.</td>
<td><strong>Control:</strong> A blank piece of card of the same size and weight of the appointment card and an informational flyer outlining the health effects of excessive alcohol consumption, and contract details for national alcohol telephone helplines.</td>
<td>There was no significant difference between groups in the proportion of patients with a repeat episode of self-harm by the six-month follow-up assessment. Those randomised to the brief alcohol treatment group did, however, self-report consuming an average of seven fewer units of alcohol per drinking day. Only around one-half (47.1%) of those who were assigned to the brief alcohol treatment group attended their appointment. The authors conclude that although they did find evidence that those who were offered the brief intervention reduced the amount of alcohol they consumed over the six-month follow-up period, this reduction in consumption did not, in turn, appear to be associated with a reduction in the likelihood of repetition of self-harm.</td>
</tr>
<tr>
<td>Fischer, 2013</td>
<td>Heidelberg, Germany</td>
<td>Target sample size will be 80 participants, aged 12-17</td>
<td><strong>Intervention:</strong> Participants will receive between eight and 12 sessions delivered over 12 weeks of a brief psychosocial intervention combining aspects of CBT and DBT addressing: (1) promoting treatment motivation and compliance; (2) identification of reasons for suicidal behaviour; (3) exploration of alternative coping strategies; (4) stabilisation of alternative reasons for self-harm.</td>
<td>N/A. N/A.</td>
<td>This RCT is ongoing. Results are not yet available.</td>
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</table>
be included.

**Control:** Participants will receive a one-off telephone call referring them to further outpatient treatment as required.

<table>
<thead>
<tr>
<th>Gratz, 2006</th>
<th>Boston, USA</th>
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</table>
| 24 adults (100% female), between 18 and 60 years of age, diagnosed with borderline personality disorder according to DSM-IV criteria, with a history of multiple episodes of self-harm (at least one of these episodes must have occurred in the six months preceding enrolment) were included. | **Intervention:** A 14 week group emotion regulation training intervention consisting of elements of CBT and ERGT to:

1. increase awareness and acceptance of distressing emotions;
2. strategies to engage in goal-directed behaviours whilst inhibiting impulsive behaviours during times of distress;
3. use situationally appropriate strategies to modulate the intensity and duration of emotions;
4. become accepting of negative emotional states.

**Control:** outpatient treatment as required.

Although the intervention was not associated with a significant reduction in the proportion of participants repeating self-harm by the post-intervention assessment, there was a significant reduction in the number of repeat episodes per person at this time point.

Outcomes relied on subjective, self-reported measures.

As only women were included in this trial, results cannot be generalised to males.

The relatively small sample size also meant this study was underpowered with respect to the clinical outcomes of suicidal behaviour assessed.

The authors conclude that an emotion-regulation focused brief psychosocial intervention can effectively reduce number of repeat episodes of self-harm whilst improving symptomatic functioning.

<table>
<thead>
<tr>
<th>Gratz, 2014</th>
<th>Mississippi, USA</th>
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</table>
| 61 adults (100% female), between 18 and 60 years of age, diagnosed with borderline personality disorder according to DSM-IV criteria, with a history of multiple episodes of self-harm (at least one of these episodes must have occurred in the six months preceding enrolment) were included. | **Intervention:** A 14 week group emotion regulation training intervention consisting of elements of CBT and ERGT to:

1. increase awareness and acceptance of distressing emotions;
2. strategies to engage in goal-directed behaviours whilst inhibiting impulsive behaviours during times of distress;
3. use situationally appropriate strategies to modulate the intensity and duration of emotions;
4. become accepting of negative emotional states.

**Control:** outpatient treatment as required.

At the 14-week post-intervention assessment, this intervention was associated with a significant reduction in the proportion repeating self-harm. There was no evidence of an effect on the number of repeat self-harm episodes. 

Outcomes relied on subjective, self-reported measures.

As the control group did not receive treatment as usual, results from the uncontrolled 9 follow-up period do not enable the effects of this intervention to be persuasively established.

The authors conclude that an emotion-regulation focused brief psychosocial intervention can effectively reduce the proportion of patients repeating self-harm; although, given that the aim of the intervention is not to abstain
least one of these episodes must have occurred in the six months preceding enrolment) were included. 
behaviours whilst inhibiting impulsive behaviours during times of distress;
(3) use situationally appropriate strategies to modulate the intensity and duration of emotions;
(4) become accepting of negative emotional states.
**Control:** Outpatient treatment as required.

<table>
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<tr>
<th>Study</th>
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<th>Sample Size</th>
<th>Intervention</th>
<th>Control</th>
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</table>
| Guthrie, 2001 Manchester, UK | 119 adults (55.5%), between 18 and 65 years of age, discharged from EDs following an episode of self-poisoning were included. | Intervention: Four sessions of psychodynamic interpersonal therapy, lasting an average of 50 minutes, delivered within the patient’s home. All four sessions occurred within one week of discharge.  
**Control:** Assessment within the ED and referral to mental health outpatient services, addiction services, or general practitioner management as required. | By the six-month follow-up assessment, significantly fewer of the participants in the intervention group had a repeat episode of self-poisoning. A significant reduction in suicidal ideation scores was also observed.  
Potential for selection bias exists owing to the large nonparticipation rate in this study; 51.1% of those initially approached declined to participate.  
Only those engaging in self-poisoning were included in this trial. Given that past work suggests these patients may have more significant interpersonal difficulties compared to those who engage in self-injury, results of the present study may not generalise to those who engage in self-injury. | The authors conclude that psychodynamic interpersonal therapy can be offered within a brief format and can lead to reductions in suicidal thoughts and behaviours. |
| Hawton, 1987 Oxford, UK | 80 participants (66.3% female), 16 years of age and older, discharged from the ED following an episode of self-harm | Intervention: Up to eight sessions of brief problem-oriented counselling, lasting on average for 54 minutes, delivered in the patient’s home within one week of discharge. | There was no indication of a significant difference between groups in terms of the rate of repetition of self-harm  
The RCT was underpowered with respect to the clinical outcomes of suicidal behaviour | The authors conclude that, owing to the small differences between groups in terms of repetition of self-harm, this method of treatment may not reduce the number of repeat episodes. Evidence from a 9 month uncontrolled follow-up period also suggests this effect can be maintained. |

However, self-reported measures. As only women were included in this trial, results cannot be generalised to males. From self-harm this may not reduce the number of repeat episodes. Evidence from a 9 month uncontrolled follow-up period also suggests this effect can be maintained.
<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Details</th>
<th>Intervention</th>
<th>Control</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>O’Connor, 2010</td>
<td>Seattle, USA</td>
<td>50 adults (proportion female not specified), between 18 and 65 years of age, discharged from the medical or surgical units of a psychiatric hospital following an episode of suicidal behaviour and with clinically significant levels of suicidal ideation at discharge.</td>
<td><strong>Intervention:</strong> Up to 12 sessions, delivered over 12 weeks, of collaborative therapy focusing on problem-solving, development of alternative coping strategies to use during times of distress, and creating reasons for living.</td>
<td><strong>Control:</strong> Referral to mental health services as required.</td>
<td>Although greater reductions in suicidal ideation were observed in the intervention group as compared to the control group at the post-intervention assessment, these differences were not significant.</td>
</tr>
<tr>
<td>O’Connor, 2015</td>
<td>Seattle, USA</td>
<td>30 adults (26.7% female), 18 years of age and older, discharged from a level</td>
<td><strong>Teachable Moment Brief Intervention:</strong> Participants received an unspecified number of sessions delivered over one</td>
<td></td>
<td>This evaluation was undertaken by the research team that devised the intervention.</td>
</tr>
</tbody>
</table>

The authors conclude that a brief intervention based on the principles of collaborative assessment and management may hold promise for reducing suicidal ideation on discharge from clinical services, but that larger and more rigorously designed RCTs are required before definitive conclusions can be drawn.
one trauma center following treatment for medical and/or surgical treatment for a suicide attempt. month combining aspects of CAMS and DBT. The ultimate aim of the therapy is to assist patients to discover for themselves the triggers underlying their suicidal behaviour and to develop their own motivation to change. 

Control: Not described.

Therapeutic Assessment: A 1.5 hour psychosocial assessment and cognitive analytic therapy intervention which addressed:

(1) identification of the target problem underlying the attempt;
(2) analysis of motivations for change;
(3) identification alternative methods of coping to break the cycle between distress and suicidal behaviour

Control: A standard psychosocial risk and needs assessment followed by treatment referrals as required.

Therapeutic Assessment: The post-intervention assessment. Those randomised to the intervention group did, however, have significantly higher scores on measures of motivations to change and reasons for living at the post-intervention assessment.

The RCT was also underpowered with respect to the clinical outcomes of suicidal behaviour assessed.

The authors conclude this intervention was associated with a significant improvement in treatment engagement during the post-discharge period. The extent to which this, in turn, is associated with significant reductions in suicidal behaviour remains to be determined.

Ougrin, 2011  London, UK

70 adolescents (80.0% female), between 12 and 18 years of age, discharged from hospital following an episode of self-harm and who were not currently engaged with outpatient psychiatric services.

Intervention: Participants received four sessions of a strengths-based family intervention, delivered over four weeks, designed to:

(1) provide psychoeducation about self-

At the three-month follow-up assessment, the intervention was associated with significant reductions in suicidal behaviour as measured by the Adolescent Suicide

The RCT was likely underpowered with respect to the clinical outcomes of suicidal behaviour assessed. It is also unclear how changes in suicidal ideation scores, the authors conclude that the inclusion of the Readiness to Change Scale as an outcome is novel. They suggest that this construct, along with the Reasons for Living Scale, should be included as key performance indicators in all future evaluations of post-discharge interventions.

Pineda, 2013  Sydney, Australia

48 adolescents (proportion female not specified), between 12 and 17 years of age, discharged from hospital following an episode of self-harm.

Intervention: Participants received four sessions of a strengths-based family intervention, delivered over four weeks, designed to:

(1) provide psychoeducation about self-

At the three-month follow-up assessment, the intervention was associated with significant reductions in suicidal behaviour as measured by the Adolescent Suicide

The RCT was likely underpowered with respect to the clinical outcomes of suicidal behaviour assessed. It is also unclear how changes in suicidal ideation scores, the authors conclude that the inclusion of the Readiness to Change Scale as an outcome is novel. They suggest that this construct, along with the Reasons for Living Scale, should be included as key performance indicators in all future evaluations of post-discharge interventions.
suicidal behaviour (including suicidal ideation, self-harm, and/or attempted suicide).

harm and reasons for self-harm;
(2) assist with the identification of family strengths;
(3) strategies to improve family functioning and to manage conflict.

**Control:** Referral to any form of therapy, including crisis management, counselling, CBT, and/or medication treatment as required.

**Intervention:**

- **Multimodal Interventions**

<table>
<thead>
<tr>
<th>Author</th>
<th>Location</th>
<th>Participants</th>
<th>Intervention Details</th>
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| Gysin-Mallert, 2016 | Bern, Switzerland | 54 adults (55.0% female), with an average age of 36.0 years (SD 14.0 years), discharged from hospital following treatment for a suicide attempt were included. | Four sessions, of between 60-90 minutes’ duration, delivered over the four weeks’ post-discharge, comprising:
(1) a narrative interview to identify potential triggers for suicidal behaviour;
(2) cognitive reactivation;
(3) collaborative development of a crisis plan.
Additionally, participants received a series of six letters, mailed every three months in the first year post-discharge and every six months in the second years post-discharge. Letters contained a personalised message reminding participants of their crisis plan and included a message encouraging participants to contact the psychiatric emergency service should they wish to... |

The intervention was associated with an 83.0% reduction in risk of further suicide attempts over the 24 month intervention period, as well as significant reductions in suicidal ideation scores.

The RCT was likely underpowered with respect to the clinical outcomes of suicidal behaviour assessed. Information on repetition of self-harm was obtained from patient self-report and was therefore by its nature subjective.

The authors conclude that this manual-based brief multimodal therapy was found to be efficacious in reducing suicidal behaviour in a real-world clinical setting.
Hatcher, 2015  |  Multiple locations, New Zealand  |  684 adults (67.8% female), with an average age of 36.9 years (SD 14.4 years), discharged from EDs following an episode of self-harm were included in the trial.

**Intervention:** Participants received:
1. between four and six sessions of brief problem-solving therapy delivered within the first four weeks following discharge;
2. a series of eight postcards, mailed in sealed envelopes, sent at one, two, three, four, six, eight, 10, and 12 months’ following discharge;
3. between 1 and 2 telephone or face-to-face contacts to remind participants of the treatment plan recommended at discharge and/or to received suggestions of new treatment options for those who have dropped out of treatment;
4. a series of GP vouchers entitling participants to a free GP appointment;
5. a cultural assessment (for all participants, including those of European ancestry).

**Control:** Referral to in- or outpatient mental health treatment teams and/or referral to their general practitioner as required.

There was no evidence of a significant reduction in either the proportion of participants representing to hospital following an episode of self-harm or in the number of repeat episodes per person at the three month or 12 month follow-up assessment.

Zelen’s post-consent design was used. A number of participants refused to provide consent on learning treatment assignment: 44.4% of the intervention group and 48.4% of the control group. Use of this design may have led to selection bias as those who did not provide consent were less likely to have a history of multiple episodes of self-harm.

Almost one-half (43.0%) did not receive at least one session of brief problem-solving therapy, 33.0% did not receive the problem-solving therapy or the telephone or face-to-face contacts

The authors conclude that this treatment package had little effect on the proportion representing to hospital with self-harm, suggesting that the dose of problem-solving therapy included in this intervention may have been too small to have an effect.
<table>
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<tr>
<th>Study</th>
<th>Location</th>
<th>Sample Characteristics</th>
<th>Intervention Details</th>
<th>Control Details</th>
<th>Outcomes</th>
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<tr>
<td><strong>Hatcher, 2016</strong></td>
<td>Multiple locations, New Zealand</td>
<td>167 adults (65.3% female), with an average age of 32.4 years (SD 10.8 years), discharged from EDs following an episode of self-harm, and who identify as of Maori ethnicity were included in the trial.</td>
<td>Intervention: Participants received: (1) between four and six sessions of brief problem-solving therapy delivered within the first four weeks following discharge; (2) A series of eight postcards, mailed in sealed envelopes, sent at one, two, three, four, six, eight, 10, and 12 months’ following discharge; (3) between one and two telephone or face-to-face contacts to remind participants of the treatment plan recommended at discharge and/or to received suggestions of new treatment options for those who have dropped out of treatment; (4) a series of GP vouchers entitling participants to a free GP appointment; (5) a cultural assessment.</td>
<td>Control: Referral to in- or outpatient mental health treatment teams and/or referral to their general practitioner as required.</td>
<td>There was a significant reduction in the proportion of participants representing to hospital following a self-harm at the 3 month follow-up assessment (10.4% vs. 18.0%). This was not maintained at the 12-month follow-up assessment, however. As all participants identified as of Maori ethnicity, results cannot be generalised to other cultural or ethnic groups. Zelen’s post-consent design was used. A number of participants refused to provide consent on learning treatment assignment: 52.2% of the intervention group and 39.3% of the control group. Use of this design may have led to selection bias as those who did not provide consent were less likely to have a history of multiple episodes of self-harm. Despite randomisation, there was also evidence that the intervention group had significantly higher levels of hopelessness and were significantly more likely to have a history of repeat episodes of self-harm. The authors conclude that a culturally adapted, brief psychosocial intervention can improve access to care in marginalised ethnic groups and can lead to meaningful reductions in repetition of self-harm; at least over the short term.</td>
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<td><strong>King, 2015</strong></td>
<td>Michigan, USA</td>
<td>49 adolescents (79.6% female), between 14 and 19 years of age (average age 17.7±1.7 years), discharged from hospital following treatment for a non-psychiatric compliant</td>
<td>Intervention: An emergency card listing telephone numbers they could call at times of distress, a motivational interview to review treatment goals, a hand written follow-up mailed two days following discharge containing a personalised message wishing</td>
<td>At the two-month follow-up assessment, the intervention was associated with a significant reduction in depression scores (25.4±4.7 vs.30.9±4.0). There were no significant effects for this</td>
<td>The sample were drawn from a low-income community in a relatively under-served community. Results may therefore not be generalisable to other communities. Despite finding no effect for this intervention in reducing suicidal ideation scores at follow-up, the authors conclude their intervention may represent a promising brief intervention for</td>
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</table>
but with current suicidal ideation and/or who made a recent suicide attempt.

participants well, and a telephone contact five days following discharge to assist them in implementing their treatment plan.

Control: An emergency card listing telephone numbers they could call at times of distress and an information leaflet about the link between depression and suicide, encouraging safe storage of firearms, and a list of local mental health services.

intervention on suicidal ideation scores, or hopelessness, however.

The RCT was likely underpowered with respect to the clinical outcomes of suicidal behaviour assessed.

adolescents with a non-psychiatric chief complaint at risk of suicide.

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<tr>
<th>Group-Based Interventions</th>
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<tr>
<td><strong>Rudd, 1996</strong> Texas, USA</td>
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<td><strong>Intervention:</strong> Nine hours of hospital-based group therapy per day delivered over a two week period. Sessions were unstructured, but were guided by the principles of problem-solving therapy, and also addressed interpersonal problem-solving deficits, and maladaptive behaviour.</td>
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<tr>
<td><strong>Control:</strong> Not described.</td>
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<td>By the conclusion of the 24 month follow-up period, this intervention was not associated with a significant reduction in suicidal ideation scores according to scores on either the Modified Scale for Suicidal Ideation (1.0±2.4 vs. 0.0±0.0) or the Suicide Probability Scale sub-scale (10.8±5.8 vs. 9.0±1.4).</td>
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<tr>
<td>This study was conducted in a military veteran’s health service. Results may therefore not be generalisable. 79.9% of participants could not be contacted by the 24 month follow-up assessment. Selection and detection bias therefore cannot be ruled out. Results may also be underpowered due to this high attrition rate.</td>
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<tr>
<td>The authors suggest that although this intervention may have been effective in engaging the highest risk participants, and may show some promise as a partial hospitalisation outpatient intervention for young suicidal adults.</td>
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Chapter Five: Overarching discussion

Key findings

This suite of reviews has examined the identification of patients who have self-harmed and presented to emergency departments, assessment in emergency departments and subsequent primary care treatment provided to patients.

In total 110 studies were identified. Results spanned the establishment and utility of monitoring systems to identify and track patients presenting to emergency departments (45 studies); comparisons of assessment measures and current practice (25 studies); and interventions involving clinicians and general practitioners, multimodal approaches and stepped care models (40 studies).

Overall the findings from these studies suggest that:

- Monitoring presentations for self-harm in emergency departments provide opportunities for more rigorous research, improved care, service planning and strategies to reduce presentation rates.
- Assessment in emergency departments should involve thorough psychosocial assessments as existing measures do not reliably or accurately predict future health. Conducting a full assessment allows clinicians to make appropriate referrals, evaluate predictors of risk and identify targets for intervention.
- There is currently little support for self-directed interventions, clinician directed interventions or general practitioner management. Some promising results have been found for multimodal interventions suggesting that effective, and collaborative, care following a presentation for self-harm at an emergency department requires a systemic approach.

The key findings for each review were as follows:

Identifying patients who have self-harmed in the emergency departments

- Four systems designed to monitor presentations for self-harm have been established in the UK, Ireland and Australia. These systems routinely collect data on presentations, treatment and patient characteristics.
- These systems have allowed for research to be conducted on a large scale, across a range of areas. Research has examined the epidemiology of self-harm, methods used by patients who present, timing of presentations, assessment and treatment provided, repetition rates and mortality.
- In turn, these findings allow for service planning, management and treatment of known risk factors and policy changes.

Assessment in the emergency department following self-harm

- Three areas of research were identified in the review: psychosocial assessment, risk and screening and audits of current practice.
- Results suggested that whilst the impact of psychosocial assessment on subsequent repetition is unclear, providing this type of assessment to patients provides opportunities to identify modifiable risk factors and make appropriate referrals. Results also indicated that none of the currently used measures perform adequately enough to be used in routine clinical practice as stand-alone tools. Finally, audits of current practice provide valuable insights into the impact of service change and can facilitate best practice.
Primary care interventions

- The search identified five types of care examined in the research: self-directed interventions, clinician-directed interventions, general practitioner management interventions, multimodal interventions and stepped care models.
- Self-directed, clinician-directed and general practitioner management interventions showed no significant impacts on patients who had been recently discharged from the emergency department.
- Research exploring multimodal interventions has found some support however thus far the generalisability of these interventions is unclear. It was also noted that stepped-care models were not researched with this population. They might provide an opportunity for integrated care and early intervention and prevention.

This suite of reviews was subject to a number of limitations, discussed below.

Limitations

Several limitations should be considered when using the results of this rapid review to inform policy or treatment development considerations, largely due to the time constraints imposed by the rapid review process.

For example, we were unable to review grey literature or systems that collect a range of injury data including data relating to self-harm (e.g. National Electronic Injury Surveillance System in the USA). This also meant we did not have the scope to identify examples of good practice that were not already known to the research team or reflected in the peer-reviewed literature.

In addition, information from the included studies was unable to be double-extracted, contrary to the minimum standards for the conduction of quality systematic reviews. Nevertheless, this review was conducted by a research team with considerable experience in systematically reviewing evidence for the effectiveness of treatments for the prevention of suicidal behaviour and all studies were included in this rapid review by consensus of this research team.

Additionally, owing to these tight time frames, the authors of this rapid review were unable to make a request to their institutional librarians to obtain copies of four potentially eligible studies that could not be freely accessed through any of the electronic databases searched. These studies were therefore unable to be included in the present rapid review.

With regard to the examination of trials testing the impact of post discharge practices, no risk of bias or in depth assessment of study quality was able to be conducted. Furthermore, it was out of the scope of this review to examine emergency department based interventions that may enhance identification of patients, assessments and referral to primary care.

Finally, it was not within the scope of this review to examine other emergency-department-based interventions, such as training for staff. The authors acknowledge, however, that such interventions may influence or enhance the identification and treatment of people presenting for self-harm. For example, emergency departments that implement training for staff in this area may in turn have improved assessment practices (such as those described in Chapter Three, above) and improved consumer experiences.

Conclusion

Notwithstanding the limitations outlined above this suite of reviews has enabled us to draw some conclusions and to make a series of recommendations regarding best practice with regard to: the identification of people
at risk; the conduct of risk assessment; and delivery of post discharge support. These are detailed above and summarised briefly below.

Whilst many people who engage in self-harm do not seek help, many do. Given the adverse outcomes associated with self-harm, in particular the relationship with suicide and early mortality, and recommendations from international organisations such as the World Health Organization, emergency departments are an important setting for intervention. Therefore, the provision of the best possible practice is crucial. Current federal and state policy directives have recognised the importance of prompt and effective responses to self-harm and as such this provides an important opportunity to develop and evaluate best practice models across Victoria and potentially nationally. This also reflects international best practice and aligns with recommendations made by the World Health Organization and with recently announced developments in the United States where significant investments are being made into a stepped-care model for those presenting to the emergency department. This study, called System of Safety, will evaluate the efficacy of a multi-modal approach incorporating elements including suicide-risk screening, providing outpatient suicide prevention discharge resources, and follow-up telephone counselling.

Internationally, monitoring systems have led to better practice, including increased assessment of patients, better linkage of data and the development and implementation of evidence-based service changes. The current investment here in Victoria will provide an important foundation for delivering robust and comprehensive assessments that can lead to the robust identification of people at risk, meaningful referrals and high quality support. This is indeed a unique opportunity and in order to capitalise on its full potential rigorous evaluation is required. However if done carefully the proposed initiatives have the potential to save Victorian lives in some of the most vulnerable populations and set a precedent for the rest of the country.
References


