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Royal Australian and New Zealand College of Psychiatrists clinical practice guideline for the management of deliberate self-harm

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Abstract

Objective: To provide guidance for the organisation and delivery of clinical services and the clinical management of patients who deliberately self-harm, based on scientific evidence supplemented by expert clinical consensus and expressed as recommendations.

Method: Articles and information were sourced from search engines including PubMed, EMBASE, MEDLINE and PsycINFO for several systematic reviews, which were supplemented by literature known to the deliberate self-harm working group, and from published systematic reviews and guidelines for deliberate self-harm. Information was reviewed by members of the deliberate self-harm working group, and findings were then formulated into consensus-based recommendations and clinical guidance. The guidelines were subjected to successive consultation and external review involving expert and clinical advisors, the public, key stakeholders, professional bodies and specialist groups with interest and expertise in deliberate self-harm.

Results: The Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for deliberate self-harm provide up-to-date guidance and advice regarding the management of deliberate self-harm patients, which is informed by evidence and clinical experience. The clinical practice guidelines for deliberate self-harm is intended for clinical use and service development by psychiatrists, psychologists, physicians and others with an interest in mental health care.

Conclusion: The clinical practice guidelines for deliberate self-harm address self-harm within specific population subgroups and provide up-to-date recommendations and guidance within an evidence-based framework, supplemented by expert clinical consensus.

Keywords

Guidelines, deliberate self-harm, management, treatment

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Executive summary

Introduction

This clinical practice guideline (CPG) is for psychiatrists and other health professionals who assess and treat people after deliberate self-harm (DSH) in Australia and New Zealand.

People who present to acute care services after DSH ('hospital-treated' DSH) probably represent a minority of all those who self-harm in the community. The most common form of hospital-treated DSH is self-poisoning, followed by self-cutting and other methods such as hanging, jumping and burning. In Australia, rates of hospital-treated DSH are higher for women than men and higher for Aboriginal and Torres Strait Islander people than for the general population. In New Zealand, rates of hospital-treated DSH are higher among Māori and lower among Pacific Islander people, compared with the general population. Up to one in five people repeat DSH within the first year after an episode of hospital-treated DSH, but most people never repeat DSH at all.

The most common forms of DSH in the community are cutting, burning and biting, while self-poisoning is also common. Such self-injury is almost equally common among males and females, less likely to be suicidal in intention and more likely to be motivated by the need to regulate distressing psychological experiences. Repetition rates are high, although precise estimates are not available.

Published DSH rates are likely to be underestimates. Systems should be developed to effectively monitor the prevalence, incidence and trends of community and hospital-treated DSH in Australia and New Zealand. Monitoring should include specific sentinel surveillance units established in general hospitals, improved state and national hospital (institutional) data collection systems and inclusion of questions about DSH in national health and mental health surveys.

Organisation of healthcare services

Waiting times should be minimised for people who present to emergency departments (EDs) after DSH. Psychosocial assessment should be performed by a trained mental health professional. Services that provide care for people with DSH should improve staff knowledge about DSH and improve communication and collaboration between patients and clinical staff during assessment and treatment. Clinical staff should show empathy and respect for patients who self-harm and should provide high-quality medical and mental health care.

A thorough clinical assessment of the patient's situation and treatment needs should include an assessment of modifiable risk factors for self-harm, such as substance use, psychosis, mood disorder, anxiety disorder, eating disorder, personality disorder, medical conditions, relationship difficulties and social problems. Treatment decisions about patients who present with DSH should be made following a thorough personalised assessment and on the basis of a discussion with the patient and their family, friends or carers, where appropriate. The use of risk assessments scales or tools does not reduce repetition of DSH and should not be used as the basis to allocate treatment or aftercare. Specialist multidisciplinary teams should be established, if possible.

Patients who leave before completion of assessment or treatment should be actively followed up and offered aftercare. For patients who frequently present with DSH, primary and specialist care providers should be identified and should collaborate with hospital staff to develop a management plan. Access to effective aftercare and information about DSH should be improved for patients, carers and the public.

Which treatments are effective to reduce repetition of DSH?

Unselected hospital-treated DSH populations. Overall, the limited evidence available from a small number of randomised controlled trials (RCTs) shows that pharmacological treatment does not reduce the risk of repetition of DSH or has an unfavourable risk–benefit ratio. In general, psychotropic agents should not be initiated to manage DSH, unless they would otherwise be indicated.

Overall, psychological or psychosocial therapies are effective in reducing any repetition of DSH in unselected populations of patients who deliberately self-harm. Services that provide treatment for people who have self-harmed should offer or arrange psychological or psychosocial interventions aimed at reducing repetition of DSH, such as cognitive behavioural therapy (CBT), psychodynamic interpersonal therapy or assertive outreach combined with psychological therapy.

Overall, the limited evidence from a small number of RCTs shows that brief contact interventions are effective in reducing the number of repeat DSH events. Services that provide treatment for people who have self-harmed should consider providing these interventions as part of the aftercare service.

It should be understood that although hospital-treated DSH is common, most patients will not repeat DSH. This means that the modest effects of psychological, psychosocial or brief contact interventions to reduce the risk of any future DSH or to reduce the frequency of DSH events are clear only at the population level (service delivery). However, the smaller potential benefit to any individual patient may limit the acceptance of these aftercare interventions, even where they are offered and available.

Special populations. Overall (all studies combined), psychological therapies are effective in reducing repetition of DSH (number of events) among people with borderline personality disorder. People with borderline personality disorder who self-harm should be offered effective psychological therapies that have been shown to reduce the risk of repetition of DSH, such as dialectical behaviour therapy (DBT), CBT or mentalisation-based therapy (MBT). Pharmacotherapy is not effective for reducing repetition of DSH among people with borderline personality disorder and should not be initiated unless otherwise indicated.

Overall, psychological interventions have not been shown to be more effective than treatment as usual for hospital-treated DSH in children and adolescents. Limited evidence from a small number of RCTs suggests that CBT, MBT or DBT might help reduce repetition of DSH among children and adolescents. These treatment options can be considered, where suitable.

There is a lack of RCT evidence on the effectiveness of any treatment to reduce the risk of repeat DSH among older adults. Expert opinion suggests they are likely to need multifaceted care.

Interventions for reducing repetition of DSH in Māori populations should be developed and evaluated with leadership from Māori. Australian EDs, and hospitals should ask all patients whether they identify as Aboriginal or Torres Strait Islander to ensure that population-specific data can be collected for DSH and other presenting problems. Interventions for reducing repetition of DSH among Aboriginal and Torres Strait Islander peoples should be developed and evaluated with leadership from these communities.

Community prevention and management initiatives

There is very little high-quality evidence from which to identify effective interventions to reduce community DSH. However, there is a range of initiatives at the community level that may help prevent or better manage DSH. All general practitioners (GPs) should maintain up-to-date training in the detection and effective treatment of mental illness, particularly depression. Gatekeeper training programmes should target relevant professions within the community (e.g. GPs, youth workers, teachers, police, ambulance staff, armed forces personnel, security service personnel, staff of non-government organisations, human resource professionals and employers) to equip them to identify people at risk of suicide or self-harm and help them access appropriate services.

Public awareness campaigns should aim to improve knowledge and reduce stigma associated with depression and suicidal behaviour and to promote help-seeking behaviour and attitudes. Inpatient and outpatient acute care services should improve their capacity to provide timely aftercare for people who self-harm. Media, health policymakers and academics should actively participate in developing and adhering to media guidelines on public reporting of DSH and suicide.

Section 1: introduction

This CPG for the management of DSH (DSH CPG) was developed on behalf of the Royal Australian and New Zealand College of Psychiatrists (RANZCP). It updates the previous RANZCP DSH CPG which was limited to adults (Boyce et al., 2003; RANZCP, 2004).

Purpose

This guideline reviews and synthesises current evidence about the management of DSH in hospitals and in the community to provide guidance on assessment, clinical treatment, aftercare and organisation of services for people who self-harm. Where possible, it makes evidence-based

recommendations (EBRs) for clinical practice. It also identifies current research needs.

It is intended mainly for psychiatrists and other health professionals who assess and treat people who deliberately self-harm in Australia and New Zealand. It addresses issues specific to the care of Māori, Pacific Islander peoples and Aboriginal and Torres Strait Islander peoples. The sections on service delivery, service evaluation and improvement of monitoring systems may be of use to health service administrators and government authorities responsible for health policy development in Australia and New Zealand.

This guideline may also be useful for health professionals in other settings and for non-clinical staff of support organisations.

Background

Clinical and epidemiological literature refers to 'hospital-treated' DSH and 'community' DSH. Community DSH is not consistently defined (see *Definitions*, below). In some sources, it refers broadly to people who deliberately self-harm within the community, regardless of whether and where they receive medical care. Other sources use the term to describe people who self-harm within the community and do not attend hospital. Therefore, the two categories are not mutually exclusive and the community DSH population partially overlaps with the hospital-treated DSH population.

Hospital-treated DSH. Hospital-treated DSH is common and costly in terms of immediate treatment, aftercare and adverse outcomes. A recent large international systematic review (Carroll et al., 2014) reported that the most common form of hospital-treated DSH is self-poisoning (median: 90% for included studies), followed by self-cutting (median: 10.5%) and other methods such as hanging, jumping and burning (median: 6.2%).

Important adverse outcomes associated with hospital-treated DSH include repetition of non-fatal DSH, suicide, all-cause mortality, mental health morbidity (e.g. anxiety, depression, substance use), impaired quality of life and impairment of functioning in physical, psychological and social domains. Rates of suicide and repetition of DSH are considered to be the key clinical outcomes for hospital-treated DSH (Carroll et al., 2014).

At the time of the previous RANZCP DSH CPG (Boyce et al., 2003; RANZCP, 2004), estimated median rates of adverse outcomes after hospital-treated DSH were 16% for repetition of non-fatal DSH at 1 year, 2% suicide at 1 year and 7% suicide at 9 years, based on a systematic review of 90 studies conducted in Western countries (Owens et al., 2002). More recent data from a systematic review, meta-analysis and meta-regression of 177 studies from Western and non-Western countries (Carroll et al., 2014) suggest that there has been no change in these estimates: 16% repetition of non-fatal DSH at 1 year (10% in Asian countries), 1.6% suicide at 1 year and 3.9% suicide at 5 years.

Institutional records and patient self-report are the most common methods for measuring rates of repetition of DSH. Repetition rates vary according to the method. Carroll et al. (2014) estimated the average annual repetition rate at 13.7% (95% confidence interval [CI]=[12.3%, 15.3%]) based on hospital records and 21.9% (95% CI=[14.3%, 32.2%]) based on patient report.

Differences between hospital-treated DSH and other community DSH. Estimated rates of community DSH (300–1100/100,000/year) are generally higher than hospital-treated DSH (2.6–542/100,000/year) (Welch, 2001). Populations of people who present to hospital for treatment following an episode of DSH generally differ from those who do not present to hospital, although the ways in which they differ are not entirely certain.

Hospital-treated DSH is predominately by self-poisoning (Gunnell et al., 2005), is slightly more common among females than males, is associated with suicidal ideation (Hjelmeland et al., 2002), is associated with repetition rates of approximately 16% at 1 year and suicide mortality of approximately 1% at 1 year (Owens et al., 2002) and 4% at 5 years (Carroll et al., 2014). Conversely, community DSH is predominately by self-injury (especially cutting, burning or biting), almost equally common among males and females, less likely to be suicidal in intention and more likely to be motivated by the need to regulate distressing psychological experiences, with higher repetition rates and lower suicide mortality (Hamza et al., 2012).

Non-suicidal self-injury. Community DSH and hospital-treated DSH have some important overlap with the concept of 'non-suicidal self-injury' (NSSI), which was considered for inclusion in *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5; American Psychiatric Association, 2013). However, NSSI was ultimately not included in Section II (*Diagnostic criteria and codes*) but was included in Section III (*Emerging measures and models*; sub-section *Conditions for further study*) along with 'suicidal behaviour disorder' (American Psychiatric Association, 2013).

A recent review reported that estimated rates of community-managed DSH classified as NSSI were 13–29% for adolescents and 4–6% for adults, compared with NSSI rates among clinical psychiatric inpatient populations of 30–40% for adolescents and 21% for adults (Hamza et al., 2012). A recent systematic review of 52 adolescent epidemiological studies reported pooled prevalence estimates of 18.0% (standard deviation [SD]=7.3) for NSSI and 16.1% (SD=11.6) for DSH (Muehlenkamp et al., 2012).

Scope

Target populations and treatment settings. This guideline provides guidance on the management of two main variants

of DSH: hospital-treated DSH and community DSH. It covers the epidemiology of DSH, the organisation of services for people who self-harm, clinical assessment for people who self-harm and effective interventions.

This guideline also includes several new sections that were not included in the previous RANZCP DSH CPG (RANZCP, 2004), including sections on borderline personality disorder, first-episode psychosis, children and adolescents, older-age adults, Māori, Aboriginal and Torres Strait Islander peoples, prison populations and immigration detention populations. It also includes Internet-based treatment and school-based treatment.

This guideline does not cover the management of DSH by ambulance services or EDs, or the surgical or medical treatment of DSH (including toxicology).

Conditions not covered by this guideline. People who deliberately self-harm may have a variety of primary or comorbid mental disorders (e.g. mood-related and non-mood-related psychotic disorders, depressive disorders, anxiety disorders, eating disorders, substance use disorders and personality disorders). The management of these disorders is outside the scope of this guideline. Other RANZCP CPGs have addressed some of these conditions (Beaumont et al., 2004; Ellis and RANZCP Clinical Practice Guidelines Team for Depression, 2004; Hay et al., 2014; Malhi et al., 2015; RANZCP, 2003, 2004, 2005).

This guideline does not cover the following:

- DSH in the context of specific genetic disorders (e.g. Lesch–Nyhan syndrome);
- DSH in the context of specific disorders of development (e.g. autism);
- Culturally sanctioned DSH (e.g. tattoos, body piercing, body inserts or circumcision);
- 'Indirect' self-harm behaviours (e.g. smoking, excessive alcohol intake or risk-taking behaviours) or 'passive' forms of DSH (e.g. refusal to eat or drink).

This guideline focuses on evidence from studies in populations either restricted to or predominantly consisting of people who deliberately self-harm. Evidence searches were not designed to include studies that measured DSH or suicidal behaviour outcomes in other populations (e.g. populations defined primarily by depression, schizophrenia or substance use). Systematic reviews of such studies have been published elsewhere (Gaynes et al., 2004; Haw et al., 2005; Mann et al., 2005; National Collaborating Centre for Mental Health, 2011; O'Neil et al., 2012).

Outcome measures. Because prevention of further self-harm is an important aim, this guideline focuses on the outcome measure of repetition of non-fatal self-harm. It also considers other outcomes, including suicide, treatment adherence, psychological symptoms, quality of life, function and adverse effects of treatment, where relevant and where adequately reported in the evidence.

This guideline does not focus on suicide mortality in general. Other reviews have addressed suicide prevention in general (Mann et al., 2005), suicide prevention in various specific populations, such as New Zealanders (Beautrais et al., 2007), Indigenous populations (Clifford et al., 2012) young people (Gould et al., 2003), people with depression (Hawton et al., 2013a), people with bipolar disorder (Hawton et al., 2005; Schaffer et al., 2015), psychiatric inpatients after discharge (Large et al., 2011) and people with eating disorders (Pompili et al., 2004; Preti et al., 2011), and the relationship between suicidal ideation and later suicide risk (Chapman et al., 2015). Similarly, we did not include studies that measured the effect of interventions on suicide outcomes in the general psychiatric treatment population, such as the longitudinal cohort study by While et al. (2012) that reported a beneficial effect of specific service organisation changes on national suicide rates in the United Kingdom.

Definitions and terminology

There is no definition of DSH that is acceptable to all; some authors have recommended that this term should not be used. In developing this guideline, we neither attempted to define DSH, nor did we endorse any particular existing definition. There may be differences in the usage of terminology and in the underlying concepts in Europe and Australia, compared with Canada and the United States (Muehlenkamp et al., 2012).

However, the phenomenon of DSH is real, and some important principles are probably central to the concept. To quote from an editorial published in the *British Journal of Psychiatry* (Kapur, 2005),

> *…two sets of guidelines have been published (National Collaborating Centre for Mental Health, 2004; Royal College of Psychiatrists, 2004). Both have dropped the prefix 'deliberate' from 'self-harm' in response to the heterogeneous nature of the phenomenon and the concerns of service users. What needs to be emphasised (whatever the terminology) is that self-harm includes both self-poisoning and self-injury. There may be a belief among non-specialists that the term refers primarily to those who cut themselves, and even academic journals are sometimes guilty of misrepresentation.*

The difficulties in accurately defining hospital-treated DSH or deliberate self-poisoning are not new. The 1965 Milroy lectures, delivered at the Royal College of Physicians of London, reported 1 year's experience of the Royal Infirmary (Edinburgh, Scotland) unit for patients who required concurrent general medical and psychiatric care (Kessel, 1965a, 1965b). In these two lectures, Kessel outlined the increasing incidence of self-poisoning cases,

the definitional issues for classifying these patients and the organisation of clinical services for their care. He used the terms 'self-poisoning' and 'deliberate self-poisoning' to identify these patients (Kessel, 1965a):

> *Self-poisoning refers to the intentional taking of too much of a poisonous substance believing that it will be noxious… the three essential components of the act: that it must be deliberate, not accidental; that the quantity must be known to be excessive; and that it is realized that this may be harmful.*

Other definitions of deliberate self-poisoning followed, which included other aspects, e.g., '*the deliberate ingestion of more than the prescribed amount of medicinal substances, or ingestion of substances never intended for human consumption, irrespective of whether harm was intended*' (Bancroft et al., 1975).

Soon after Kessel's definition was published, others expressed reservations with the use of the term 'attempted suicide' for these patients because they believed that most were not suicidal. Some were also unsatisfied with 'deliberate self-poisoning' and 'deliberate self-injury' because the definition would include patients who had purely recreational use of drugs or alcohol with no relationship to suicidal behaviours and patients with no toxicological consequences of the ingestion, who were not obviously 'poisoned'.

The term 'parasuicide' was proposed as an alternative (Kreitman et al., 1969). Parasuicide was later defined as '*a non-fatal act in which the individual deliberately causes self-injury or ingests a substance in excess of any prescribed or generally recognised therapeutic dosage*' (Kreitman, 1979). Following the World Health Organization (WHO) multicentre study of parasuicide (De Leo et al., 2006), unifying terminologies were proposed, but these have not been universally adopted. The National Institute for Health and Care Excellence (NICE)[1] guidelines (National Collaborating Centre for Mental Health, 2004) do not use the term DSH and use instead 'self-harm', which is defined as '*self-poisoning or injury, irrespective of the apparent purpose of the act*'. The *British Journal of Psychiatry* editorial guidance has indicated a move away from the use of DSH and now prefers 'self-harm' (Kapur, 2005).

The concepts, definitions and classification of community DSH, and the related concept of NSSI, are not any clearer than for DSH in general. In their recent critique of the proposed diagnosis of NSSI in DSM-5 (American Psychiatric Association, 2013), Kapur et al. (2013a) traced the history of the concept as arising in the United States in the 1960s. These authors raised three main objections to the concept of NSSI: a strong relationship with suicidal behaviour, the exclusion of self-poisoning and the changing pattern of self-harm methods over time (including self-poisoning). The relationship between suicidal behaviours and NSSI has been examined in detail in a recent systematic review and meta-analysis (Victor and Klonsky, 2014). Some authors have proposed a concept of 'self-injurious behaviour', which includes NSSI and suicidal attempt, but not other components like self-poisoning without suicidal intent (Nock et al., 2006):

> *Self-injurious behavior (SIB) refers to a broad class of behaviors in which an individual directly and deliberately causes harm to herself or himself. Such behavior can include non-suicidal self-injury (NSSI), which refers to direct, deliberate destruction of one's own body tissue in the absence of intent to die; or suicide attempts, which refer to direct efforts to intentionally end one's own life.*

We have not attempted to resolve the classification and nomenclature arguments around DSH and other suicidal and non-suicidal behaviours. For the purposes of this guideline, we accepted any definition of DSH or related concepts used by the authors of original studies or reviews.

Notwithstanding the differences in definition and usage, we have decided to use the term 'deliberate self-harm' in this guideline. We did so for two main reasons: the meaning of this term is reasonably well understood – at least by clinicians – and much of the literature published to date has used this term. The future may be different. For the most part, we have used the term DSH throughout the manuscript for clarity and consistency, except for those occasions where we used one of the many alternative terms when it was relevant to the individual study under review.

Limitations

Evidence-based CPGs are limited by the available evidence published in the literature, including the quantity and quality of the evidence available, the selection and measurement of particular outcomes and the choice of interventions to be evaluated.

For some interventions, like changes in models of service provision, there is rarely any level I or level II evidence (Table 1), and there is limited level III and level IV evidence from which recommendations can be generated. For some interventions, there may be no published evidence at all. Even where a body of level I and level II evidence does exist for some interventions, the quality of the studies may be variable, the study populations may not be generalisable to real-world clinical populations or settings and there may be publication bias (e.g. due to the non-publication of studies with 'negative' findings). Small beneficial effects may be very attractive at the population level but less compelling for any individual patient.

Since the time of preparation of this CPG for publication, relevant new original studies and systematic reviews have been published (see *Evidence published after searches completed* in 'Section 2: methods'). This illustrates how all

Table 1. Levels of evidence for intervention studies.

Level	Design
I	A systematic review of level II studies
II	A randomised controlled trial
III-1	A pseudo-randomised controlled trial (i.e. alternate allocation or some other method)
III-2	A comparative study with concurrent controls: Non-randomised, experimental trial Cohort study Case-control study Interrupted time series with a control group
III-3	A comparative study without concurrent controls: Historical control study Two or more single arm studies Interrupted time series without a parallel control group
IV	Case series with either post-test or pre-test/post-test outcomes

Source: National Health and Medical Research Council (NHMRC) (2009).

CPGs begin the process of becoming outdated even before their publication has occurred. CPGs can capture and synthesise the evidence at a particular point in time and provide a related set of recommendations, which must inevitably require revision at a relevant time in the future.

Implementation of recommendations may be restricted by factors like cost, training, acceptance by patients, and availability of treatments, staff or facilities.

For these reasons, clinicians and administrators need to use their professional judgement in the choice, introduction and application of any specific recommendations in this guideline. Nevertheless, we believe that the publication of evidence-based CPGs may assist clinicians and administrators in their task of providing the most appropriate treatment(s) for patients by providing information about effectiveness (and cost-effectiveness if available), which is needed to make the most informed decisions.

Section 2: methods

Contributors

The RANZCP appointed a working group of healthcare academics and clinicians. Individual members drafted sections according to their area of interest and expertise.

Evidence finding

In developing this guideline, the working group took into account the considerable amount of new evidence published since the previous RANZCP DSH CPG (Boyce et al., 2003; RANZCP, 2004). To do this, we systematically identified and synthesised the best available published evidence, following a process outlined by the National Health and Medical Research Council (NHMRC, 2007). We also considered other recent major international guidelines, such as those developed by the American Psychiatric Association and the UK NICE.

For each topic, we used the specific methodology considered most suitable to the evidence base (details below). Several systematic literature reviews and structured, non-systematic literature reviews were conducted by members of the writing team. We also accessed relevant Cochrane reviews, other systematic reviews and meta-analyses and other CPGs. Where necessary, we updated existing reviews to identify more recent studies.

We defined study size for intervention studies as follows:

- Small: <150 participants;
- Medium: 150–600 participants;
- Large: >600 participants.

We did not limit evidence to a particular definition of DSH (see *Definitions and terminology* in 'Section 1: introduction') but accepted any definition of DSH or related concepts used by the authors of original studies or reviews.

Epidemiology of hospital-treated DSH

Sources. Rates of hospital admission for 'intentional self-harm' were estimated from hospital records, where *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification* (ICD-10-AM) codes X60–X84 were documented as the first reported external cause. In Australia, these data were obtained from the National Hospital Morbidity Database (Australian Institute of Health and Welfare [AIHW] 2013). In New Zealand, they were obtained from aggregated reports from district health boards (New Zealand Ministry of Health, 2012b). Self-reported admission rates for DSH were also obtained from published surveys (Beautrais, 2006; Johnston et al., 2009; Martin et al., 2010).

Methodological issues. In Australia and New Zealand, hospital-treated DSH is primarily enumerated through routine hospital admissions data collections. However, there are differences in methods between the two countries.

In Australia, only data for admitted patients are recorded, so non-admitted patients receiving treatment only within the ED are excluded. In New Zealand, aggregated reports from district health boards exclude data from patients who were treated in the ED only and from those who were discharged within 2 days (New Zealand Ministry of Health, 2012b). Additional sources of hospital-treated DSH can be obtained from surveys and observational (descriptive and/or analytic) studies, either population-based or non-population-based, clinical cohort or cross-sectional studies, with

hospital-treated DSH enumerated through clinical services via medical record reviews or data linkage approaches.

Several factors may lead to underestimation of hospital-treated DSH based on institutional data, but the extent of underestimation in Australia and New Zealand is not well known. A recent Norwegian study (Mellesdal et al., 2014) reported that only 49% of DSH admissions were adequately coded in that country.

Estimates of hospital-treated DSH are likely to underestimate the total public health burden of DSH in a given population because they only include cases that present to services. These cases generally represent more serious instances of self-harming behaviour, but are categorical measures of DSH and therefore less subject to measurement bias.

Data collected from self-report of DSH may capture instances where individuals did not attend services and may also capture other forms of self-harm such as NSSI. However, these approaches may be affected by recall bias, the reference period of measurement, the number of behavioural prompts and items asked and whether the interview is conducted face to face or anonymously (Swannell et al., 2014).

Community DSH. We conducted electronic searches of bibliographic databases using search terms designed to identify studies reporting suicide or DSH (see Appendix B) in conjunction with the terms 'prevention', 'suicide prevention', 'community intervention' and 'multilevel interventions'. The search was limited to papers in English.

Reference sections of included studies were checked, and additional relevant studies were reviewed for inclusion.

Service organisation for hospital-treated DSH. We conducted electronic searches of bibliographic databases using search terms designed to identify studies reporting suicide or DSH (see Appendix B) in conjunction with the terms 'hospital treatment', 'attendance' or 'presentation'. The search was limited to papers in English.

Reference sections of included studies were checked, and additional relevant studies reviewed for inclusion.

Risk assessment

Sources. Searches of the bibliographic databases PubMed and PsycINFO (to Week 1 April 2015) were conducted using the term 'suicide'. The search was limited to papers in English. We included articles that reported both assessment status and the outcomes of suicide or attempted suicide among populations of people presenting with mental illness or DSH.

After scanning the titles (10,733 citations in PubMed and 12,632 in PsycINFO) and relevant abstracts (318 in PubMed and 321 in PsycINFO), we inspected the full text of 249 articles. No studies were identified that examined DSH or suicide outcomes in risk-assessed versus non-risk-assessed populations.

Methodological issues. Systematic searches of the literature revealed no comparative studies, pseudo-randomised studies or randomised studies that examined rates of DSH in risk-assessed versus non-risk-assessed groups.

Risk assessment is more commonly evaluated using accuracy statistics (sensitivity, specificity, positive predictive value and negative predictive values), derived from longitudinal cohort designs where populations having an independent prediction of the outcome of interest are followed for a period of time to determine accuracy of the prediction. We took into account existing reviews of various risk assessment instruments, including predictive scales or measures based on psychological data (Bürk et al., 1985; Freedenthal, 2008; McMillan et al., 2007; National Collaborating Centre for Mental Health, 2011; Randall et al., 2011; Warden et al., 2014) and biological data (Lester, 1992; Mann and Currier, 2007; Åsberg, 1997).

Measuring DSH in adults. We identified one systematic review of validated instruments used to measure self-harm in adults (Borschmann et al., 2012).

Pharmacological interventions for DSH. The Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999), which informed the previous RANZCP DSH CPG (Boyce et al., 2003; RANZCP, 2004), was used to identify relevant RCTs evaluating pharmacological therapy.

We searched for later RCTs that evaluated pharmacological interventions by conducting electronic searches of bibliographic databases using search terms designed to identify relevant studies.

Psychological interventions for DSH. A systematic review, meta-analysis and meta-regression on this topic was undertaken by working group members and other authors (Hetrick et al., 2015).

The Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999), which informed the previous RANZCP DSH CPG (Boyce et al., 2003; RANZCP, 2004), included 15 relevant RCTs. We also identified all relevant studies in the reference list of this systematic review.

We searched for later RCTs by conducting electronic searches of bibliographic databases using search terms designed to identify relevant studies (see Appendix B).

We included RCTs of psychological or psychosocial interventions for adults (aged 16 years or older) with a recent history of DSH, regardless of intent. We included articles published in any language. We also examined the reference lists of included articles and relevant reviews and contacted experts in the field to identify further RCTs.

We excluded the following:

- Trials that specifically targeted patients with NSSI;
- Trials that evaluated brief contact interventions or pharmacological interventions;

- Trials undertaken in sub-populations selected on the basis of a particular diagnosis (e.g. borderline personality disorder, depressive disorder or psychosis).

Two reviewers independently selected trials and extracted data on the nature of the interventions, and the outcomes using previously piloted data extraction forms. Discrepancies were resolved by a third reviewer. Risk of bias was assessed independently by two reviewers, based on Cochrane Collaboration methodology (Higgins et al., 2011).

We conducted meta-analyses and meta-regression analyses. The primary outcome measure was the proportion of participants who had engaged in any episode of repeat DSH. Secondary outcomes for meta-analysis included self-rated severity of suicidal ideation, depression and hopelessness, measured on standardised validated scales.

The reference list of the Cochrane review (Hawton et al., 1999) yielded 16 trials classified as psychological or psychosocial interventions. One trial was excluded because it was assessed not to be an RCT. Electronic database searches yielded 3126 articles after removal of duplicates. Inspection of title and abstract resulted in the exclusion of 3015 articles. We identified seven relevant reviews, the reference lists of which yielded six additional RCTs.

We inspected 117 full-text articles, of which 81 were excluded. Our evidence synthesis included a total 36 RCTs, of which 15 were included in the Cochrane review (Hawton et al., 1999) and 21 were published since. Of these, 30 trials provided data that could be included in the meta-analysis for the primary outcome and 32 trials provided data for at least one of the secondary outcomes (Hetrick et al., 2015).

Included trials are summarised in Table ii (see Appendix C). Full details of a later version of this search protocol and meta-analysis have been published elsewhere. In this updated version, 45 RCTs were identified with data available from 36 RCTs (7354 participants) for the primary analysis (Hetrick et al., 2016).

Brief contact interventions for DSH. A systematic review and meta-analysis on this topic was undertaken by working group members and other authors (Milner et al., 2015). The review protocol was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (www.prisma-statement.org). We assessed published systematic reviews of interventions for the relevance of suicidal behaviours. All articles cited within relevant reviews were considered eligible for inclusion.

We then conducted electronic searches of the bibliographic databases Cochrane Central Register of Controlled trials, Cochrane Library, MEDLINE and EMBASE on August 2013 using the following search terms: ('self-harm' OR 'suicide') AND 'intervention' AND 'post-discharge' AND ('postcard' OR 'brief contact') AND 'follow-up' AND care'.

Articles were considered if they included search terms in the abstract or title of the article and were published in a peer-reviewed journal. After a review of the title and abstract, editorials and papers in languages other than English were excluded. Following this, we reviewed the abstract and text to assess whether the study utilised a brief contact intervention and also whether suicide attempt, self-harm or suicide was a measured outcome variable. We excluded articles if the contact intervention was not brief in nature or did not assess the effect of telephone, green cards, crisis card, letters or postcards as the intervention. We also excluded any articles where participants were not sourced from a hospital or a healthcare setting.

Full details of the search protocol and meta-analyses have been published elsewhere (Milner et al., 2015).

Special populations: borderline personality disorder. We used two existing guidelines for the management of borderline personality disorder as an initial reference point: UK national guidelines (National Collaborating Centre for Mental Health, 2009, 2011) and Australian national guidelines (NHMRC, 2012).

The NHMRC (2012) guideline was used to identify relevant randomised trials published up to 2011. To identify later RCTs, we conducted an electronic search of PubMed (2012–2014) using the terms 'self-harm' AND 'borderline personality disorder' and limiting to RCTs. None was found.

We also used existing systematic reviews of DBT (Kliem et al., 2010; Panos et al., 2013) and pharmacological treatments (Bellino et al., 2011; Duggan et al., 2008; Ingenhoven et al., 2010; Lieb et al., 2010; Mercer et al., 2009; Stoffers et al., 2009).

Special populations: children and adolescents. We conducted an electronic search of the bibliographic database PubMed (to April 2014) using the following terms: self-harm AND review AND adolescent.

We identified a systematic review of RCTs that evaluated pharmacological, social or psychological interventions for reducing repetition of self-harm in adolescents (Ougrin et al., 2012). We also contacted the Cochrane group members who are currently updating the previous Cochrane review (Hawton et al., 1999) to identify any other recently published or reported trials. One further trial was identified by an international expert reviewer during independent review of a draft of this guideline.

Included trials are summarised in Table iii (see Appendix C).

Special populations: older adults. We used selected systematic reviews and meta-analyses as an initial reference point for identifying evidence on suicidal behaviour in older adults (60 years and over) (Chan et al., 2007; Lapierre et al., 2011; Oyama et al., 2008).

We also conducted electronic searches of the bibliographic databases MEDLINE, PsycINFO and EMBASE

(2007–2013) using the following search terms: suicide, deliberate self-harm, suicide ideation, attempted suicide, old, elderly and old age. Studies were included if they focused on older adults aged 60 years and over and were written in English. Of the 384 articles yielded, 46 abstracts were examined and five articles relevant were identified and included.

Included trials are summarised in Table iv (see Appendix C).

Special populations: Māori

Sources. Searches of bibliographic databases MEDLINE, Cochrane Library and PsycINFO were conducted using the following search terms: 'Māori' AND 'deliberate self-harm' OR 'suicide'. No relevant RCTs were found.

We conducted a comprehensive review of New Zealand Ministry of Health online articles and publications, specifically reviewing published data with the terms 'Māori', 'Deliberate self-harm' and/or 'suicide'.

Relevant epidemiological data on DSH and suicide within the Māori population were included, especially in regard to prevalence rates and proposed aetiological factors. There were no systematic reviews, meta-analyses or RCTs evaluating specific interventions for Māori who present with DSH, or interventions to prevent suicide. Therefore, evidence-based studies from non-Māori populations nationally and internationally need to be considered and adapted to meet the cultural needs and context of Māori in Aotearoa/New Zealand.

Methodological issues. Research that combines Kaupapa Māori principles and practice (an indigenous research approach that is decolonising and transformative) with interpretative descriptions (qualitative methodology) to investigate the experience of Māori is considered to be valuable and consistent with traditional methods of sharing knowledge and learning.

We also consulted expert Māori opinion, including the following publications:

- Professor Sir Mason Durie (2011) *Nga Tini Whetu: Navigating Māori futures*. Wellington, New Zealand: Huia.
- Robson B, Harris R (eds) (2007). *Hauora: Māori Standards of Health IV. A study of the years 2000–2005*. Wellington, New Zealand: Te Rōpū Rangahau Hauora a Eru Pōmare (The Eru Pōmare Māori Health Research Centre, University of Otago).
- Cormack D, Harris R (2009) *Issues in monitoring Māori health and ethnic disparities: an update*. Wellington, New Zealand: Te Rōpū Rangahau Hauora a Eru Pōmare (The Eru Pōmare Māori Health Research Centre, University of Otago).
- Oakley-Browne M, Wells JE, Scott KM, et al. (2006) *Te Rau Hinengaro: The New Zealand Mental Health Survey*. Wellington, New Zealand: Ministry of Health NZ.

Special populations: Aboriginal and Torres Strait Islander peoples. No relevant RCTs that reported DSH outcomes for Aboriginal and Torres Strait Islander people or studied Indigenous DSH populations were found. We identified no systematic reviews of DSH interventions relevant to Indigenous Australians, but found two relevant systematic reviews on suicide: a systematic review of interventions for suicidal behaviours (Ridani et al., 2014), which did not identify any RCTs, and a systematic review of suicide prevention studies in Indigenous populations (Clifford et al., 2012), which did not identify any RCTs. Most of the included studies used a pre–post design with no control group.

Special populations: prison populations. We conducted electronic searches of the bibliographic database PubMed using search terms designed to identify studies reporting suicide or DSH among prison populations (see Appendix B).

The search yielded 395 articles. No RCTs that specifically evaluated the management of self-harm in prison populations were identified. We identified a single systematic review of the management of suicidal and self-harming behaviours in prison populations (Barker et al., 2014).

Special populations: first-episode psychosis

Sources. We conducted electronic searches of bibliographic databases using search terms designed to identify studies reporting suicide or DSH in patients with first-episode psychosis (see Appendix B). Studies were included if published in English and met any of the following criteria:

- Specifically targeted patients with recent DSH or suicide-related behaviour;
- Included DSH or a suicide-related outcome as a predetermined outcome measure;
- Specifically focused on patients with first-episode psychosis or early-onset schizophrenia;
- Specifically reported a suicide-related outcome in patients with schizophrenia.

Of the 377 articles retrieved, 284 were excluded after checking title and abstract. After assessing 93 full-text articles, 9 studies met inclusion criteria.

We conducted further searches to identify evidence of risk factors for suicide in first-episode psychosis (Appendix B).

Methodological issues. Only two intervention studies (Meltzer et al., 2003; Power et al., 2003) met the first inclusion criterion as RCTs that tested the effects of an intervention on people presenting with DSH or related behaviours. Due to this lack of evidence, we included another seven studies that met at least one of the other criteria (Bateman et al., 2007; Grawe et al., 2006; Nordentoft et al., 2002; Tarrier

et al., 2006) and three cohort studies (Chen et al., 2011; Harris et al., 2008; Melle et al., 2006).

Rarer forms of DSH: major self-mutilation. A 2009 systematic review (Large et al., 2009) identified 305 case histories of major self-mutilation. We conducted a continuous search in Google Scholar to identify subsequently published articles that included any of the following terms: self-mutilation, self-enucleation, enucleation, self-inflicted eye injuries, eye injuries, oedipism, castration, emasculation, orchidectomy, penile amputation, penile injury, amputation, limb amputation, mutilation, self-mutilation and deliberate self-harm.

Further case reports and small series were identified, but there were no recent systematic reviews.

Rarer forms of DSH: self-immolation. We conducted electronic searches of bibliographic databases using search terms designed to identify studies reporting on self-immolation (see Appendix B).

No studies were found that evaluated interventions for survivors of self-immolation.

We also considered information obtained through personal communications with staff from the New Zealand National Burn Centre.

Web-based programmes for suicidal behaviour. A systematic review of this topic was undertaken by working group members and other authors (Christensen et al., 2014).

We conducted electronic searches of bibliographic databases using search terms designed to identify studies evaluating web-based programmes for suicidal behaviour (see Appendix B).

Inclusion and exclusion criteria were applied in order to identify any Internet or mobile-based interventions that included a measure of suicidal behaviour: trials do not need to explicitly target those experiencing suicidal behaviours, but they were required to measure participants' level of suicidality prior to programme commencement and following programme completion. Studies were excluded if they did not include an intervention, if suicidality (any type of suicidal behaviour) was not measured as a primary or secondary outcome and if the intervention was not Internet-based, web-based or mobile device–based. Conference abstracts, non-peer-reviewed papers, non–English language papers and PhD theses were excluded. One paper was excluded as the research design and sample were identical to another paper written by the same authors.

The search yielded a total of 198 abstracts (33 in MEDLINE, 39 in PsycINFO, 35 in the Cochrane Library, and 91 in PubMed). A total of 109 titles and abstracts (after removal of duplicates) were screened for eligibility by two independent researchers. Where insufficient information was provided, full-text copies of the articles were consulted. Of these, nine papers met inclusion criteria.

Due to the low numbers of trials, studies without control or comparison groups were included in addition to trials including control groups in order to provide an overview of the area. The control group would consist of a wait list, treatment-as-usual or another treatment. There was no restriction on participant age.

Notes on inclusions and exclusions are as follows:

- Marasinghe et al. (2012) was excluded because it involved face-to-face interventions, plus telephone and SMS, without a web component.
- Wagner et al. (2014) was excluded because it was difficult to determine the type of therapy and the extent to which the intervention delivered was an online intervention (it was not clear whether both groups received a paper-and-pencil manual).
- Merry et al. (2012a) employed the Kazdin Hopelessness Scale in place of a suicidal behaviour measure. This scale was used as a proxy for suicidal ideation, and so the study was included, although the results should be considered with caution.

Included trials are summarised in Table v (see Appendix C). Full details of the search protocol and meta-analyses have been published elsewhere (Christensen et al., 2014).

School-based interventions for DSH. We conducted electronic searches of the bibliographic database MEDLINE and Google Scholar to identify articles on risk factors for self-harm or interventions. We identified existing reviews of school-based interventions that reported DSH as an outcome (Katz et al., 2013) or reported on interventions to reduce exposure to known risk factors for DSH in school populations (Burns et al., 2005).

Papers reporting on the Saving and Empowering Young Lives in Europe (SEYLE) study (Brunner et al., 2013; Waterhouse and Platt, 1990) were identified by a working group member after completion of the initial searches.

Evidence published after searches completed. Several relevant articles were published since the cut-off date for inclusion in this CPG. There have been two systematic reviews for child and adolescent DSH populations (Hawton et al., 2015a; Ougrin et al., 2015): two for psychological interventions in adults (Hawton et al., 2016; Hetrick et al., 2016) and one for pharmacological interventions in adults (Hawton et al., 2015b). There have also been new original trial reports, including a 24-month follow-up of the Attempted Suicide Short Intervention Program (ASSIP) versus treatment as usual in adults (Gysin-Maillart et al., 2016), a 24-month follow-up of therapeutic assessment versus treatment as usual in adolescents (Ougrin et al., 2013) and a trial of DBT versus collaborative assessment and management

of suicidality (CAMS) in adults (Andreasson et al., 2016). To our knowledge, there are no findings in these studies or systematic reviews that would alter the recommendations and key points in this CPG.

Developing the recommendations

Clinical practice recommendations were formulated after appraising the evidence using the NHMRC levels of evidence for intervention studies (Table 1) (NHMRC, 2009).

EBRs were formulated when there was sufficient evidence on a topic. Where evidence was weak or lacking, consensus-based recommendations (CBRs) may have been formulated. CBRs are based on the consensus of a group of experts in the field and are informed by their agreement as a group, according to their collective clinical and research knowledge and experience.

Consultations and external review

A draft version of this guideline was reviewed by national and international expert advisers (please see section 'Acknowledgements'). The working group revised the manuscript in response to their suggestions.

A revised version of the guideline was released for public consultation on 20 February–15 March 2015. To encourage wide participation, RANZCP invited review by its committees and members and by key stakeholders, including professional bodies and special interest groups. During the consultation period, the draft guideline was publicly available on the RANZCP website.

Reviewers were asked to respond via an online survey, which asked the following four questions for each section of the guideline:

- Are there any significant gaps (of topic, literature, other)?
- Are there errors in the content?
- Is the structure logical and easy to use?
- Do you have any other comments?

The working group considered all responses. For each suggestion, the working group agreed on whether to revise the manuscript and recorded their decision. Several amendments were made during this revision process.

The amended draft was reviewed by the following RANZCP committees:

- Committee for Therapeutic Interventions and Evidence-Based Practice;
- Practice, Policy and Partnerships Committee;
- Corporate Governance and Risk Committee.

The final draft was approved for publication by the RANZCP Board in February 2016.

Section 3: epidemiology

Recommendations	Type	Level of evidence
Better information systems should be developed to collect data on rates of DSH among people presenting to acute care services.	CBR	N/A
Sentinel surveillance units should be established in general hospitals to collect regional data on DSH rates and to enable more accurate estimates of prevalence, incidence and trends.	EBR	III-2
National surveys should be designed to collect data on rates of hospital-treated DSH and community DSH in Australia and New Zealand.	EBR	IV
National surveys should be designed to collect data on rates of NSSI in Australia and New Zealand.	EBR	IV
Systems should be developed to effectively monitor the prevalence, incidence and trends of community and hospital-treated DSH in Australia and New Zealand.	CBR	N/A

CBR: consensus-based recommendation; EBR: evidence-based recommendation; DSH: deliberate self-harm; NSSI: non-suicidal self-injury; N/A: level of evidence category does not apply. Recommendation based on a combination of available evidence, clinical experience and expert consensus.

Hospital-treated DSH

Key points

Current estimates of hospital-treated DSH from institutional data are recognised as underestimates; better information systems should be developed.

Sentinel surveillance units based in general hospitals, which provide area-wide coverage of hospital-treated DSH, can supply timely data about prevalence, incidence and trends in DSH which can supplement national institutional data at low cost.

Development of sentinel surveillance units is warranted as part of a public health approach to DSH.

Suicide and repetition of DSH are considered to be the key clinical outcomes for hospital-treated DSH.

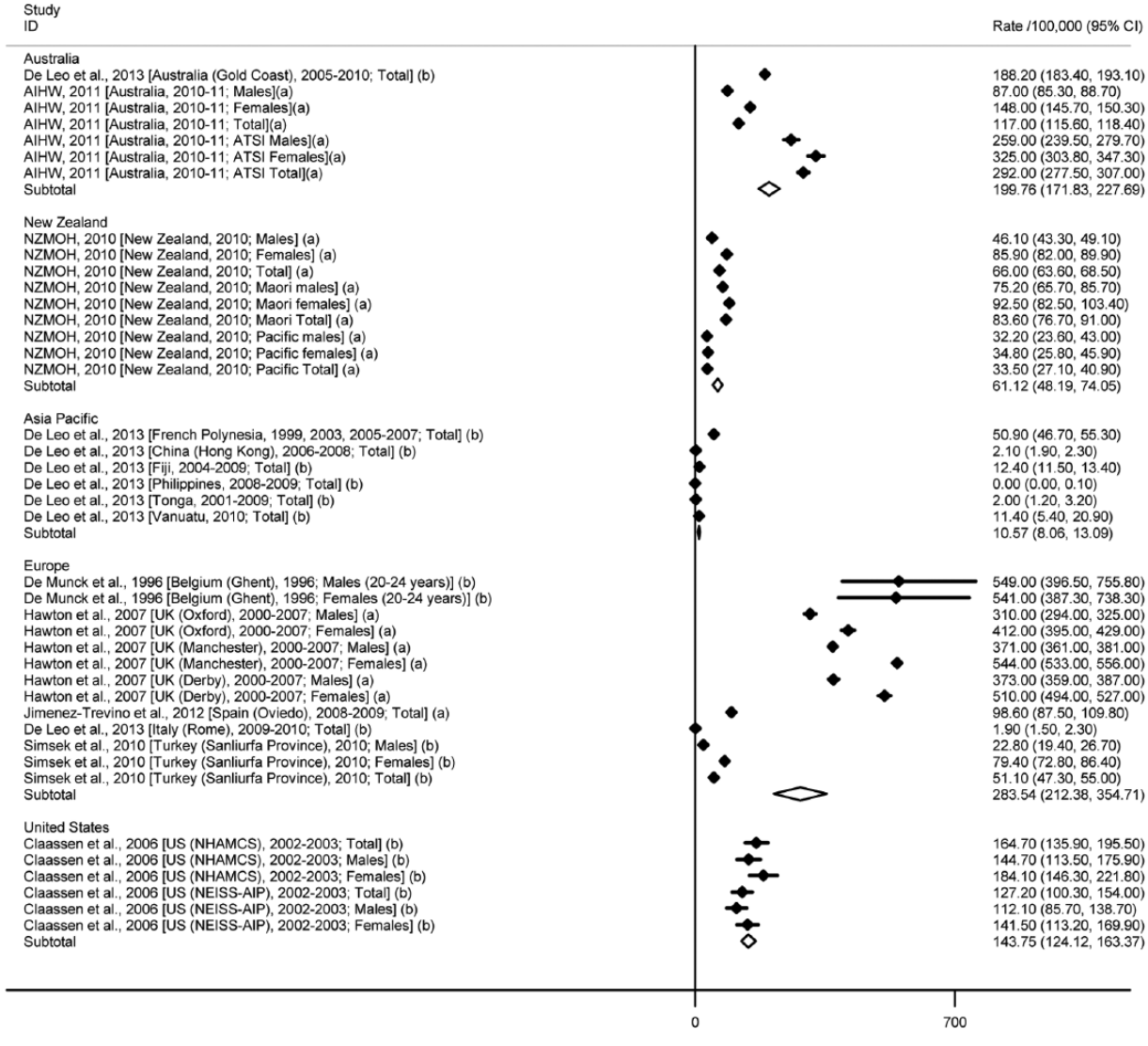
Other important adverse outcomes include non-suicidal mortality (and associated physical morbidity), mental health morbidity (e.g. anxiety, depression, substance use), impaired quality of life and impairment of functioning in physical, psychological and social domains.

Incidence in Australia and New Zealand. In Australia, the overall age-standardised incidence of hospital-treated DSH events (not individuals) for the most recent period with available data (2010–2011) was 117/100,000/year (95% CI=[116, 118]) (Pointer, 2013). Rates were higher among females 148.0/100,000/year (95% CI=[45.7, 150.3]) than males 87.0/100,000/year (95% CI=[85.3, 88.7]). These rates are probably underestimated. In comparison, a recent Australian study from one geographically representative hospital in Newcastle, New South Wales (Hiles et al., 2015), reported age-standardised event rates restricted to deliberate self-poisoning of 220.3/100,000/year (99% CI=[190.7, 249.9]) for females and 112.7/100,000/year (99% CI=[91.5–134.0]) for males.

In New Zealand, the recorded incidence of hospital-treated DSH in 2010 was 76 per 100,000 (95% CI=[64, 69]) (New Zealand Ministry of Health, 2012b), substantially lower than for Australia (Table 2; Figure 1). This difference is partly artefactual, given the different definitions of DSH (see *Definitions and terminology* in 'Section 1: introduction').

The incidence of hospital-treated DSH from institutional data was higher in females than males, both in Australia (148 vs 87 per 100,000) and in New Zealand (86 vs 46 per 100,000). The incidence of hospital-treated DSH was highest among those aged 15–24 years in both Australia and New Zealand (Table 2), predominantly due to higher rates in

Figure 1. Incidence of hospital-treated DSH, selected demographic and international comparisons: (a) age-standardised incidence and (b) crude incidence.



Forest plot showing incidences of hospital-treated DSH (black diamonds) and 95% confidence intervals (bars) reported in each study and summary incidences for each region (open diamonds).

Table 2. Age-specific rates of hospital-treated DSH in Australia (2010–2011) and New Zealand (2010).

	Australia				New Zealand			
	Males		Females		Males		Females	
Age (years)	*n*	per 100,000 [95% CI]	*n*	per 100,000 [95% CI]	*n*	per 100,000 [95% CI]	*n*	per 100,000 [95% CI]
0–14	108	5.3 [4.4–6.4]	457	22.5 [20.5–24.7]	17	5.8 [3.4–9.2]	93	32.4 [26.2–39.7]
15–24	2319	143.1 [137.4–149.1]	5278	344.9 [335.7–354.3]	262	80.1 [70.7–90.4]	565	181.6 [167.0–197.3]
25–44	4551	142.8 [138.6–147.0]	6479	203.7 [198.8–208.7]	400	70.7 [64.0–78.0]	710	117.1 [108.6–126.0]
45–64	2230	80.6 [77.2–84.0]	3487	123.8 [119.8–128.0]	244	45.5 [40.0–51.6]	393	70.1 [63.3–77.4]
65+	540	39.2 [36.0–42.7]	613	37.6 [34.7–40.7]	67	25.9 [20.1–32.9]	74	23.8 [18.7–29.9]

Sources: Pointer (2013) and New Zealand Ministry of Health (2012b).

adolescents (15–19 years). However, the peak of highest incidence of hospital-treated DSH in adolescents and young adults in Australia is less marked when stratified by Aboriginal and Torres Strait Islander status in Australia; rates of DSH among Aboriginal and Torres Strait Islander people aged 25–49 years (males and females) are higher than for other Australians in the same age group (Pointer, 2013).

In Australia, the incidence of hospital-treated DSH among Aboriginal and Torres Strait Islander people was substantially higher than for the general population (292 vs 117 per 100,000), males (259 vs 87 per 100,000) and females (325 vs 148 per 100,000) (Figure 1) (Pointer, 2013). In New Zealand, the incidence of hospital-treated DSH was higher in Māori than in the general population, but was lower in Pacific Islander groups. The incidence of hospital-treated DSH in Māori was 75 per 100,000 (95% CI=[66, 86]) for males and 93 per 100,000 (95% CI=[83, 103]) for females, and in Pacific Islanders it was 32 per 100,000 (95% CI=[24, 43]) for males and 35 per 100,000 (95% CI=[26, 46]) for females (New Zealand Ministry of Health, 2012b).

In Australia, the incidence of hospital-treated DSH among males remained stable at approximately 90 per 100,000. However, reported rates among females have increased during the past 10 years, from approximately 140 per 100,000 to 150 per 100,000 (Figure 2) (Pointer, 2013). This apparent increase could be artefactual (e.g. due to changes in admission practices or coding of admissions).

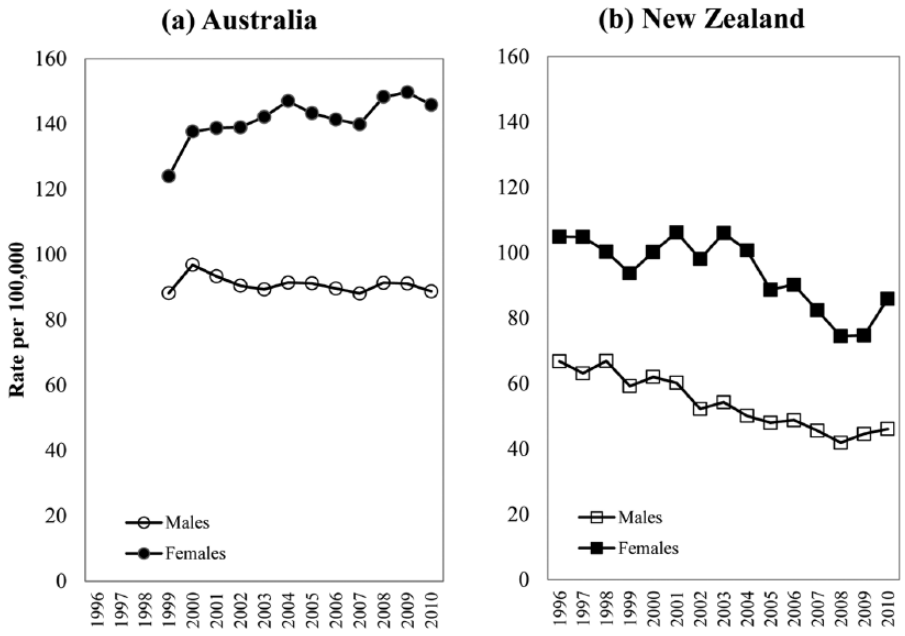
In contrast, the incidence of hospital-treated DSH in New Zealand has shown a sustained decline for both males (from approximately 65 per 100,000 to 40 per 100,000) and females (from approximately 100 per 100,000 to 75 per 100,000). However, data for the most recent period suggest that this trend may be reversing in both males and females. This decline has been attributed to changes in clinical practice and administration, specifically, a move to community-based mental health care, which reduces the likelihood of an inpatient admission (New Zealand Ministry of Health, 2012b).

Frequency of methods. Based on institutional data, the most common methods of hospital-treated DSH in Australia and New Zealand were self-poisoning, accounting for over 80% of cases, followed by cutting (approximately 15–20% of cases) (Hatcher et al., 2009; Pointer, 2013). This pattern is largely consistent with the distribution of methods of hospital-treated DSH reported in the United Kingdom (Bergen et al., 2010a) and Europe.

However, some methods that are rare in Australia and New Zealand have been reported to be more clinically significant in some regions. These include pesticide poisoning in China (Gunnell et al., 2007) and oleander poisoning in Sri Lanka (Rajapakse et al., 2013). These reports highlight the importance of cultural differences and the availability of means as a determinant of intentional self-harm behaviour, rates and outcomes.

International comparisons. International comparisons of the incidence of non-fatal DSH can be problematic, given differences in definitions, whether cases are enumerated via routine data collections or self-report, and underlying differences in health systems and mental health assessment. The international comparisons presented here are restricted to hospital-treated DSH to allow more plausible comparisons between Australia and New Zealand and similar available estimates in the Asia-Pacific, United Kingdom, United States, and Europe. However, caution should be used in interpreting these comparisons because of the heterogeneity of definitions and recording methods used across studies.

Figure 2. Trends in hospital-treated DSH in Australia (1999–2010) and New Zealand (1996–2010).



Sources: Pointer (2013) and New Zealand Ministry of Health (2012b).

The incidence of hospital-treated DSH in Australia for the most recent period for which data are available (2010–2011) was comparable to hospital register-based estimates in the United States (Claassen et al., 2006). Total incidences reported in the United States ranged from 127 to 165 per 100,000, with similarly higher incidence of DSH in females compared to males (Figure 1). The most recent Asia-Pacific estimates from the WHO 'Suicide Trends in At-Risk Territories' (START) study (De Leo et al., 2013) suggest that, compared with Australia and New Zealand, incidences of hospital-treated DSH are substantially lower in French Polynesia, Fiji, Tonga, Vanuatu, the Philippines and Hong Kong (China), ranging from less than 1 per 100,000 (Philippines) to 51 per 100,000 (French Polynesia) (Figure 1).

European estimates of the incidence of hospital-treated DSH from population catchments in the United Kingdom, Belgium and Turkey are more heterogeneous. However, where gender-specific estimates were reported, incidences of hospital-treated DSH were higher among females than males, consistent with rates in Australia and New Zealand. The incidence of hospital-treated DSH for UK population catchments in Oxford, Manchester and Derby (all individuals who presented to general hospital EDs in these catchments) for the period 2000–2007 ranged from 310 to 510 per 100,000 (Bergen et al., 2010a), higher than those recorded in Australia and New Zealand.

Rates of hospital-treated DSH among young adults were also higher in Ghent, Belgium, ranging from 541 to 549 per 100,000 (De Munck et al., 2009), than estimates for similar age groups in Australia and New Zealand. Compared with Australian and New Zealand, estimated incidences of DSH were substantially lower for other European regions such as Rome, Italy (2 per 100,000; De Leo et al., 2013) and Turkey (51 per 100,000; Simsek et al., 2013), but consistent with Oviedo, Spain (99 per 100,000) (Jimenez-Trevino et al., 2012).

Sentinel surveillance approaches to hospital-treated DSH. Sentinel surveillance of DSH in specific population catchments has also proved to be a valuable source of information about the public health burden associated with hospital-treated DSH, its aetiology and the impact of specific clinical and population-based interventions. Sentinel surveillance involves ongoing collection of detailed clinical and demographic information from cases that present to a particular service and meet specified criteria. The principal advantages of this form of surveillance are as follows:

- It is cheaper than population-wide surveillance.
- Time trends can be documented for detailed demographic and clinical information.
- The impact of specific assessment, policy and clinical interventions (which affect that population base) can be evaluated.

However, sentinel surveillance does not necessarily provide nationally or regionally representative estimates of incidence.

Some sentinel surveillance units do have regionally representative treatment populations. A recent study from sentinel

units in Oxford, UK, and Newcastle, Australia (Hiles et al., 2015), reported significantly lower rates of hospital-treated deliberate self-poisoning (only) for Australia than for the United Kingdom. In Newcastle, age-standardised rates for individuals (not events) were 95.4/100,000/year (99% CI=[75.8, 115.0]) for males and 162.7/100,000/year (99% CI=[137.4, 188.1]) for females. In comparison with Newcastle, standardised rate ratios in Oxford were much greater: 2.5 (99% CI=[1.7, 3.5]) for males and 2.4 (99% CI=[1.9, 3.2]) for females (Hiles et al., 2015). These data may be population-based, in that all DSH cases for a given hospital or clinical catchment are enumerated, but may not be generalisable to other contexts, depending on case definitions and other contextual factors associated with clinical care.

Ongoing sentinel surveillance of DSH is not widely employed in Australia or internationally. However, well-established systems in Newcastle, Australia (Whyte et al., 1997), Christchurch, New Zealand (Beautrais et al., 1994), Oxford, UK (Hawton et al., 1994), Leeds, UK (Owens et al., 1994), and Manchester, UK (Kapur et al., 2004) have shown how effective sentinel surveillance sources can be in documenting the epidemiology of DSH, understanding aetiology and the impact of clinical interventions and the outcome evaluation of policy changes.

Community DSH

Key points

- Current estimates of Community DSH in Australia and New Zealand come from infrequent national surveys that use a very limited form of questions to determine DSH. Further study is warranted.
- Current estimates of NSSI in Australia come from a single nationally representative cross-sectional study. Further study is warranted.
- Community DSH is more common than hospital-treated DSH, although the knowledge base for this behaviour is very limited; effective monitoring of prevalence, incidence and trends is warranted.

Community-based estimates of DSH, usually based on self-report surveys, have been published in Australian and New Zealand studies, and population-based estimates can be obtained from these specific analytic studies. However, the main source of representative community-based estimates come from national surveys in Australia (Johnston et al., 2009; Swannell et al., 2014) and New Zealand (Beautrais, 2006), which include the following questions: Have you attempted suicide in the past 12 months? Have you ever attempted suicide?

The most recent Australian reports (Johnston et al., 2009), based on 2007 survey data, estimate the 12-month prevalence of attempted suicide at 0.4% (95% CI=[0.3%, 0.6%]), equivalent to approximately 400 per 100,000, and life-time prevalence at 3.2% (95% CI=[2.8%, 3.7%]), equivalent to approximately 3200 per 100,000. The most recent New Zealand estimates (Beautrais, 2006), based on the 2004 national survey, were very similar: 12-month prevalence was 0.4% (95% CI=[0.3, 0.6]) and life-time prevalence was 4.5% (95% CI=[4.1%, 5.0%]). The reported 12-month prevalences were similar in females and males. However, life-time prevalence estimates were approximately two times higher in males than in females in both Australia and New Zealand (Beautrais, 2006; Johnston et al., 2009).

Nationally representative Australian data on NSSI are also available from a single community-based survey (Martin et al., 2010), in which 1.8% of respondents (approximately 1800 per 100,000) reported NSSI in the last 6 months and 8.1% (approximately 8100 per 100,000) reported having ever engaged in NSSI. Community-based estimates of suicide attempt (self-harm) and NSSI are substantially higher than those of hospital-treated self-harm. This difference partly reflects additional, perhaps less severe, cases of self-harm that do not come to the attention of health services, but may also reflect ascertainment bias in the self-reported measures of suicidal behaviour in response to the type and number of questions, behavioural prompts used and referent period (Swannell et al., 2014).

Research priorities

Studies should be designed to collect accurate data on the rates of community DSH and NSSI in Australia and New Zealand.

Section 4: organisation of services

Recommendations	Type	Level of Evidence
Minimise waiting times for people who present to EDs after DSH and monitor the reception area closely to ensure patients do not leave before psychosocial assessment is completed.	CBR	N/A
Psychosocial assessment should be performed by a trained mental health professional for every patient treated in hospital after DSH.	EBR	III-2
Do not use risk assessment scales or tools to determine the need of clinical services or follow-up in people treated in hospital after DSH.	EBR	III-2
If patients abscond from the ED or hospital before completion of assessment and treatment of DSH, staff should follow them up and attempt to reengage them through phone contact, their GP, the treating mental health team, crisis team or the police, if necessary.	CBR	N/A

(Continued)

(Continued)

Recommendations	Type	Level of Evidence
Services that provide care for people with DSH should show respect for patients who self-harm and should improve communication and collaboration between patients and clinical staff during treatment.	EBR	IV
For patients who attend frequently for DSH, identify primary and specialist care providers who can work with hospital staff and, where appropriate, the service user (patient) to create an active management plan for future presentations. This should be linked to a hospital alert so that the management plan is available early in each episode of care.	CBR	N/A
Services that provide care for people with DSH should implement strategies to improve staff knowledge about DSH and increase empathy.	EBR	I
Access to aftercare and information about DSH should be improved for patients, carers and the public.	EBR	III-2
People who have self-harmed should be treated by specialist multidisciplinary teams, if possible.	EBR	III-2
Self-harm planning groups should address the service planning and operational policies of the hospital for this patient group. Members should include hospital managers, ED, medical staff, nursing, psychiatry, medical ward, primary care and service users.	CBR	N/A
Seek the advice of senior clinicians and the hospital legal team, where appropriate, in complex situations (e.g. when a patient refuses treatment, lacks the capacity to make decisions about their care due to unconsciousness or delirium, when a patient has a 'do-not-resuscitate' advance directive, when the patient's family disputes management and the person lacks decision-making capacity, when the patient has a terminal illness and suicide is seen as a legitimate solution by themselves and their family).	CBR	N/A

CBR: consensus-based recommendation; EBR: evidence-based recommendation; DSH: deliberate self-harm; ED: emergency department; GP: general practitioner; N/A: level of evidence category does not apply. Recommendation based on a combination of available evidence, clinical experience and expert consensus.

Models of care

Key point

There is insufficient evidence on the effects of service organisation on rates of repetition of DSH. Further evaluation is warranted.

No systematic reviews or RCTs that specifically assessed the effect of service organisation on repetition rates for hospital-treated DSH were identified. However, the most recent Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) included four RCTs that included service organisation as a component of interventions for patients with hospital-treated DSH and reported repetition of DSH as an outcome measure. The Cochrane review did not conduct a separate meta-analysis of this subgroup of trials. Of these trials, three showed no significant difference in DSH repetition rates between treatment groups:

- A trial that compared general hospital admission with treatment in the ED only (Waterhouse and Platt, 1990) reported an odds ratio (OR) of 0.75 (95% CI = [0.16, 3.60]).
- A study that compared long-term therapy with short-term therapy (Torhorst et al., 1988) reported an OR of 1.0 (95% CI = [0.35, 2.86]).
- A study that compared 'home-based' therapy with standard care (Harrington et al., 1998) reported an OR of 1.02 (95% CI = [0.41, 2.51]).

The fourth trial (Torhorst et al., 1987), which compared aftercare by the 'same therapist' with aftercare by a 'different therapist', found that maintaining the same therapist was associated with harm rather than benefit: OR for DSH repetition = 3.70 (95% CI = [1.13, 12.09]).

Various CPGs have made recommendations for the organisation of clinical services for patients who self-harm. These include recommendations for the following:

- Adult populations (RANZCP, 2004);
- Adolescent and young adult populations (Australasian College for Emergency Medicine (ACEM) and RANZCP, 2000);
- Short-term management (National Collaborating Centre for Mental Health, 2004);
- Long-term management (National Collaborating Centre for Mental Health, 2011);
- Particular sub-groups (National Collaborating Centre for Mental Health, 2009).

However, there have been few evaluations for the implementation of these recommendations (Auditor General of Western Australia, 2001).

A small number of observational studies have reported DSH outcomes associated with elements of service organisation. An early study from Scotland (Kessel, 1965a) described the components of services organised for hospital-treated DSH:

A general medical team and a psychiatric team work alongside each other. Adult poisoning cases from the whole of the city

come or are sent there. If they first arrive at another hospital it is common for them to be transferred, but the great majority of patients are brought direct to the Infirmary, where it is the practice in the out-patient or casualty department to send to the ward all patients who have taken an overdose. The casualty officer does not have to make a hurried judgment about whom to send in, nor need he exercise a disliked discretion about whether a case is 'serious' enough be admitted. It is most important that the situation is assessed by inquiry, both of the patient and of an independent informant. Specially prepared schedules were used to systematize the customary clinical records. Every patient was followed by home visiting for one year after admission.

A later Australian study (Whyte et al., 1997) described a very similar model of acute clinical management, without the 12-month home visiting follow-up care, and reported that it was associated with reduced length of stay, reduced costs and no greater mortality, compared with other Australian hospitals.

There is no clear blueprint for how services should be organised, and there have been recent calls for observational studies of services and interventions. The UK NICE CPG for the long-term management of DSH (National Collaborating Centre for Mental Health, 2011) recommended that *'study should be carried out to investigate the different approaches to harm reduction following self-harm currently in use in settings*'.

Psychosocial assessment (or mental health assessment)

Key point

Psychosocial assessment by a trained mental health professional may have an effect on DSH repetition rates. Further evaluation is warranted.

Background. The majority of adults (83.9%) and adolescents (81.2%) who present for hospital-treated DSH have an underlying psychiatric disorder, of which depression, anxiety and alcohol misuse are the most common (Hawton et al., 2013b). Among adolescents, attention-deficit hyperactivity disorder and conduct disorder are also common (Hawton et al., 2013b). Hospital presentation following self-harm therefore represents an opportunity for assessment and intervention.

DSH CPGs usually recommend psychosocial assessment for each patient as a mainstay of service organisation and for informing decisions about follow-up care provision. The NICE guideline for the short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care (National Collaborating Centre for Mental Health, 2004) recommends the following:

Following psychosocial assessment for people who have self-harmed, the decision about referral for further treatment and help should be based upon a comprehensive psychiatric, psychological and social assessment, including an assessment of risk, and should not be determined solely on the basis of having self-harmed.

NICE recommends that the psychosocial assessment for a patient presenting after an episode of self-harm should focus on identifying their needs and modifiable risks, rather than focusing solely on risk assessment, given the low sensitivity and specificity of risk assessment tools for predicting suicide or repetition of self-harm (National Collaborating Centre for Mental Health, 2004). However, implementation of psychosocial assessment continues to be variable in UK hospitals (Cooper et al., 2013).

In Australia, psychosocial assessment rates recorded at one sentinel unit have been reported as 97% (568 of 584 episodes) for 1995 (Whyte et al., 1997) and 93% (3262 of 3492 individuals) for the period 1997–2006 (Hiles et al., 2015).

Evidence for the effects of psychosocial assessment on DSH. No individual RCTs, cluster RCTs or stepped-wedge design studies that reported on the efficacy or effectiveness of psychosocial assessment in any form for outcomes like repetition of hospital-treated DSH were identified.

Observational studies have provided conflicting evidence:

- A study of six UK hospitals (Kapur et al., 2008) included data for 7344 individuals with 10,498 episodes (60% assessment rate). It found no association between assessment and self-harm repetition, but reported differences between hospitals; assessments were associated with reduced risk of repetition in one hospital but associated with increased risk of repetition in another.
- A study of three UK hospitals (Kapur et al., 2013c) included data for 35,938 individuals (59% assessment rate). It reported that psychosocial assessment was associated with no reduction in repetition at one hospital (hazard ratio [HR]=0.99; 95% CI=[0.90, 1.09]) but a significant reduction at two hospitals: HR=0.59 (95% CI=[0.48, 0.74]) and HR=0.59 (95% CI=[0.52, 0.68]). Although psychosocial assessment was associated with an overall 40% lower risk of repetition when data for all three hospitals were pooled, this association was lost when adjusted for socio-economic status of the individuals.
- A study of three UK hospitals (Bergen et al., 2010b) included data for 13,966 individuals (56% assessment rate). It reported that psychosocial assessment following an index episode of self-harm was associated with reductions in the risk of repeat self-harm of 51% (95% CI=[42%, 58%]) in people with no psychiatric treatment history and 26% (95% CI=[8%, 34%]) in those with a treatment history. For the subgroup with a history of previous self-harm, assessment was associated with a 57% (95% CI=[51%,

63%]) reduction in the risk of repetition (assuming independent episodes) and a 13% (95% CI=[1%–24%]) reduction in risk after accounting for ordering and correlation of episodes by the same person (stratified episodes model).

Psychosocial assessment in practice. It has been suggested that psychosocial assessment should be viewed as a potential treatment opportunity (Bergen et al., 2010b; Whyte et al., 1997). In practice, psychosocial assessment of patients who self-harm differs according to the method of harm. Those who use self-cutting are less likely to receive a psychosocial assessment than those who self-poison (Gunnell et al., 2005; Lilley et al., 2008) while paradoxically being at greater risk of subsequent suicide (Cooper et al., 2005; Hawton et al., 2006; Owens et al., 2005). A study of 22 UK hospitals (Bennewith et al., 2005) included data for 2780 self-harm episodes with a 59% assessment rate. It reported that of those who did not receive psychosocial assessment, 57% discharged themselves and 43% were discharged by hospital staff. Self-discharge was independently associated with being male, taking illegal drugs/alcohol, attendance out of office hours and not being admitted to a hospital bed (Bennewith et al., 2005). The apparent increased risk of discharge without an assessment for those who self-lacerated was attenuated after allowing for their lower admissions rates.

It has also been recommended that children and adolescents should be assessed by a person with appropriate expertise, given the developmental needs of this population and the challenges of establishing the intention of the act (Fortune and Hawton, 2005).

Patients' use of services

Key points

The number of patients leaving before assessment might be reduced by short waiting times in the reception area and close monitoring of these patients inside the ED.

Active attempts at engagement and active attempts at follow-up through phone contact, GP, treating mental health team, crisis team or police may be necessary to retrieve absconding patients.

People who leave prior to assessment. Even when services are well organised for those presenting with DSH, a proportion of people will leave EDs before receiving treatment or assessment. These patients are at higher risk of repetition of DSH and suicide (Hickey et al., 2001). Strategies for reducing risk that are recommended in the clinical literature include close monitoring in the ED, active attempts at engagement and active attempts at follow-up through phone contact or by GPs, the treating mental health team or the police (Kapur, 2009).

A recent comparison of sentinel units in Oxford, UK, and Newcastle, Australia (Hiles et al., 2015), reported a difference in rates of patients leaving before assessment was complete: 11% in Oxford and 2% in Newcastle. The authors speculated that this difference might be attributed to differences in service provision, particularly in the Oxford unit's use of triage scales, resulting in longer wait times in the reception areas before transfer into the ED.

Frequent attenders. Every general hospital will also have a small number of people who frequently present following an act of DSH. Staff attitudes towards this group are particularly negative (Saunders et al., 2012), and these patients may have experienced many negative interactions with clinical staff (Taylor et al., 2009), although these issues are not restricted to frequently attending patients (see section 'Staff attitudes towards people who harm themselves').

Frequently attending patients have complex biopsychosocial challenges that could benefit from intervention. Kapur (2009) recommends that the pattern of frequent attendances should be recognised as a clinical problem in its own right and should be identified by clinicians' experience and via ED databases. Accessing appropriate background information will help to identify primary and specialist care providers who can work with hospital staff and, where appropriate, with the service user to create an active management plan for future presentations. Such plans should be linked to a hospital alert so that the management plan is available early in the episode of care.

Legal issues. Some patients who present to hospital following an act of DSH may be ambivalent or negative about their future, their desire to engage in further DSH, their willingness to receive medical or psychiatric care and their interactions with staff. The use of the local legislation for involuntary mental health treatment is usually restricted to those with a psychiatric disorder (variously defined). However, in all cases, there is a need to consider a possible duty of care towards the patient, a need for emergency treatment and a need for a surrogate decision maker – any of which circumstances might require staff to provide care or treatment to an unwilling patient. It might be useful for hospitals to establish standing policies for the management of these situations, including the capacity to seek extra advice and support from senior clinicians, hospital administration and hospital legal advisers in some complex situations. However, full discussion of these circumstances is beyond the scope of this guideline.

Staff–patient interaction

Key points

Improved communication, respect and collaboration in treatment are needed between people who have self-harmed and clinical staff.

Staff knowledge about DSH can be improved.

Staff empathy for people who have self-harmed can be increased.

Staff attitudes towards people who harm themselves. Staff attitudes towards people who harm themselves vary. A recent review (Saunders et al., 2012) suggested that attitudes of general hospital staff, particularly doctors, were largely negative, most notably towards individuals who repeatedly self-harm:

> *Self-harm patients were viewed more negatively than other patients, except those abusing alcohol or drugs. Active training led to consistent improvements in attitude and knowledge in all groups.*

Staff members were more sympathetic to those they perceived as having high suicidal intent. Psychiatric staff in community and hospital settings had more positive attitudes than general hospital staff (Saunders et al., 2012).

Among people who self-harm, some groups present a particular challenge to staff: those who present frequently to EDs, those who are aggressive or violent and those who are intoxicated (Bolton, 2009; Saunders et al., 2012).

There is a considerable body of evidence concerning the assessment and modification of negative staff attitudes towards patients who have self-harmed, which is beyond the scope of this guideline. Evaluation studies of active training have reported consistent improvements in staff knowledge and attitudes towards patients who self-harm (Saunders et al., 2012), and some recent studies have demonstrated beneficial changes in clinician behaviour (Osteen et al., 2014).

Service user experiences of self-harm services. There is a considerable body of evidence on patients' perspectives on staff attitudes and clinical service provision for people who self-harm, which is also beyond the scope of this guideline. A recent systematic review (Taylor et al., 2009) has summarised the findings as follows:

> *Poor communication between patients and staff and a perceived lack of staff knowledge with regard to self-harm were common themes. Many participants suggested that psychosocial assessments and access to after-care needed to be improved.*

A recent review of service users' experiences of self-harm services (Taylor et al., 2009) suggested a need for improved communication, respect and participation in treatment planning between people who have self-harmed and clinical staff. Improving perceptions of staff knowledge about DSH, increased empathy, improved access to aftercare, and enhanced provision of information about DSH to patients, carers and the public have been recommended.

Service organisation issues

Key points

Improved access to aftercare and enhanced provision of information about DSH to patients, carers and the public are warranted.

Specialist multidisciplinary teams to manage DSH are likely to enhance service-user experiences and provide greater support and professional development for clinical staff.

Emergency services. People presenting to hospital for treatment of an episode of DSH require their medical and physical needs to be attended to by triage, emergency and medical staff. The UK Royal College of Psychiatrists (Royal College of Psychiatrists, 1994) recommended that general clinical staff have the following competencies for the management of self-harm in a general hospital setting:

- Prompt assessment and treatment of the patient's physical condition;
- Basic psychosocial and mental state assessment;
- Detection of immediate suicide risk;
- Judgement of when to defer to specialist opinion;
- Culturally relevant assessment;
- Basic understanding of medico-legal issues.

In addition to these general skills, the Royal College of Psychiatrists (1994) recommended that specialist clinical staff should have skills in the following:

- Diagnostic formulation;
- Assessing risk of repetition;
- Generating and implementing management plans;
- Liaising with appropriate services;
- Assessing hostile or guarded patients.

In the United Kingdom, it has been recommended that self-harm planning groups should be developed in hospitals to address service planning and operational policies and that membership should include hospital managers, ED staff, medical staff, nursing staff, psychiatry staff, medical ward staff, primary care providers and service users (Kapur, 2009). One important operational decision is whether or not medical admission beds should routinely be used to facilitate psychiatric assessment, greater information gathering, temporary respite and time to organise follow-up care. Specialist multidisciplinary teams for managing self-harm exist in some hospitals. The levels of clinical training, experience, supervision and responsiveness that such teams offer are usually superior to what can be achieved by a sole practitioner with competing commitments (Kapur, 2009). In Australia, an integrated service using a clinical model of management of deliberate self-poisoning was associated with shorter lengths of stay, with no greater in-hospital or follow-up mortality, realising a saving of 1470 bed-days per year (Whyte et al., 1997).

Crisis teams. Patients' engagement with services following a referral for hospital-treated self-harm varies, and the proportion of patients who attend a single follow-up session can be as low as 40% (Trautman et al., 1993). Good working relationships between hospital and crisis teams might enhance access to aftercare. A recent review of crisis teams (Carpenter et al., 2013) indicated that they are cheaper than hospital admission and patients are generally satisfied with

them. The review identified only two evaluation studies and reported that one observed a higher suicide rate in an area covered by a crisis team, compared with the same area before introduction of the crisis team and with another nearby area not covered by a crisis team, while the other study observed that suicide rates remained constant in the presence and absence of crisis teams (Carpenter et al., 2013). The effect on DSH is not known.

Substance misuse services. About half of all episodes of self-harm in the United Kingdom are associated with ingestion of alcohol in the period preceding the self-harm episode (Hawton et al., 2007). Co-ingestion of alcohol with other drugs at the time of self-poisoning events is also common, occurring in approximately 24% of episodes in the United Kingdom and 32% in Australia (Hiles et al., 2015). Alcohol misuse is also common in DSH populations (Hawton et al., 2013b). Therefore, the availability of alcohol or substance misuse services is considered to be useful.

Service evaluations. A limited number of observational studies evaluated service delivery for patients with hospital-treated DSH.

The UK National Health Service (NHS) makes explicit requirements for services to provide care to patients who self-harm. Several evaluations have assessed DSH management in the United Kingdom:

- A study of four UK teaching hospitals (Leeds, Leicester, Manchester, and Nottingham) (Kapur et al., 1999) assessed the clinical care of patients who presented for deliberate self-poisoning over a 4-week period. It found that no psychosocial assessment was made at any time during the patient's contact with the hospital for 220 of 477 (46%) hospital attendances. There was also a considerable inter-hospital variation, with almost twice as many patients receiving a specialist psychosocial assessment at some hospitals than others.
- A postal survey of 129 NHS Trusts (Slinn et al., 2001) reported that 30% of trusts did not use secondary psychiatric services for psychosocial assessment following DSH, only 52% had designated self-harm liaison staff and only 18% had staff with psychiatric experience. Standards for DSH services were considered to fall substantially below existing UK national guidelines, particularly in the areas of planning and training.
- A later study (Bennewith et al., 2004) audited the management of DSH in a nationally representative, stratified random sample of 32 UK hospitals, according to 21 recommended self-harm service standards. A designated self-harm or liaison service was available at 23 of the 32 hospitals, but more than half of the 21 recommended service structures were not in place within 11 hospitals. Guidelines for medical management were available at 31 hospitals and 24-hour access to specialist psychosocial assessments was available at 30 hospitals. However, there was wide variation in the proportion receiving psychosocial assessment (median: 55%; range: 36–82%). A follow-up study (Cooper et al., 2013), which included 31 of the original 32 hospitals, reported little difference in the proportion of episodes receiving specialist assessment. However, scores on the service quality scale had increased. The proportion of DSH episodes with a psychosocial assessment by a mental health professional ranged from 22% to 88% (median: 58%; interquartile range: 48–70%).

A comparison of sentinel units in Oxford, UK, and Newcastle, Australia (Hiles et al., 2015), found that rates of psychosocial assessment by a mental health professional were generally high (Oxford: 80%; Newcastle: 93%). This finding demonstrates the feasibility of psychosocial assessment in regional referral hospitals using a speciality service deployed for a given geographical population.

In Australia and New Zealand, guidelines have been developed for the management of DSH in young people in EDs (ACEM and RANZCP, 2000). The implementation of these guidelines in Western Australia was evaluated by a review of EDs, conducted by the Auditor General of Western Australia (Auditor General of Western Australia, 2001). The review found the following:

- The quality of documentation in patient files was adequate in only three-quarters of cases.
- None of the hospitals had assessed the risk category in accordance with the guidelines.
- Risk assessment was inconsistent and generally not based on the identified risk indicators.
- Patients presenting for DSH were not always treated with the appropriate level of urgency and waited longer for treatment than other patients with similar levels of medical need.
- Patients presenting for DSH did not always receive an appropriate psychiatric assessment.

Modifiable risk factors for hospital-treated DSH. Psychiatric disorders are common, but not universal, among patients with hospital-treated DSH. A recent review of 50 studies in 24 countries (Hawton et al., 2013b) reported that, among adults presenting to hospital after DSH, an Axis I disorder was identified in 83.9% (95% CI=[74.7%, 91.3%]) and an Axis II personality disorder in 27.5% (95% CI=[17.6%, 38.7%]). The most common diagnoses were depression, anxiety and alcohol misuse. For adolescents and young people, 81.2% (95% CI=[60.9%, 95.5%]) met research criteria for any psychiatric disorder, with attention-deficit hyperactivity disorder and conduct disorder common in younger

patients. Two studies reporting clinical diagnoses in adolescents and young people showed more modest prevalence for any disorder: 61.4% (95% CI=[35.2%, 84.5%]).

Mental illness may be an important distal risk factor for DSH, but the more proximal reasons for an episode of DSH and subsequent hospital presentation for treatment are also important to understand. A study from a single unit in Oxford, UK (n=4391) (Haw and Hawton, 2008), reported that 80.6% had multiple life problems, most commonly in the relationship with spouse or partner. The most frequent life problems were relationship with a partner and with other family members, employment, alcohol and finances. Those aged 55 years and over had fewer life problems, with increased prominence of physical health and mental health concerns, and social isolation. The presence of personality disorder, but not psychiatric disorder, was associated with a larger number of life problems, including drugs and alcohol, housing and self-mutilation.

The findings from observational studies suggest that clinical services may need to consider aftercare interventions that address proximal factors like interpersonal relationships, employment, alcohol misuse and financial support, as well as managing distal factors like the mental illness and personality disorder, which have been the more traditional focus of aftercare by mental health services.

Rational use of risk assessments

Key points

Risk assessments have not been demonstrated to reduce repetition of DSH.

Risk assessment scales or tools or any other methods of risk stratification are not warranted for determining the need for clinical service or follow-up after hospital-treated DSH.

There are no widely accepted tools for clinically assessing a patient's risk of subsequent DSH or suicide (Haney et al., 2012). No empirical studies have demonstrated that categorising patients to be at low risk or high risk of future fatal or non-fatal self-harm can contribute to a reduction in overall rates of these adverse events (Wand, 2012). A systematic review of cohort studies or case-control studies that used various scales to predict subsequent DSH or suicide by patients who had received hospital treatment for DSH (National Collaborating Centre for Mental Health, 2011) reported positive predictive values of 12–60% for repetition of DSH and 1–13% for suicide. Prevalence rates were often elevated by the extremely long follow-up periods in many of these studies. Therefore, the clinical utility of these instruments in risk stratification, for the purpose of planning follow-up care, is extremely poor.

Despite this, many health service jurisdictions mandate regular risk categorisation of mental health clients in order to determine follow-up care. Where risk categorisation is mandated or is usual practice, mental health workers are required to assess the probability of future harms such as DSH and suicide into risk categories that might include 'no foreseeable risk', 'low risk', 'medium risk' and 'high risk' (New South Wales Department of Health, 2004).

However, among people who present to hospital for DSH, as many as one in six will re-present with further DSH in the following year and as many as one in 25 can be expected to die by suicide in the next 5 years (Carroll et al., 2014). Hence, all patients who present with DSH are at a greatly elevated relative risk of further DSH and suicide, compared with those who have not self-harmed or members of the general community. The most well-established clinical features for future DSH and suicide are demographic (such as age and gender) or historical (such as previous DSH and previous psychiatric treatment) and vary little over time. Some important demographic features exert contradictory effects on different outcomes. For example, younger age and female sex are protective of suicide but are risk factors for non-lethal DSH.

Further, it is well established that:

- The majority – usually the overwhelming majority – of people who are categorised as being at high risk of DSH or suicide (based on a risk assessment) do not go on to have these outcomes;
- A large proportion of adverse events such as DSH (Saunders et al., 2013) and suicide (Large et al., 2011) occur among people who were categorised to be at 'low risk'.

Risk categorisation is not a replacement for a thorough and empathic clinical assessment, nor should categorisation of a patient as low risk result in delayed assessment or reduced access to aftercare. No patient who has self-harmed should be considered to be at 'no foreseeable' risk of DSH, and in general, self-harming patients should not be considered to be at low risk.

The UK NICE guideline for the short-term management self-harm (National Collaborating Centre for Mental Health, 2004) recommends a needs assessment approach instead of a risk assessment approach. An editorial on UK national guidelines (Kapur, 2005) commented on this shift in recommendations:

> *The current management of self-harm may be improved by shifting professionals' views, involving users [patients] in staff training, and changing service provision – perhaps moving from risk assessment to needs assessment.*

A thorough clinical assessment of the patient's situation and treatment needs should include an assessment of modifiable risk factors for self-harm, such as substance use, psychosis, mood disorder and medical and social problems. Treatment decisions about patients who present with DSH should be made following a thorough personalised

assessment and on the basis of a discussion with the patient and their family, friends or carers, where appropriate. Risk assessments have not been demonstrated to reduce repetition of DSH. Treatment based on need should be available to all patients and not restricted (or mandated) based on a risk-stratification approach.

Instruments for measuring DSH in adults. We identified one systematic review (Borschmann et al., 2012) that analysed seven validated instruments used for measuring DSH in adults. The overall quality of these instruments showed considerable variation. The Suicide Attempt Self-Injury Interview (SASII) was considered to be the most robust and comprehensive available.

The review identified 14 other instruments for which there was no description of psychometric properties or a description had not been published. The authors suggested that a standardised, empirically validated and versatile measure of DSH should be developed for use in both clinical and research settings (Borschmann et al., 2012).

Research priorities

More studies are needed to determine the optimal use of psychosocial assessment in patients presenting to acute care services and mental health services after DSH. Investigation should include the following:

- Evaluation of the effect of psychosocial assessment rates and quality on repetition of DSH;
- Studies to determine which assessments that can more accurately identify patients' care needs.

Section 5: interventions to reduce or prevent repetition of DSH

Recommendations	Type	Level of Evidence
If antidepressant medication would not otherwise be indicated, do not initiate treatment with antidepressant medicines specifically to reduce the risk of repetition of DSH in people treated in hospital for DSH.	EBR	I
If depot flupenthixol or depot fluphenazine decanoate is not otherwise indicated, do not use these agents specifically to reduce the risk of repetition of DSH in a patient treated in hospital for DSH.	EBR	II
If lithium carbonate treatment is not otherwise indicated, do not initiate it specifically to reduce the risk of repetition of DSH in a patient treated in hospital for DSH.	EBR	II
Services that provide treatment of people who have self-harmed should offer or arrange aftercare using psychological or psychosocial interventions aimed at reducing repetition of DSH.	EBR	I
Offer any of the following therapies: Cognitive behavioural therapy (CBT) Psychodynamic interpersonal therapy Outreach combined with psychological therapy.	EBR	II
Do not rely on CBT for reducing depressive symptoms in people who have self-harmed.	EBR	II
Provide alcohol reduction-focused interventions if otherwise indicated for people who have self-harmed, but do use these interventions for the specific purpose of reducing the risk of repetition of DSH.	EBR	II

EBR: evidence-based recommendation; DSH: deliberate self-harm; CBT: cognitive behavioural therapy.

Pharmacological treatment

Key point

Overall, evidence from RCTs does not show that pharmacological treatment reduces the risk of repetition of DSH.

A Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) included four RCTs of pharmacological interventions that reported repetition of DSH as an outcome measure:

- Three placebo-controlled RCTs evaluated antidepressant medicines: mianserin or nomifensine ($n=76$) (Hirsch, 1982), mianserin ($n=38$) (Montgomery and Montgomery, 1982) and paroxetine ($n=91$) (Verkes et al., 1998). Meta-analysis of these RCTs reported no effect on repetition of DSH: pooled OR=0.83 (95% CI=[0.47, 1.48]) (Hawton et al., 1999).
- A single small ($n=30$) study (Montgomery et al., 1979) compared depot flupenthixol with placebo in patients with personality disorder and a history of repeated DSH. Flupenthixol was associated with a reduction in repetition of DSH: OR=0.09 (95% CI=[0.02, 0.50]; number needed to treat [NNT]=2).

We identified two more RCTs that evaluated pharmacological interventions in DSH populations and were published since the Cochrane review:

- One small ($n=58$) study (Battaglia et al., 1999) compared monthly intramuscular injections of fluphenazine deconoate at two doses (12.5 and 1.5 mg) in patients treated by a psychiatric emergency service for a recent suicide attempt and with a previous history of multiple DSH events. At 6-month follow-up, there was no difference between the two treatment arms. Pre- and post-treatment analysis showed a significant reduction in the mean number of DSH events in both treatment groups.
- A medium-sized ($n=167$) RCT (Lauterbach et al., 2008) compared 12 months of treatment with lithium or placebo in patients with a recent suicide attempt and a diagnosis of an affective spectrum disorder. The study reported a non-significant reduction in a composite outcome of suicidal acts (DSH or suicide death) in the lithium group: adjusted HR = 0.52 (95% CI = [0.18, 1.43]).

Although antidepressants and lithium do not appear to be effective in preventing repetition of DSH, they may have benefits on multiple aspects of suicidal behaviour (thoughts, attempts, suicide mortality) in other patient populations, such as those with major depression or bipolar disorder. The results should be treated with caution because of the small number of studies and participants.

Psychological and psychosocial interventions

Key points

Overall (all studies combined), psychological or psychosocial therapies are effective in reducing repetition of DSH in unselected populations of patients who deliberately self-harm. However, there is not enough clinical trial evidence to determine with certainty the effectiveness of most specific types of therapy.

CBT may be useful for reducing repetition of DSH among DSH populations.

Assertive outreach combined with psychological therapy (including regular care provider-initiated contact, rapid crisis response, solution-focused counselling and ongoing motivational support to engage in therapy) may reduce repetition of DSH.

Brief psychodynamic interpersonal therapy may reduce repetition of DSH.

Among people who have made definite suicide attempts, CBT may be effective in reducing the proportion of people who make future suicide attempts.

Problem-solving therapy may reduce repetition of DSH in those patients with a history of repetition but is probably not effective for unselected DSH populations.

Greater intensity of intervention (longer therapy treatment times) has been associated with increased risk of repetition of DSH, and this finding warrants further investigation.

Overall (all studies combined), psychological or psychosocial therapies are also effective in reducing suicidal ideation, depression scores and hopelessness scores in unselected populations of patients who deliberately self-harm. However, there is not enough clinical trial evidence to determine with certainty the effectiveness of most specific types of therapy.

Overall findings. Many RCTs of interventions to reduce repetition of DSH in hospital-treated DSH populations have been published since the previous RANZCP DSH CPG (Boyce et al., 2003; RANZCP, 2004). This new evidence has led to changes in some EBRs. However, there is still a need for more evidence from well-designed, adequately powered, high-quality studies to improve our understanding of effective prevention strategies for people who have self-harmed, particularly for specific types of therapy.

The most recent Cochrane review and meta-analyses of RCTs evaluating interventions for reducing repetition of DSH (Hawton et al., 1999) identified 23 randomised trials ($n=2973$) in patients with a recent history of DSH, of which 15 evaluated psychological interventions (not including brief contact interventions and interventions in borderline personality disorder populations) and reported repetition of DSH as an outcome measure:

- Six studies compared intensive interventions plus outreach with standard aftercare: OR = 0.84 (95% CI = [0.62, 1.15]).
- Five studies compared problem-solving interventions with standard aftercare: OR = 0.71 (95% CI = [0.45, 1.11]).
- One study compared inpatient behaviour therapy with inpatient psychodynamic therapy: OR = 0.62 (95% CI = [0.09, 4.24]).
- One study compared aftercare by the same therapist with aftercare by a different therapist: OR = 3.32 (95% CI = [1.18, 9.38]).
- One study compared general hospital admission with discharge: OR = 0.75 (95% CI = [0.16, 3.53]).
- One study compared long-term therapy with short-term therapy: OR = 1.00 (95% CI = [0.35, 2.84]).

This Cochrane review (Hawton et al., 1999), and a slightly earlier systematic review and related meta-analyses (Hawton et al., 1998), informed the recommendations in the previous version of the RANZCP DSH CPG (RANZCP, 2004).

For this guideline, we undertook a systematic review, risk of bias assessment, meta-analysis and meta-regression analyses of RCTs that evaluated a psychological therapy (or psychosocial intervention) to reduce repetition of DSH

(Hetrick et al., 2015). Studies evaluating brief contact interventions or interventions to prevent DSH in patients with borderline personality disorder are considered separately (see section 'Brief contact interventions' and 'Section 6: special populations').

Of the 36 included RCTs, the majority (22 trials) were small (<150 participants), 11 were medium-sized (150–600 participants) and three were large trials (> 600 participants). For most studies, the risk of bias was assessed to be high in at least one domain (Hetrick et al., 2015). Thirty-four RCTs were standard two-arm trials that compared the intervention with control. Two were three-arm trials with two active treatments and one control group. One of the three-arm trials included one poorly utilised treatment arm, so we considered this as a two-arm trial. This resulted in 35 psychological or psychosocial interventions that were compared with a control treatment. We classified these interventions as complex interventions with outreach (14 trials), problem-solving therapy (8 trials), CBT (6 trials), psychodynamic interpersonal therapy (1 trial) and other approaches (6 trials).

Meta-analysis of 30 trials with usable DSH outcome data showed that, overall (pooled data for all studies), psychological or psychosocial interventions were effective in reducing repetition of any DSH episode, compared with comparators: risk ratio (RR)=0.86 (95% CI=[0.76, 0.98]) (Hetrick et al., 2015). A later version of this study with data available from 36 RCTs also showed that psychological or psychosocial interventions were effective in reducing repetition of any DSH episode, compared with comparators: (RR) 0.84 (95% CI =[0.74 to 0.96]) (Hetrick et al., 2016). Sensitivity analyses, which were also conducted in two ways on a small number of trials, reduced the benefit to a non-significant difference:

- Excluding trials with high or unclear risk of bias for allocation concealment (14 studies analysed): RR=0.95 (95% CI=[0.85, 1.05]);
- Excluding trials with high or unclear risk of bias for outcome assessor blinding (13 studies analysed): RR=0.88 (95% CI=[0.72, 1.06]).

Psychological or psychosocial interventions also reduced rates of secondary outcomes (Hetrick et al., 2015):

- Meta-analysis of 32 trials showed a reduction in the severity of suicidal ideation (standardised mean difference [SMD]=−0.32; 95% CI=[−0.47 to −0.16]).
- Meta-analysis of 32 trials showed a reduction in depression symptom scores (SMD=−0.25; 95% CI=[−0.40 to −0.10]).
- Meta-analysis of 30 trials showed a reduction in hopelessness scores (SMD=−1.66; 95% CI=[−2.43 to −0.89]).

Meta-regression analyses showed that only the intensity of intervention (therapy hours) was a significant modifier of the pooled effect size: more intense intervention (greater number of therapy hours) was associated with *increased* risk of repeat DSH (Hetrick et al., 2015). However, a later review did not find any relationship of number of therapy hours and outcome (Hetrick et al., 2016).

The results demonstrated that psychological or psychosocial interventions are likely to be beneficial on repetition of DSH, although the intensity of intervention may be more important than any other characteristics of a particular intervention. Future studies should be adequately powered and address the risks of bias and subsequent threats to internal validity.

Cognitive therapies, CBT and behavioural therapies

Repetition of DSH. The Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) identified no RCTs that specifically evaluated CBT or cognitive therapy as an intervention for reducing DSH, other than those categorised as problem-solving-based therapies (see section 'Problem-solving or problem-oriented therapies'). The Cochrane review also identified one small (n=24) trial that compared behaviour therapy with insight-oriented therapy in inpatients, which showed no difference between groups in DSH (Liberman and Eckman, 1981).

We identified several RCTs of CBT or behaviour therapy that were not included in the Cochrane review (Hawton et al., 1999) or were published subsequently:

- A small (n=15) three-arm trial (Patsiokas and Clum, 1985) compared (1) cognitive restructuring, (2) group problem-solving therapy and (3) nondirective support in psychiatric inpatients who had attempted suicide and observed no differences between groups in suicidal ideation outcomes. DSH repetition was not reported as an outcome (see section 'Problem-solving or problem-oriented therapies').
- A medium-sized (n=239) three-arm trial in China (Wei et al., 2013) compared (1) group CBT, (2) supportive counselling delivered over the phone (12 calls over 3 months) and (3) no intervention in patients who attended EDs after suicide attempts. However, only 5 of 82 participants assigned to the CBT group received CBT. We categorised this trial as an evaluation of a complex intervention with an outreach component (see section 'Problem-solving or problem-oriented therapies').
- A small (n=120) trial (Brown et al., 2005) compared cognitive therapy with enhanced usual care (including case management and non-standardised therapy) in patients with high suicidal intent attending an ED after a suicide attempt. At 18-month follow-up (interview), the intervention group was 50% less likely to reattempt suicide than participants in the usual care group (HR=0.51; 95% CI=[0.26, 0.997]).
- A small (n=90) trial (Slee et al., 2008) compared CBT with other therapy in patients with a recent

history of DSH. There was no difference in the mean number of DSH events at 0–3 months (mean = 5.63; SD = 9.04 vs 5.65; SD = 9.24) and at 3–6 months (mean = 5.30; SD = 9.44 vs 4.03; SD = 7.16), but a lower mean number of subsequent DSH events in the CBT group (mean = 1.18; SD = 4.22 vs 4.58; SD = 8.37) at 6- to 9-month follow-up. The proportion of patients with repeated DSH in each treatment group was not reported.

Three RCTs (Evans et al., 1999a; Tyrer et al., 2003; Weinberg et al., 2006) evaluated manual-assisted cognitive treatment (MACT) in populations with established recurrent DSH. One of these (Evans et al., 1999a) was included in the Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999), but was grouped with problem-focused interventions. The two smaller of these studies (Evans et al., 1999a; Weinberg et al., 2006) were also restricted to patients meeting criteria for borderline personality disorder and are discussed below (see *Borderline personality disorder* in 'Section 6: special populations').

- A small ($n = 34$) trial (Evans et al., 1999a) compared MACT with treatment as usual in patients with borderline personality disorder and recurrent DSH. At 6-month follow-up, there was no difference between groups in the rate of repetition of the 'suicidal act'.
- A small ($n = 30$) trial (Weinberg et al., 2006) compared MACT with treatment as usual in patients with borderline personality disorder and recurrent DSH. MACT was associated with less frequent and less severe DSH, at both completion of treatment and 6-month follow-up.
- A medium-sized ($n = 480$) multicentre trial (Tyrer et al., 2003) compared MACT with treatment as usual (another therapy) in patients with hospital-treated DSH and a history of recurrent DSH. At 12-month follow-up, there was no difference between the MACT group and the control group in the rate of repetition of DSH (39% vs 46%). In this trial, the application of extensive exclusion criteria resulted in the exclusion of up to 50% of potential participants.

A meta-analysis of data from four studies showed a significant reduction in pooled RR for subsequent DSH of 0.80 (95% CI = [0.66, 0.97]) (Hetrick et al., 2015).

We also identified one systematic review and meta-analysis of RCTs evaluating CBT or DBT in a variety of clinical populations, not restricted to DSH populations (Tarrier et al., 2008), which reported suicidal behaviour outcomes. It reported that, overall, CBT was associated with a significant reduction in suicidal behaviours, compared with minimal treatment or treatment as usual. Sub-group analyses showed differing patterns of efficacy for adults (benefit), adolescents (no benefit), individual treatment (benefit) and group treatment (no benefit). CBT showed no benefit when compared with other active treatments. The systematic review reported evidence of publication bias, so caution is needed when interpreting these findings.

Other outcomes. Two RCTs evaluated behavioural therapy provided within inpatient units (Liberman and Eckman, 1981; Patsiokas and Clum, 1985):

- A trial that compared behaviour therapy with insight-oriented therapy (Liberman and Eckman, 1981) reported that behaviour therapy was associated with improvement in depression (a higher proportion of patients shifted from depressed to minimally depressed or normal range on a depression scale).
- A trial that compared cognitive restructuring, group problem-solving therapy and nondirective support in psychiatric inpatients who had attempted suicide (Patsiokas and Clum, 1985) observed no differences between groups in suicidal ideation or hopelessness.

An early trial evaluating MACT showed some benefit for reducing depression (Evans et al., 1999a), but the two follow-up studies did not (Tyrer et al., 2003; Weinberg et al., 2006). The larger MACT study (Tyrer et al., 2003) also showed no differences between groups in hopelessness or quality of life.

In contrast, an RCT that compared cognitive therapy with treatment as usual (Brown et al., 2005) reported that cognitive therapy was associated with a reduction in the severity of self-reported depression and a reduction in hopelessness, but no difference in suicidal ideation.

An RCT that compared CBT with other therapy in patients with a recent history of DSH (Slee et al., 2008) reported that CBT was associated with reductions in suicidal cognitions, depression and anxiety symptoms; improvement in self-esteem and problem-solving; and less service utilisation.

Complex interventions that include outreach therapies

Repetition of DSH. The Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) identified six RCTs[2] evaluating interventions categorised as intensive intervention plus outreach. Meta-analysis of these trials showed no significant difference in repetition of DSH among intervention groups, compared with standard aftercare (five studies) or outpatient-based problem-solving therapy (one study). The reviewers stated that '*there was little indication that intensive intervention plus outreach was effective*' for reducing repetition of DSH and also noted that '*assertive outreach for poorly compliant patients may be a necessary component in maximising the delivery of any*

treatment that is shown to be effective' (Hawton et al., 1999). The authors of a similar systematic review (Hawton et al., 1998) noted that '*assertive outreach can help to keep patients in treatment*'.

We identified a further nine RCTs that we classified as complex interventions including an outreach component (Clarke et al., 2002; Comtois et al., 2011; Hatcher et al., 2015; Hvid et al., 2011; Kawanishi et al., 2014; Litman and Wold, 1976; Marasinghe et al., 2012; Morthorst et al., 2012; Wei et al., 2013):

- A medium-sized ($n=400$) trial (Litman and Wold, 1976) compared a 'continuing relationship management' intervention with treatment as usual in people who had called a suicide prevention telephone service and were categorised as having a high risk of suicide. The intervention group received a phone call from a volunteer once a week over 18 months. The authors stated that there were no differences between groups in DSH outcomes, but few details of the trial were reported. Benefits were reported for other outcomes (see section 'Other outcomes').
- A medium-sized ($n=467$) trial (Clarke et al., 2002) compared a nurse-led case management intervention plus treatment as usual with treatment as usual only in an unselected sample of patients with hospital-treated DSH recruited via two EDs. Case management included open access to the case manager and the opportunity to arrange meetings with the case manager at locations convenient to the patient. There was no difference between the groups in the rate of repetition of DSH after 12 months (9% vs 10%).
- A small ($n=133$) trial (Hvid et al., 2011) compared a complex intervention programme of outreach, problem-solving, treatment adherence and continuity (OPAC) with treatment as usual in patients with hospital-treated DSH (excluding patients with schizophrenia, bipolar disorder or severe/psychotic depression). The intervention group showed a lower rate of repeated suicide attempts (9% vs 22%) and fewer suicide attempt events (8 vs 22) on a per-protocol analysis.
- A medium-sized ($n=243$) trial (Morthorst et al., 2012) compared case management (assertive outreach that provided crisis intervention, flexible problem-solving, motivational support and assistance for patients to attend scheduled appointments) plus treatment as usual with treatment as usual alone in patients admitted to hospitals with a suicide attempt within the past 14 days (excluding patients diagnosed with schizophrenia spectrum disorders and patients living in institutions). After 12 months, there were no differences between groups in the rates of repetition of hospital-treated DSH on an intention-to-treat analysis (16% vs 11%), self-report of DSH on a per-protocol analysis (12% vs 18%) or self-report of DSH on an intention-to-treat analysis after imputing missing follow-up data (12% vs 19%).
- A small ($n=68$) trial in Sri Lanka (Marasinghe et al., 2012) compared a multifaceted intervention (a brief face-to-face intervention, including training in problem-solving and meditation, and a brief intervention to increase social support and advice on alcohol and drug use, followed up by 10 phone calls to reinforce the skills delivered during face-to-face sessions) with wait list (usual care) in patients treated in hospital after a suicide attempt. There were no differences between groups in reduction of DSH.
- A medium-sized ($n=239$) trial in China (Wei et al., 2013) compared (1) CBT and (2) supportive counselling delivered over the phone (12 calls over 3 months), with (3) no intervention in patients who attended EDs after suicide attempts. There were no significant differences between groups in rates of repeat suicide attempts (1.2% in the CBT group, 1.3% in the telephone counselling group and 6.5% in the control group). However, only 5 of 82 participants assigned to the CBT group received CBT.
- A large ($n=914$) trial (Kawanishi et al., 2014) compared assertive case management (focusing on maintaining adherence to psychiatric treatment via regular contact, coordination of appointments and provision of psycho-education) with enhanced usual care (a psycho-education session in the ED and provision, at every assessment visit, of an information pamphlet listing available social resources) in patients who had attempted suicide and had a primary diagnosis of an Axis I psychiatric disorder. At the end of the study (5 years after randomisation), there was no difference between treatment groups in the incidence of first recurrent suicide attempt or completed suicide (6% in the intervention group and 7% in the control group). Post hoc analysis of cumulative incidence at 1, 3 and 6 months after randomisation showed a significant effect, which was not sustained at 12 and 18 months.
- A small ($n=32$) feasibility study (Comtois et al., 2011) compared CAMS, an interview-based intervention designed to modify how clinicians engage, assess and treat suicidality, with treatment as usual in patients who had made a recent suicide attempt or had been assessed as being at 'imminent risk' by psychiatric emergency services, consultation liaison psychiatry services or inpatient psychiatry services within a US hospital providing services to low-income and uninsured community members. Rates of repeated DSH were low and no statistical comparisons were made. A large-scale RCT is now underway to further test this intervention.

- A large ($n=1474$) multicentre trial (ACCESS) (Hatcher et al., 2015) compared a complex intervention (including patient support, regular postcards, problem-solving therapy, risk management strategy and encouragement to attend GP care) with treatment as usual in patients with hospital-treated DSH. At 12-month follow-up, there were no differences between groups in rates of repetition of DSH or time to first repetition of DSH.

A meta-analysis of data from 12 studies showed a non-significant reduction in pooled RR for subsequent DSH of 0.88 (95% CI=[0.70, 1.11]) (Hetrick et al., 2015).

Other outcomes. There is limited evidence for the effect of these interventions on outcomes other than repetition of DSH. The authors of the 1999 Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) intended to evaluate other outcomes such as compliance with treatment, depression, hopelessness, suicidal ideation/thoughts and change in problems/problem resolution, but were unable to obtain these data. In subsequent studies, there has been limited reporting of other outcomes:

- Morthorst et al. (2012) reported that a case management intervention was associated with reduced attendance to healthcare services compared with treatment as usual (OR=0.57 (95% CI=[0.29, 1.14]), but had no effect on attendance at social services (OR=1.01; 95% CI=[0.61, 1.68]).
- Litman and Wold (1976) suggested that a 'continuing relationship management' intervention improved depression, suicidal ideation and formation of romantic relationships (and other social outcomes), but had no effect on help-seeking or use of professional help, compared with treatment as usual.
- Marasinghe et al. (2012) reported that a multifaceted intervention was associated with reduced suicidal ideation, depression and increased social support, compared with treatment as usual.
- Wei et al. (2013) reported no differences in depression and quality of life between patients allocated to CBT, supportive counselling or no intervention.
- Comtois et al. (2011) reported that an interview-based intervention (CAMS) was associated with fewer self-inflicted injuries at all points (including baseline) and fewer ED admissions for behavioural health reasons, but had no effect on the rate of psychiatric hospitalisations, compared with treatment as usual,.
- The ACCESS trial (Hatcher et al., 2015), which compared a complex intervention with treatment as usual and evaluated multiple secondary outcomes at multiple time periods, reported significant differences between groups only for the outcomes of 'sense of belonging' at 3 months and a measure of 'ethnic identity' at 1 year.

Psychodynamic-based therapies. No RCTs evaluating psychodynamic-based therapies for the management of DSH were identified by the Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999). We identified three RCTs published since the review (Bateman and Fonagy, 1999, 2009; Guthrie et al., 2001).

Analysis of data from one study showed a substantial significant reduction in RR for subsequent DSH of 0.31 (95% CI=[0.12, 0.78]) (Hetrick et al., 2015).

A small ($n=119$) trial (Guthrie et al., 2001) compared a brief psychodynamic interpersonal therapy (four sessions of manualised therapy delivered in the patient's home by a trained nurse) with treatment as usual (mainly referral to patient's own GP) in patients who presented to an ED after self-poisoning. The intervention was associated with a greater reduction in suicidal ideation scores at 6-month follow-up (primary outcome), compared with control. The intervention also showed a benefit for the secondary outcomes of repetition of DSH (9% vs 28%) and depression score. The exclusion criteria for this trial resulted in the majority of the initial cohort of 587 recruited patients being excluded before randomisation.

Two RCTs (Bateman and Fonagy, 1999, 2009) evaluated 'mentalization', also known as MBT. MBT is a psychodynamically influenced treatment, delivered in a day hospital setting to patients who met diagnostic criteria for borderline personality disorder:

- The original small ($n=38$) trial (Bateman and Fonagy, 1999) compared MBT with treatment as usual. It reported that the intervention was associated with fewer suicidal acts and acts of self-mutilation, less depressive symptoms, fewer inpatient days and better social and interpersonal function for those retained in the study.
- The second small ($n=134$) trial (Bateman and Fonagy, 2009) compared MBT with structured clinical management. It reported that the MBT group showed a steeper decline in both self-reported and clinically significant problems, including suicide attempts and hospitalisation.
- In long-term follow-up (after treatment was completed), MBT was associated with an enduring benefit for repetition of DSH (Bateman, 2001; Bateman and Fonagy, 2008).

See *Borderline personality disorder* in 'Section 6: special populations'.

Problem-solving or problem-oriented therapies

Repetition of DSH. The 1999 Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) stated that the results of problem-solving therapy were 'promising' and that a larger trial of this approach was required.

We considered the results of another RCT (Patsiokas and Clum, 1985) that was identified by the Cochrane review (Hawton et al., 1999) but excluded because it provided no relevant DSH outcome data. This small ($n=15$) trial, which compared cognitive restructuring, group problem-solving therapy and nondirective support in psychiatric inpatients who had attempted suicide, observed no differences between groups in suicidal ideation outcomes (Patsiokas and Clum, 1985).

We identified a further four RCTs that evaluated problem-focused therapy (Bannan, 2010; Hatcher et al., 2011; Husain et al., 2014; McAuliffe et al., 2014) and one RCT that evaluated a complex intervention incorporating problem-solving (Hvid et al., 2011):

- A medium-sized ($n=221$) trial (Husain et al., 2014) compared individual 'culturally adapted' problem-solving and CBT techniques with treatment as usual (control) in patients admitted to hospital after DSH (excluding those with psychosis, bipolar disorder or alcohol and drug dependence). It reported a significantly greater reduction in suicidal ideation at 3 months (the primary outcome measure) in the intervention group than the control group. The authors also reported that only one individual in the intervention group and one individual in the control group repeated DSH.
- A small ($n=20$) trial (Bannan, 2010) compared group-based problem-focused therapy with another psychological therapy in patients assessed as established repeaters of self-harm. It reported no repeat DSH in either group and no significant differences between groups in suicidal ideation.
- A large ($n=1094$) trial in New Zealand (Hatcher et al., 2011) compared individual problem-solving therapy with treatment as usual in patients who presented to hospital after DSH. It reported no differences between groups in the rate of repeated DSH. Planned sub-group analysis of patients known to be repeaters of DSH showed reduced repetition of DSH in favour of the intervention (RR=0.39; 95% CI=[0.07, 0.60]; NNT=12). These finding must be viewed with caution because the sample was not stratified for DSH repetition status before randomisation and the RCT design was no longer operational at subgroup analysis.
- A medium-sized ($n=433$) trial (McAuliffe et al., 2014) compared group-based problem-solving therapy with treatment as usual in patients who attended EDs or acute psychiatric units after DSH. It reported no difference between groups in the rate of repeated DSH at 12 months.

Although problem-focused therapies were considered to be a promising form of treatment in 1999 by the Cochrane group, only four studies have been completed in the intervening period. A meta-analysis of data from eight studies showed a non-significant reduction in pooled RR for subsequent DSH of 0.96 (95% CI=[0.80, 1.16]) (Hetrick et al., 2015).

One complex intervention that included a problem-solving component did show benefit (Hvid et al., 2011) and may be worth further testing (see section 'Complex interventions that include outreach therapies'). However, another complex intervention that included a prominent problem-solving component did not reduce repetition of DSH (Hatcher et al., 2015) (see section 'Complex interventions that include outreach therapies'). Sub-group analysis of trial findings for one problem-solving intervention showed a possible benefit among those with a history of repeated DSH (Hatcher et al., 2011) and might be worth evaluating further in an appropriately designed RCT.

Other outcomes. The Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999) did not analyse outcomes other than repetition of DSH for trials of problem-solving interventions. A subsequent review (Townsend et al., 2001), undertaken by the same team of Cochrane review authors, considered RCTs of problem-solving-focused interventions, including the trial by Patsiokas and Clum (1985) that was excluded from the Cochrane review. The review by Townsend et al. (2001) reported that problem-solving interventions were associated with significantly greater improvements than control in depression symptoms (SMD=−0.36; 95% CI=[−0.61 to −0.11]), hopelessness (weighted mean difference=−3.2; 95% CI=[−4.0 to −2.41]) and participant-reported problems (OR=2.31; 95% CI=[1.29, 4.13]).

Among studies of problem-solving therapies published since this review, similar benefits have been reported by most of those that measured such outcomes:

- Husain et al. (2014) reported that a culturally adapted problem-solving intervention was associated with significant improvements in hopelessness (post-intervention and 3-month follow-up), quality of life (post-intervention and 3-month follow-up) and depression (3-month follow-up), compared with treatment as usual. However, there were few differences between groups in measures of healthcare utilisation, including use of mental health services.
- Bannan (2010) reported that a group-based problem-focused therapy was associated with significant benefits for the outcomes of rational problem-solving, impulsive/careless style and avoidance style at 2-month follow-up, compared with another psychological therapy. It also reported non-significant differences in depression, hopelessness and negative problem orientation post-intervention.
- Hatcher et al. (2011) reported that problem-solving therapy was associated with significant benefits for the outcomes of suicidal ideation, depression, anxiety, hopelessness and total score on the Social

Problem-Solving Inventory, compared with treatment as usual, at post-intervention and at 1-year follow-up. However, there were few differences between groups in self-reported use of health services.
- McAuliffe et al. (2014) reported that group-based problem-solving therapy was associated with no significant effects on the outcomes of suicidal ideation, depression, anxiety, hopelessness, self-efficacy or problem-solving, compared with treatment as usual.

Other psychological or psychosocial interventions. We identified seven RCTs that evaluated interventions we classified as 'other'. Three of these trials were reported as individual studies in the Cochrane review of psychosocial and pharmacological treatments for DSH (Hawton et al., 1999). Four trials were published since that review:

- A small ($n=102$) trial (Dubois et al., 1999) compared brief psychotherapy with treatment as usual in patients after a suicide attempt. It reported no difference between groups in the rate of repeated suicide attempts.
- A large ($n=1932$) cluster randomised trial (Bennewith et al., 2002) conducted in 98 general practices compared an intervention (a letter from the GP inviting the patient to visit and DSH management guidelines for the GP) with treatment as usual. It reported no differences in the proportion of patients with repetition of DSH (22% vs 20%), mean number of repeat episodes or time to first repeat DSH event after 12 months. Sub-group analyses suggested possible benefits for established repeaters and possible harms (increased risk of DSH repetition) for patients who participated after first-time DSH.
- A small ($n=103$) trial (Crawford et al., 2010) compared an intervention for managing alcohol misuse with treatment as usual in an alcohol misusing sub-group of hospitalised patients treated for DSH. The intervention consisted of a scheduled appointment with an alcohol nurse specialist and a brief intervention for excessive alcohol use based on the FRAMES approach (feedback about the adverse effects, responsibility for change lying with the individual, advice about reducing alcohol consumption, menu of options for further intervention, empathic stance and enhancement of self-efficacy). It reported no difference between groups in rates of repetition of DSH (14% vs 21%) at 6-month follow-up.
- A small ($n=16$) pilot study (Tapolaa et al., 2010) compared brief psychotherapy (including elements of acceptance and commitment therapy and elements of solution-focused brief therapy) plus treatment as usual with treatment as usual only in an unselected hospital-treated DSH population in Finland. It reported no significant difference between groups in the mean number of repeat DSH events (mean=0.43; SD=0.54 vs 1.00; SD=0.89), but the intervention was associated with improved depression at 6-month follow-up.

A meta-analysis of data from five studies showed a non-significant reduction in pooled RR for subsequent DSH of 0.98 (95% CI=[0.57, 1.69]) (Hetrick et al., 2015).

Brief contact interventions

Key points

There is emerging evidence that brief contact interventions may reduce the number of repeat DSH events among patients who deliberately self-harm. However, more studies are needed to confirm this finding before widespread implementation can be recommended.

Potential adverse effects of brief contact interventions have not been adequately evaluated.

Background. The term 'brief contact interventions' describes a variety of treatments for DSH that seek to maintain long-term contact with patients without providing additional therapies (Kapur et al., 2010; Lizardi and Stanley, 2010). These interventions have mainly taken the form of brief individual contacts sustained or repeated over a longer period of time, where participants receive a series of supportive short letters, phone calls or postcards following presentation to a healthcare facility for DSH or suicide attempt (Kapur et al., 2010; Lizardi and Stanley, 2010). Another form of brief contact intervention is the provision of a single emergency or crisis card (sometimes referred to as a 'green card') encouraging help-seeking and offering on-demand crisis admission or access to other help for those persons presenting to hospitals or healthcare facilities for a period of time after issue of the card (Kapur et al., 2010).

The idea of a contact-based intervention issued from the treating hospital or mental health service have become attractive to researchers and clinicians for several reasons:

- Hospital-treated DSH is common, and the costs to offer formal therapy as aftercare to all patients would be prohibitive in some settings.
- Risk assessment strategies aiming to identify high-risk groups for aftercare interventions have important weaknesses, resulting in the identification of many false positives in the 'high-risk' groups, while the majority of patients who will repeat DSH or even die by suicide will be found in the 'low-risk' groups (Large et al., 2011).
- The DSH population often fails to engage in aftercare or drops out of treatment prematurely (Joubert et al., 2012).
- DSH patients emphasise the importance of post-discharge services that are proactive, delivered early and provide a sense of genuine care (Cooper et al., 2011).

Brief contact interventions address several of these issues: they can be delivered to almost all hospital-treated DSH patients, at low cost, convey an idea of continued interest or care from the hospital clinicians, and do not require direct interaction or attendance at aftercare services, but provide a point of contact for re-entry to services if required. Providing this type of care post-discharge from the ED following self-harm has been identified by patients as a potentially important aspect of treatment during a particularly vulnerable time (Cooper et al., 2011).

Evaluation studies. A Cochrane meta-analysis of two RCTs evaluating emergency contact card (Hawton et al., 1998) showed that these interventions were associated with a non-significant reduction in repetition of DSH (OR = 0.45; 95% CI = [0.19, 1.07]). The authors considered this to be a promising result.

In the first of these trials (Morgan et al., 1993), hospital-treated DSH patients were given a green card which offered rapid treatment from an ED if the participant were to experience mental health problems and an encouragement to seek help at an early stage. The second study (Cotgrove et al., 1995), which was restricted to adolescents under 17 years, used a green card that allowed immediate re-admission to the patient's local hospital. However, it was also acknowledged that the studies were underpowered, both for the individual trials and when combined for pooled estimates of effectiveness.

A recent review and meta-analysis (Milner et al., 2015) assessed the effectiveness of brief interventions in reducing suicide attempt, self-harm or suicide outcomes across 12 studies. The interventions included various methods of contact: telephone calls (Bertolote et al., 2010; Cedereke et al., 2002; Fleischmann et al., 2008; Hassanzadeh et al., 2010; Vaiva et al., 2006; Vijayakumar et al., 2011), postcards (Beautrais et al., 2010; Carter et al., 2005b, 2007, 2013; Hassanian-Moghaddam et al., 2011; Robinson et al., 2012), 'green cards' or 'crisis cards' (Chen et al., 2013; Cotgrove et al., 1995; Evans et al., 1999b, 2005; Morgan et al., 1993) and letters (Bennewith et al., 2002; Kapur et al., 2013b; Motto and Bostrom, 2001).

Ten of these studies enrolled participants into the trial following presentation to a hospital ED for hospital-treated DSH, one study recruited participants attending a mental health outpatient facility (Robinson et al., 2012) and one study recruited psychiatric inpatients (Motto and Bostrom, 2001). The outcomes assessed included repetition of various forms of non-fatal DSH: deliberate self-poisoning, self-harm, self-cutting and attempted suicide. The follow-up period for these studies ranged from 6 months to 15 years.

Repetition of DSH. The effectiveness of brief contact interventions in reducing the proportion of any subsequent DSH (or suicide attempt) was reported for 11 studies ($n = 8485$ participants; 4101 treatment and 4384 control group). The overall pooled OR for any repeated episode of DSH showed a non-significant reduction in favour of intervention: 0.87 (95% CI = [0.74, 1.04]).

Only three studies (Beautrais et al., 2010; Carter et al., 2013; Hassanian-Moghaddam et al., 2011) assessed the impact of brief contact intervention on the total number of episodes of DSH (or suicide attempts), and these studies all used a postcard intervention. Across these studies, there were 373 repeats (3549 person-years) in the intervention condition and 678 repeats (3892 person-years) in the control condition. The pooled incidence rate ratio showed a significant reduction in favour of intervention: 0.66 (95% CI = [0.54, 0.80]).

Suicide mortality. Suicide is a statistically rare outcome, even in hospital-treated DSH populations, so intervention studies are underpowered for this outcome. For example, if a hypothetical population of people with a history of suicide attempt has a 2.8% rate of suicide in the subsequent 8 years, the sample size needed to demonstrate a 15% relative reduction in suicide has been estimated at 45,000 (Gunnell and Frankel, 1994).

There were five studies that assessed suicide death as an outcome in 4106 individuals, of whom 72 died by suicide. There was a non-significant reduction in favour of intervention (OR = 0.58; 95% CI = [0.24, 1.38]). One single large ($n = 1867$) multicentre study reported a benefit for suicide mortality for a predominately telephone intervention (0.2% vs 2.2%, $\chi^2 = 13.83$, $p < 0.001$). These results were derived from a small number of suicide deaths ($n = 20$) and should therefore be interpreted with considerable caution.

Other outcomes. There is some evidence that brief interventions can improve contact with services and adherence to treatment. A cluster RCT of general practices (Bennewith et al., 2002) compared an intervention (a letter from the GP inviting patients with a history of DSH to visit and DSH management guidelines for the GP) with treatment as usual. It reported that DSH patients of the practices allocated to the intervention group were more likely to maintain contact with their GP over a 12-month period and that GPs in the intervention group made more frequent contact with patients who had a history of DSH.

An RCT that evaluated a telephone intervention for patients treated in hospital after deliberate self-poisoning (Vaiva et al., 2006) showed that the contact group was more likely to discuss their 'suicidal impulses' with the GP than the control group. Another RCT that evaluated a telephone intervention (Cedereke et al., 2002) showed no difference between the intervention and control groups in the rate of treatment attendance for any reason (combined psychiatric or other; mostly GP treatment) after 12 months, although sub-group analyses suggested a significant benefit for treatment attendance for those patients whose follow-up care was delivered by the GP.

Evaluation of 'satisfaction' outcomes from several studies suggests that brief contact interventions are appreciated by those who receive them (Hassanian-Moghaddam et al.,

2011; Robinson et al., 2012; Vijayakumar et al., 2011). An RCT evaluating postcard contact in a youth population (Robinson et al., 2012) found that the majority liked receiving the postcard contacts, 46% followed the health advice in the contacts and 42% reported referring to the postcards often. An RCT evaluating an intervention based on telephone contacts among people who had attempted suicide in India found 65% perceived these as supportive and useful (Vijayakumar et al., 2011).

Harm and adverse events. Adverse events have not been systematically reported in original studies, and therefore, information can be drawn only from a limited number of studies. Caution is needed in interpreting these results about potential harms because of potential sources of bias, particularly those related to sub-group analyses and small study sizes.

A green card intervention offering 24-hour crisis telephone consultation was associated with an increase in subsequent DSH, in a sub-group analysis of those participants with a history of previous DSH (Evans, 2005b).

In another small ($n=66$) pilot study in the United Kingdom (Kapur et al., 2013b), a complex intervention (information leaflet, telephone calls and letters) was associated with an increase in repetition of DSH after 12 months (OR = 3.67; 95% CI = [1.0, 13.1]; $p=0.046$).

A large ($n=1867$) multicentre study (Fleischmann et al., 2008) evaluated a brief intervention based on an initial hospital visit and ongoing telephone contact. It reported a significant risk for all-cause mortality in the intervention group (2.7% vs 1.3%), although this difference was predominately due to the suicide deaths; non-suicide mortality was actually greater in the intervention group. However, this result was derived from a small number of deaths, and a causal association between the intervention and the observed risk for non-suicide mortality may not be biologically plausible. Sub-group analyses showed an increased number of re-presentations for suicidal behaviours in the Brazil and Iran centres (Bertolote et al., 2010).

Research priorities

Much more research is needed to determine optimal interventions for people who self-harm. RCTs are needed to evaluate the effectiveness of several specific interventions in reducing rates of repetition of DSH, including the following:

- Brief contact interventions that do not involve psychological therapy;
- CBT;
- Brief psychodynamic interpersonal therapy;
- Complex interventions that include an outreach component, e.g.; assertive outreach that includes regular care provider-initiated contact, including rapid crisis response, solution-focused counselling and ongoing motivational support to engage in therapy;
- CAMS.

Efficacy studies should consistently include outcome measures designed to evaluate potential adverse effects of interventions. In particular, more data are needed to resolve the following questions:

- Whether a longer duration of therapy is associated with increased risk of self-harm;
- Whether the range of adverse effects reported in some studies of brief contact interventions are replicated in appropriately designed trials.

Section 6: special populations

Recommendations	Type	Level of evidence
People with borderline personality disorder who self-harm should be offered psychological therapies that have been shown to reduce the number of repetitions of DSH, such as DBT, CBT or MBT.	EBR	I
Consider DBT for women with borderline personality disorder who self-harm.	EBR	I
Do not rely on group therapy alone to reduce the risk of repetition of DSH in people with borderline personality disorder who self-harm.	EBR	II
Do not use pharmacotherapy specifically for the purpose of reducing the risk of repetition of DSH in people with borderline personality disorder who self-harm.	EBR	I
For children and adolescents who self-harm, consider offering CBT, MBT or DBT, where suitable.	EBR	II
Interventions should be developed specifically for children and adolescents who self-harm, incorporating motivation to change, maintenance of sobriety, familial or non-familial support, promotion of positive affect and healthy sleep.	CBR	N/A
Prevention strategies and interventions should be developed specifically for older adults who self-harm.	CBR	N/A
Better institutional information systems should be developed to collect data on rates of DSH among Māori people presenting to acute care services.	CBR	N/A

(Continued)

Recommendations	Type	Level of evidence
National surveys in New Zealand should include questions designed to collect data on rates of DSH among Māori.	CBR	N/A
Interventions to reduce repetition of DSH in Māori populations should be developed and evaluated with leadership from Māori.	CBR	N/A
Australian EDs and hospitals should ask all patients whether they identify as Aboriginal or Torres Strait Islander, to ensure that population-specific data can be collected for DSH and other presenting problems.	CBR	N/A
Interventions for reducing repetition of DSH among Aboriginal and Torres Strait Islander peoples should be developed and evaluated with leadership from these communities.	CBR	N/A
Services should be organised to ensure that people with first-episode psychosis are offered treatment as soon as possible.	EBR	III-2

DSH: deliberate self-harm; DBT: dialectical behaviour therapy; CBT: cognitive behavioural therapy; MBT: mentalisation-based therapy; CBR: consensus-based recommendation; EBR: evidence-based recommendation; ED: emergency department; N/A: level of evidence category does not apply; recommendation based on a combination of available evidence, clinical experience and expert consensus.

Borderline personality disorder

Key points

- For patients who deliberately self-harm and who also meet criteria for borderline personality disorder, there is evidence that overall (all studies combined) psychological therapies designed for this sub-population are effective in reducing the number of repeat DSH events.
- DBT is effective in reducing repeat DSH in women with borderline personality disorder.
- Other psychological interventions that warrant further evaluation for reducing DSH in people with borderline personality disorder include MBT and CBT.
- Group therapy alone is not effective in reducing DSH in people with borderline personality disorder.
- Pharmacotherapy is not effective for reducing repetition of DSH in borderline personality disorder populations; it is not warranted for people with borderline personality disorder unless otherwise indicated.

Background. Borderline personality disorder is associated with high risks of repeated DSH and suicide (NHMRC, 2012).

Interventions

Overall findings for psychological treatments. In the last 10 years, there has been a rapid increase in studies testing specific psychological treatments in the management of borderline personality disorder in adults. The effectiveness of these treatments has been evaluated in UK national guidelines (National Collaborating Centre for Mental Health, 2009, 2011) and, more recently, in an Australian national CPG for the management of borderline personality disorder developed by the NHMRC (2012).

There is a range of manualised psychological treatments that have either been specifically developed for borderline personality disorder or adapted from standard psychological models. Across research studies, the majority of these manualised treatments have been shown to reduce DSH. Most have been found to be effective for a range of outcomes, including reduction in DSH events, compared with controls (usually 'treatment as usual').

A meta-analysis of 10 RCTs of psychological treatments (NHMRC, 2012) showed that, overall, psychological therapy was effective in reducing the number of suicide attempts and DSH events, compared with treatment as usual: SMD = −0.439 (95% CI = [−0.607 to −0.271]). When specific psychological treatments for borderline personality disorder have been compared, generally each has been associated with a reduction in DSH events, and no real difference between treatment models has been demonstrated for a range of outcomes, including DSH (Stoffers et al., 2012).

Dialectical behaviour therapy. DBT has been the most evaluated treatment model for people with borderline personality disorder. Most of the outcome data are from studies conducted among women (NHMRC, 2012). In RCTs where DSH was measured as an outcome, DBT was associated with a significant reduction, compared with the control, in four RCTs (Linehan et al., 1991, 2006; Priebe et al., 2012; Verheul et al., 2003), but there was no significant difference between DBT and control in six individual RCTs (Carter et al., 2010; Feigenbaum et al., 2012; Koons et al., 2001; Linehan et al., 1999, 2002; McMain et al., 2009). In these six RCTs, the rate of DSH was substantially decreased from baseline, but not significantly more than the control groups.

Factors have been identified that may account for the non-significant effect on DSH in five of these RCTs:

- Two of these trials (Carter et al., 2010; Koons et al., 2001) measured outcomes after 6 months of DBT, which is shorter than the minimum recommended treatment period of 12 months.
- One trial (Linehan et al., 1999) compared DBT with treatment as usual in patients with borderline personality disorder and opiate dependence, a patient subgroup in which management is particularly difficult.

- One trial (Linehan et al., 2002) compared DBT with an active treatment ('comprehensive validation') in patients with borderline personality disorder and substance abuse.
- One trial (McMain et al., 2009) compared DBT with an active treatment designed specifically for borderline personality disorder.

Three meta-analyses of RCTs evaluating DBT in patients with borderline personality disorder (Kliem et al., 2010; NHMRC, 2012; Panos et al., 2013) have reported reductions in DSH:

- A meta-analysis of six RCTs (Kliem et al., 2010) reported a moderate effect size for suicidal and self-injurious behaviours in favour of DBT: OR = 0.60 (95% CI = [0.49, 0.71]).
- A meta-analysis of five RCTs, which was undertaken for the NHMRC CPG on the management of borderline personality disorder (NHMRC, 2012) reported a moderate effect size for suicide and self-harm events in favour of DBT: SMD = −0.460 (95% CI = [−0.749 to −0.171]).
- A meta-analysis of five RCTs (Panos et al., 2013) reported a moderate effect size for a combined outcome of suicide attempt or parasuicidal behaviour in favour of DBT: pooled Hedges' $g = -0.622$ (95% CI = [−0.983 to −0.260]).

CBTs. Two RCTs that evaluated adapted CBTs in patients with borderline personality disorder (Davidson et al., 2006; Weinberg et al., 2006) reported on DSH outcomes:

- A trial ($n = 106$) that compared 12 months of CBT plus treatment as usual with treatment as usual alone (Davidson et al., 2006) reported that the intervention was associated with a lower rate of suicidal acts over 2 years.
- A trial ($n = 30$) that compared MACT with treatment as usual (Weinberg et al., 2006) reported that the intervention was associated with a reduction in the frequency and severity of DSH at 6-month follow-up.

Psychodynamic therapies. Three RCTs compared adapted psychodynamic models with treatment as usual in patients with borderline personality disorder:

- Two trials ($n = 38$ and $n = 134$) that compared MBT with treatment as usual each reported that the intervention was associated with reduction in DSH (Bateman and Fonagy, 1999, 2009).
- A trial ($n = 104$) that compared transference-focused psychotherapy with treatment as usual (treatment by an experienced community psychotherapist) reported that self-harming behaviour did not change in either group (Doering et al., 2010).

Other psychodynamic treatments that have been evaluated for DSH outcomes in patients with borderline personality disorder have not been compared with treatment as usual in RCTs:

- 'General psychiatric management' (a psychodynamic treatment model) was shown to reduce DSH in an RCT (McMain et al., 2009), but only to the same extent as the comparator treatment, DBT.
- The 'Conversational model of psychotherapy', an Australian model developed for patients with borderline personality disorder, has been reported to reduce DSH compared with control (wait list) in non-randomised studies (Korner et al., 2006; Stevenson and Meares, 1992).

All of the psychodynamic treatments involve a minimum of once-weekly psychotherapy for at least 1 year, require a specifically trained therapist and require concurrent supervision of the therapist's clinical work. All these therapies are emotion-focused, target DSH to some extent and focus on the therapeutic relationship. Although group therapy is a component in many of the above therapies, group therapy alone does not have significant empirical support for efficacy on DSH outcomes (NHMRC, 2012).

Pharmacological treatment. Six published systematic reviews have evaluated pharmacological interventions for people with borderline personality disorder (Bellino et al., 2011; Duggan et al., 2008; Ingenhoven et al., 2010; Lieb et al., 2010; Mercer et al., 2009; Stoffers et al., 2009), but these are difficult to interpret because there are few RCTs for each class of agent, trials have used small sample sizes and due to heterogeneity of outcomes.

There is evidence that pharmacological treatment is not effective in reducing DSH or suicide attempt outcomes in borderline personality disorder populations. A meta-analysis of four RCTs, which was undertaken for the NHMRC CPG on the management of borderline personality disorder (NHMRC, 2012), reported that pharmacological treatments showed no effect on suicidality and self-harm: SMD = −0.131 (95% CI = [−0.499 to −0.188]).

There is no evidence that pharmacological treatment is effective in altering the nature or course of the underlying disorder, although there may be benefits for other clinical endpoints (NHMRC, 2012).

Effect of interventions on non-DSH outcomes. The effects of interventions on outcomes other than repetition of DSH in patients with borderline personality disorder are beyond the scope of this guideline. These are summarised in the Australian national CPG for the management of borderline personality disorder (NHMRC, 2012).

Children and adolescents

Key points

Overall, psychological interventions in hospital-treated DSH populations of children and adolescents have not been shown to be more effective than treatment as usual for reducing repetition of DSH.

Some specific types of therapy appear promising and warrant optional implementation and further evaluation. These include CBT, MBT adapted for adolescents, and DBT adapted for adolescents.

Certain elements appear common to approaches reported to be effective in children and adolescents: motivation to change, maintenance of sobriety, familial or non-familial support, promotion of positive affect and promotion of healthy sleep.

Background

Epidemiology. The majority of children and adolescents never engage in self-harm, but a significant proportion do. A systematic review of community-based studies (Evans et al., 2005a) suggested that 26% of adolescents had self-harmed (regardless of intent) in the previous year, while a recent meta-analysis (Swannell et al., 2014) reported that the adjusted life-time prevalence of NSSI in this age group was 17.2%. A study of adolescents in 11 European countries (Brunner et al., 2013) found a life-time prevalence of 27.6% for NSSI: 19.7% occasionally and 7.8% repetitively. A large ($n = 12{,}006$) Australian study of community self-injury (Martin et al., 2010) found a mean age of onset of 17 years, peaking slightly earlier among males (10–19 years) than females (15–24 years).

In these studies, 'self-injury' referred to deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent, including cutting, scratching and self-battery (Swannell et al., 2014). 'Self-harm' was used as a broader term encompassing self-injury and self-poisoning, both with and without suicidal intent (Hawton et al., 1998).

Cutting, scratching, hitting and burning were the most frequently reported methods of self-injury in these studies. Most community DSH in this age group is not treated in hospital (Hawton et al., 2002; Martin et al., 2010); one study estimated that seven out of eight episodes of self-harm do not lead to a hospital presentation (Hawton et al., 2002). A recent systematic review estimated that up to half of adolescents who self-harm do not seek help (Rowe et al., 2014).

Among adolescents with hospital-treated DSH, taking an overdose was the method reported in the majority of cases (Hawton et al., 2002). Analgesic self-poisoning, which can be associated with liver failure, was particularly common (Hawton et al., 2002). The estimated risk of repetition of DSH is between 5% and 25% per year (Bridge et al., 2006; Muehlenkamp et al., 2012). The risk of repetition is highest in the first year, but remains high for many years after an episode of DSH (Gibb et al., 2005; Reith et al., 2003). Hospital-treated DSH is also associated with an elevated risk of all-cause mortality (Carter et al., 2005a; Gibb et al., 2005; Suominen et al., 2004).

Data for 1999–2000 and 2010–2011 (Pointer, 2013) show that hospital-treated DSH by adolescents and young adults (aged 15–24 years) in Australia has recently increased. Comparison of the two periods show marked increases in poisoning by psychotropic drugs (from 1988 to 2812 cases), poisoning by non-opioid analgesics (from 1252 to 2238 cases) and self-harm by sharp object (from 576 to 1109 cases). For females, the number of cases of DSH by sharp object more than doubled (from 274 to 640 cases).

Risk factors. Young people have a poor understanding of the potential lethality of methods and also switch between methods for different episodes of DSH (Fortune and Hawton, 2005). Therefore, interventions to prevent further episodes of DSH are one approach to reducing both the morbidity and mortality associated with hospital-treated DSH.

Family factors are particularly important risk factors associated with both non-fatal DSH and suicide among children and adolescents (Ougrin et al., 2012). Difficulties in parent–child relationships, including those related to early attachment problems, perceived low levels of parental caring and communication, are associated with increased risk of DSH and suicide (Fergusson et al., 2000). A family history of DSH is associated with increased risk of DSH by adolescents (Hawton et al., 2002; Johnson et al., 1998). Other important risk factors include parental mental illness and substance abuse (Bridge et al., 2006), childhood sexual abuse, physical abuse (Evans and Hawton, 2005) and exposure to recent stressful life events such as rejection, conflict or loss following the break-up of a relationship, conflicts, disciplinary crises or legal crises (Hawton et al., 2003).

The nature of the stressors varies according to age; children and younger adolescents describe familial stress, whereas older adolescents typically describe peer-related stressors (Gould et al., 2003; Hawton et al., 2003). In light of these factors, involvement of family in the assessment and treatment planning of adolescents with hospital-treated DSH is critical.

Children and adolescents who are involved with statutory child protection services represent a sub-group at elevated risk of suicidal behaviour, probably due to the increased rates of exposure to known biopsychosocial risk factors (Beautrais, 2001; Christoffersen et al., 2003; Farand et al., 2004). These children and adolescents often experience family instability in addition to instability within the child welfare system, which exacerbates their experiences of loss (Vinnerljung et al., 2006). Close collaboration between mental health and welfare providers is needed for this clinical population.

Interventions. We identified four systematic reviews of interventions for child and adolescents with DSH (Hawton et al., 1999; Newton et al., 2010; Ougrin et al., 2012; Robinson et al., 2011). From these and other sources we identified 14 relevant RCTs, with a total of 1965 participants: a systematic review (Ougrin et al., 2012) included 11 relevant RCTs. A more recent narrative review (Brent et al., 2013) included two more relevant RCTs. We also identified another trial published since the narrative review (Mehlum et al., 2014).

Psychotherapy. The systematic review (Ougrin et al., 2012) included a small ($n=63$) trial that compared developmental group psychotherapy with treatment as usual in a population of adolescents aged 12–16 years who were referred to community Child and Adolescent Mental health Services (CAMHS) following an episode of DSH. It reported a lower rate of multiple repetitions of DSH (more than one repetition) in the intervention group.

However, two larger multicentre trials ($n=72$ and $n=394$) were unable to replicate this finding (Ougrin et al., 2012).

MBT. The narrative review (Brent et al., 2013) also reported one small ($n=80$) trial that compared MBT (adapted for adolescents) with treatment as usual in a population of adolescents aged 12–17 years who presented to community health services or hospital EDs following DSH. It reported that the intervention was associated with a lower rate of participant-reported DSH (56% vs 83%) during 12-month follow-up.

While this study suggests that MBT adapted for adolescents may be effective in particular clinical populations, replication of these findings is required before this treatment can generally be recommended for adolescents who self-harm.

Cognitive therapies and behaviour therapies. The narrative review (Brent et al., 2013) reported one small ($n=36$) trial that compared integrated CBT plus treatment as usual with treatment as usual alone in suicidal inpatients with current alcohol or substance abuse. It reported that the intervention was associated with a lower rate of suicide attempts (5.3% vs 35.3%, $p=0.023$) during 18-month follow-up.

While this study suggest that CBT adapted for adolescents may be effective in particular clinical populations, replication of these findings is required before this treatment can generally be recommended for adolescents who self-harm.

One small ($n=77$) trial (Mehlum et al., 2014) compared DBT (adapted for adolescents) with enhanced usual care, given over a 15-week treatment period in adolescents aged 12–18 years with a recent (past 16 weeks) history of DSH and features of borderline personality disorder. It reported that the mean number of DSH episodes was lower during weeks 10–15 than weeks 0–9 in both treatment groups, but that the intervention was associated with a greater decline. The total rate of repetition of DSH during the full follow-up period (0–15 weeks) was not compared between groups. The novel approach to reporting outcome (episodes or event rates) may be more clinically salient than traditional methods (see section 'Interpreting evidence for interventions to manage DSH in adolescents') but makes comparison with other trials more difficult.

Other interventions. A systematic review of interventions for DSH in adolescents (Ougrin et al., 2012) identified eight RCTs assessing a range of interventions, including family intervention for suicide prevention, token allowing re-admission, home-based family intervention, compliance enhancement in hospital, skills-based treatment, youth-nominated support team (two trials) and therapeutic assessment at point of presentation. None showed statistically significant differences in rates of repetition of DSH between treatment groups and those receiving 'treatment as usual' (Ougrin et al., 2012).

Interpreting evidence for interventions to manage DSH in adolescents. Clinical trial samples may not be representative of the broader population of adolescents who self-harm because most do not present to health services; a high proportion either do not seek help at all or seek help only from friends or family, and some may only access the Internet (Rowe et al., 2014).

'Treatment as usual' – the approach most evaluated in RCTs – performs as well or as poorly as most alternative interventions. Treatment as usual was not standardised across or within studies, so it is difficult to distil its essential components. However, five factors have been proposed that should be considered for inclusion when designing interventions to prevent repetition of DSH in children and adolescents (Brent et al., 2013):

- Motivation to change;
- Maintenance of sobriety;
- Familial or non-familial support;
- Promotion of positive affect;
- Healthy sleep.

Timeliness of intervention is also important because the individual is most likely to repeat DSH within 1–4 weeks of an index DSH event. In real-world clinical settings, interventions might not commence within 4 weeks, or too few sessions may be delivered within 4 weeks to protect against the recurrence of DSH (Brent et al., 2013).

Objectives of treatment also need to be realistic; reduction in the number of DSH events or cessation of DSH after a period of time might be a more achievable goal for the individual than immediate cessation of DSH. These outcomes should be measured in future trials evaluating interventions for children and adolescents with a history of DSH.

Older adults

Key points

Strategies for detection and management of later-life depression in primary and secondary care to reduce DSH (or suicidal behaviour) warrant further evaluation.

Potentially effective population-based approaches that warrant further evaluation include outreach telephone support and 24-hour emergency contact for isolated older people and multi-modal interventions (e.g. local government leadership, education of the general public to reduce stigma and increase awareness, training programmes for community gatekeepers and screening and increased support for individuals at high risk).

Older patients presenting to mental health services after DSH are likely to need multifaceted care management to reduce their risk of repetition of DSH or suicide behaviour.

Background. DSH rates decline with age. However, DSH among older adults is associated with a higher level of lethal intent and less impulsivity than DSH among younger age groups (Chan et al., 2007). Repetition of DSH is a strong indicator of high subsequent suicide risk (Murphy et al., 2012). Observational studies report high rates of clinical depression, including first-episode major depression and high rates of subsequent suicide in cohorts of older adult DSH populations (Chan et al., 2007; Erlangsen et al., 2011). Accordingly, interventions have tended to broadly target suicidal behaviour and to use depression and suicidal ideation as proxy outcomes (Lapierre et al., 2011).

Other frequent clinical features found in older adult DSH populations include social isolation, health-related concerns (e.g. pain, disability), mild cognitive changes and relationship difficulties (Chan et al., 2007).

Interventions. There has been very limited research on interventions for DSH among older adults.

Interventions targeting individuals. We identified no RCTs that evaluated interventions for managing DSH in populations of older adults and targeted individuals.

Service organisation. We identified two studies that evaluated approaches to the organisation of services for older adults with a history of DSH or suicide attempt (Chan et al., 2011; Ono et al., 2013):

- A small ($n=66$) observational cohort study (Chan et al., 2011) evaluated a regional elderly suicide prevention programme in Hong Kong, which was based on a multifaceted care management model. The study compared outcomes for older adults who had attempted suicide the 2-year period before the service was introduced ($n=66$) with the period after the service began ($n=351$). It found no difference in the rates of suicide re-attempts, but a significant reduction in suicide mortality in favour of the service period (7.58% vs 1.99%, $\chi^2=6.192$, $p<0.05$).
- A comparative study (Ono et al., 2013) in Japan evaluated a multi-modal suicide prevention intervention that involved local government leadership, education of the general public to reduce stigma and increase awareness, training programmes for community gatekeepers and screening and increased support for individuals at high risk. The intervention was implemented in rural ($n=291,459$) and highly populated metropolitan ($n=615,586$) areas and was compared with concurrent control groups consisting of the entire population of four matched pairs of rural areas ($n=339,674$) and three matched pairs of highly populated areas ($n=704,341$). The intervention was found to be effective in reducing suicidal behaviour among certain sub-groups in rural regions, including older adults and males. However, it was ineffective in highly populated regions.

Outreach and primary care interventions. A comparative study in Italy (De Leo et al., 1995) evaluated a regional telephone counselling service (24-hour emergency alarm and twice-weekly telephone support) that addressed social isolation and provided social support for older adults referred to the telephone counselling service by their GPs. Compared with a comparable general population, the service was associated with a lower rate of observed versus expected suicide mortality over a 4-year period (De Leo et al., 1995) and an 11-year period (De Leo et al., 2002).

Other non-RCTs have recruited older adults from primary care settings and focused on depression and suicidal ideation as outcomes. Older people are often in contact with GPs and interventions have attempted to increase identification of depression through screening and follow-up of screen positives (Erlangsen et al., 2011; Lapierre et al., 2011; Oyama et al., 2008).

Collaborative care strategies have been tested in two RCTs of enhanced primary care management of depression in older adults (60 years and over) in the United States:

- The 'Improving Mood – Promoting Access to Collaborative Treatment for depression in primary care' (IMPACT) study (Unützer et al., 2006) demonstrated lower rates of suicidal ideation compared with usual care at follow-up of 6 months (OR=0.54, 95% CI=[0.37, 0.78]), 12 months (OR=0.54, 95% CI=[0.40, 0.73]), 18 months (OR=0.52, 95% CI=[0.36, 0.75]) and 24 months (OR=0.65, 95% CI=[0.46, 0.91]).
- The Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT) study (Alexopoulos et al., 2009) demonstrated significant reductions in suicidal ideation, compared with usual care, only in the sub-group of those with major depression after

4 months (OR = 2.5; 95% CI = [1.1, 6.2]), 8 months (OR = 4.2, 95% CI = [1.7, 10.5]) and 24 months (OR = 3.2; 95% CI = [1.1, 9.5]).

Interventions targeting clinicians. A cluster RCT in Australia (Almeida et al., 2012) compared an intervention targeting GPs (practice audit, personalised automated audit feedback and targeted printed educational material over 2 years provided) with control (practice audit without individualised feedback). The trial recruited 373 GPs and 21,762 of their patients aged 60 years or older. The intervention was associated with a reduction in DSH among older adult patients after 24 months (OR = 0.80; 95% CI = [0.68, 0.94]).

In this study, the beneficial effect of the intervention was in the relative reduction of DSH behaviour in those who did not report symptoms at baseline, with no obvious effect in reducing the prevalence of depression or DSH behaviour in those with symptoms at baseline.

Interpreting evidence for DSH treatments in older adults. Reduction of DSH among older adults requires a multifaceted, multilayered approach that encompasses the broad spectrum of suicidal behaviour and depression. Prevention of depression by addressing factors such as social isolation and chronic pain is a key consideration. Optimal detection and management of depression and of high-risk individuals in primary and secondary care is central to this, as available evidence indicates that this can reduce suicidal behaviour. How best to improve the quality of depression management in these settings requires further research.

Māori populations

Key points

Rates of hospital-treated DSH rates in New Zealand are higher among Māori than other New Zealanders, but better systems are needed to collect data.

A culturally appropriate intervention composed of several therapeutic components may be useful for the short-term reduction in repeat DSH and warrants further evaluation.

It is essential for Māori communities to lead the development and evaluation of interventions for reducing repetition of DSH in Māori populations.

Background

Mental health among Māori. Māori experience the greatest health burden due to mental illness of any ethnic group in Aotearoa (New Zealand Ministry of Health, 2012a). Furthermore, *Te Rau Hinengaro* (Oakley-Browne et al., 2006) showed Māori experience the highest levels of mental health disorders overall and are more likely to experience serious disorders and co-morbidity. Māori are also a young population and two-thirds live in socio-economic deprivation. However, even when Māori populations have the same age structure and level of socio-economic privilege, their rates of mental disorder remain higher than any other population group in New Zealand.

Despite this higher mental health need, data for the period 2000–2005 (Robson and Harris, 2007) show that contact with health services for mental health needs was low for Māori. Only half of those with a serious disorder in the previous 12 months had any contact with mental health services (compared with two-thirds of non-Māori). These findings highlight the fact that current models of health care are not meeting the needs of Māori and that health services need to be delivered in a more culturally specific way to engage this vulnerable group.

The vision of the national Mental Health and Addiction Service Development plan 2012–2017 (New Zealand Ministry of Health, 2012a) is '*to make the best possible use of public funds and support the best possible outcome for those who are most vulnerable*'. Therefore, there is a need for regular and accurate ethnicity data to monitor the health status trends of Māori. This will track disparities in health status, experiences and outcomes over time. It is crucial to monitor the impact of government policies and practices on Māori health and ethnic disparities to understand whether these government policies and interventions are effective.

Māori have rightfully argued that it is necessary to ensure the Government meets its obligations under the Treaty of Waitangi and that Māori at least have the same access to health services as all other New Zealanders. The Government, as a Treaty partner, has an obligation to achieve improved health among Māori and rectify disparities of access (New Zealand Ministry of Health, 2004). This may involve targeting Māori and developing specific health programmes for them. Māori also acknowledge international conventions as signatories to International Convention on economic, social and cultural rights. Aspirations to improve Māori health and reduce health inequalities are key objectives in health planning strategies (Cormack and Harris, 2009). Māori want to contribute to and be involved in strategies that effect their future.

Epidemiology. According to the latest available data (New Zealand Ministry of Health, 2014), rates of hospital-treated DSH were higher among the Māori population (71.5 per 100,000) than the non-Māori (Pākehā) population (61.2 per 100,000). However, the data set may not be reliable, given that 60% of the data set could not be included in the analysis due to inaccuracies in recording of information.

Overall, DSH hospitalisation rates for non-Māori decreased by 32.7% between 1996 and 2011, while Māori remained relatively constant (73.5 per 100,000 in 1996 compared to 71.5 per 100,000 in 2011). Among Māori, hospital-treated DSH was most common in the group aged 15–19 years, both for males and for females. Rates were almost double in females than males (201.9 per 100,000 population compared with 118.1 per 100,000 population.

There is a paucity of information on the rates of DSH in the community for those who do not seek help or intervention, both for Māori and for Pākehā.

Suicide rates in New Zealand have fallen by almost 24% since the peak recorded in 1998 (New Zealand Ministry of Health, 2013). However, New Zealand still has some of the highest youth suicide rates in the developed world, and suicide rates for Māori are 54% higher than non-Māori rates (New Zealand Ministry of Health, 2013).

Risk factors. People who engage in DSH and suicidal behaviour usually do so as a result of complex range of factors. An exploratory qualitative study (Hirini and Collings, 2005), which examined Māori views on the social and cultural factors that influence suicidal behaviour, identified the following as common social and cultural themes for Māori:

- Alienation from traditional Māori culture and social institutions that provide support (e.g. connection to *whānau, hapū* and *marae*);
- Poor self-concept and lack of Māori identity, especially for Māori youth;
- The impact of negative social construct of Māori;
- Historical effects of New Zealand social and economic change to Māori population;
- Adjustment to re-emergence of Māori cultural identity as a prominent part of New Zealand society;
- Rapid change in social values and norms, especially Māori gender and social roles.

This research provides insights into socio-cultural explanations for suicidal behaviour among Māori that should inform further research.

These factors may also be relevant to DSH, as the risk factors often overlap with those for suicide. Because these factors are so wide-ranging, actions to prevent DSH may need to be wide-ranging and culturally specific to Māori.

Interventions. A small ($n=167$) trial of a complex intervention (regular postcards, problem-solving therapy, patient support, risk management, improved access to primary care and cultural assessment, in addition to usual care) was compared with usual care in Māori who were treated for DSH in New Zealand EDs (Hatcher et al., 2016). The main outcome measure was the self-rated change in scores on the Beck Hopelessness Scale at 1 year, and a secondary outcome was any repetition of DSH. There was a statistically significant benefit in hopelessness scores at 3 months but no difference after 12 months, and a statistically significant benefit for repetition of DSH at 3 months (10.4 vs 18.0%) but no difference after 12 months, compared to the control group.

No other RCTs or observational studies were identified that evaluated interventions for DSH among Māori.

Key leaders in Māori mental health (Professor Sir Mason Durie) and politics (Hon Tariana Turia) have advocated for an intervention model of developing resilience and potential. The New Zealand Government is building on these ideas and has shown a commitment to building capacity of Māori and Māori communities to find their own solutions for preventing DSH and suicide. *Whānau Ora* is one such plan, which is building Māori capacity and community potential to respond in culturally specific ways to their community needs and risks.

Another initiative, *Te Waka Hourua*, is focused specifically on suicide prevention, but will overlap with DSH prevention. Although there is no specific prevention action plan for DSH, the New Zealand Suicide Prevention Strategy (New Zealand Ministry of Health, 2006) is a useful approach to follow. It ensures that families, *whānau, hapū, iwi* and communities have capacity, capability and support to prevent suicide and reduce the impact of suicide by ensuring that culturally relevant education and training which focus on building resilience and leadership are provided. Evidence of what works for Māori and their communities is being accumulated through cultural expertise, cultural models of health, research and collaboration.

In his book *Ngā Tini Whetū: Navigating Māori Futures* (Durie, 2011), Professor Sir Mason Durie articulates that two key messages are relevant to finding acceptable solutions for improving Māori health status in general. In articulating the principle of '*taking charge of the future rather than charging into the future*', he identifies the need for Māori leaders in positions of influence to act now to create a better future. The second key message is that Māori and their communities do have the resources and expertise to develop culturally acceptable interventions that are specific to their needs, evidence-based and relevant for the people they serve:

> *Māori have the knowledge, skills and foresight to create a future where younger generations, and generations yet to come can prosper in the world and at the same time live as Māori.*

Aboriginal and Torres Strait Islander peoples

Key points

Rates of hospital-treated DSH rates in Australia are higher among Aboriginal and Torres Strait Islander peoples than other Australians, but better systems are needed to collect data.

It is essential for Aboriginal and Torres Strait Islander communities to lead the development and evaluation of interventions for reducing repetition of DSH in Aboriginal and Torres Strait Islander people.

Background

Epidemiology. Rates of suicide and DSH among Aboriginal and Torres Strait Islander peoples are disproportionately high. Although records of suicide must be interpreted with caution, particularly when data are collected across state and territory borders, rates are higher among Indigenous Australians than among non-indigenous Australians and have recently increased (Steering Committee for the Review of Government Service Providers, 2014).

Australian government reports have noted 'high rates of suicide among Aboriginal and Torres Strait Islander

peoples, differences in the pattern of suicidal behaviour and its disproportionate impact on families and communities' compared to the general population (Australian Government Department of Health and Ageing, 2013; Senate Community Affairs References Committee, 2010). Suicide contributes to the persistently higher rates of mortality at younger ages and the resultant repetitive and ongoing grieving in these communities, which may be magnified by cultural and family obligations to participate in numerous funerals.

The distinction between non-fatal suicide attempt and DSH without suicidal intent in Indigenous populations can be difficult to determine clinically, and this uncertainty affects research evaluations. Based on records of non-fatal hospitalisations from intentional self-harm across states and territories, the rate of hospital-treated DSH among Aboriginal and Torres Strait Islander people has been estimated to be approximately 2.7 times higher than among non-indigenous Australians and has risen by 28% between 2004–2005 and 2012–2013, while the rate for other Australians has remained relatively stable (Steering Committee for the Review of Government Service Providers, 2014).

In 2012–2013, the rate of hospital-treated DSH among Indigenous Australians was higher for women than for men (as for non-Indigenous Australians) and higher in remote areas than other areas (Steering Committee for the Review of Government Service Providers, 2014).

Risk factors. The national framework for prevention of suicide in Australia (Living Is For Everyone [LIFE] Framework, 2007) identifies proximal and distal risk factors for suicide that may also be relevant to DSH. Proximal risk factors include the individual's mental state, recent adverse events and substance use. All these factors need to be identified and either modified or interrupted. However, many communities have limited access to mental health practitioners. This can be due in part to geographical remoteness, but can also be due to a number of unintentional discriminatory factors.

Where access to mental health services is limited, there is a need to involve citizens, volunteers and clinicians to help intervene, triage cases appropriately and provide treatment (Silburn et al., 2014). A number of culturally appropriate training programmes are available, including the Mental Health First Aid to an Aboriginal or Torres Strait Islander Person (Mental Health First Aid Australia, 2008). These programmes have the potential to increase the skill set and the pool of helpers.

Among Aboriginal and Torres Strait Islander communities, there are relatively high rates of exposure to distal risk factors for suicidal behaviours, including adverse childhood experiences, inadequate nutrition, socio-economic disadvantage, educational disadvantage and employment disadvantage. These factors also contribute to high rates of physical and mental illnesses, which further compound the risk of suicide and DSH and the disproportionate impact of these events on Aboriginal and Torres Strait Islander communities. Public health–oriented interventions, which target whole populations, are needed to reduce exposure to these risks and to increase exposure to preventative factors across a range of psychological and socio-cultural areas (Silburn et al., 2014).

Differences in the rates of suicide and DSH between communities suggest that community-specific factors may be significant mediators of risk and may have a stronger influence than factors traditionally addressed by medical models of individual risk factors (Silburn, 2014). In his book *Aboriginal Suicide Is Different*, Tatz (2005) suggests several community factors explaining increases in suicide, including lack of recognised role models and mentors (outside of the context of sport), disintegration of the family, lack of meaningful support networks within the community, persistent cycle of grief, poor literacy and high rates of sexual assault and drug and alcohol misuse. A socio-historical analysis of violence in the remote Kimberly region (Hunter, 1991) found that, further to the role of substance misuse, a history of heavy drinking in the family was more predictive of suicides among incarcerated Aboriginal men than their own alcohol use.

There is a considerable overlap in the colonisation histories of Australia's and Canada's first peoples. A study of Canadian First Nations (Chandler and Lalonde, 1998) identified 'cultural continuity' factors that were protective against suicide. These included self-government, actively pursuing land claims, education, tribal-controlled police services, local health services and cultural facilities.

Interventions. We did not identify any RCTs evaluating interventions for managing DSH in Aboriginal and Torres Strait Islander populations or for which DSH or suicidal behaviour outcomes in these populations were reported.

A recent systematic review of interventions for suicide prevention in Australian Aboriginal communities (Ridani et al., 2014) reported the following summary:

> *Most programs targeted the whole community and were delivered through workshops, cultural activities, or creative outlets. Curriculums included suicide risk and protective factors, warning signs, and mental health. Many were poorly documented and evaluations did not include suicidal outcomes.*

In developing interventions for Aboriginal and Torres Strait Islander peoples, the following factors should be considered:

- There is a role for mainstream services to be delivered in a culturally appropriate way.
- There is a lack of access to mental health services, which may make it necessary to mobilise local resources and educate community members to provide care.
- The disproportionate impact of suicide and DSH on families and communities must be recognised, and families and communities should be involved in therapeutic interventions.

- Cultural factors, which may not be well considered in traditional Western medical models, play a significant role in the risk of suicide or DSH among Aboriginal and Torres Strait Islander peoples. Strong cultural identification and 'cultural continuity' factors may be protective, and a loss of these may contribute to increased risk.

All mental health clinicians working in Australia should have mandatory training in Aboriginal and Torres Strait Islander cultural awareness, which should include understanding of the following:

- The current relevance of post-colonisation history for Aboriginal and Torres Strait Islander peoples, particularly in regard to incarceration and collective grief, trauma and loss;
- The paradigm of social, emotional and well-being within which to contextualise mental illness;
- A rights-based approach with particular reference to self-determination and social justice;
- The principles of a contributing life (National Mental Health Commission [NMHC], 2012), involving 'thriving – not just surviving', timely and effective care and treatment, meaningful activity, and meaningful connections with family, friends, culture and community
- Psychosocial determinants of mental health in Aboriginal and Torres Strait Islander populations, particularly unstable poor quality accommodation, poor access to health care, unemployment, social exclusion, stress, trauma, violence and substance use.

Prison populations

Key points

There is insufficient evidence to recommend any specific intervention in the prevention or treatment of DSH in prison populations.

High-quality studies of interventions to prevent or treat DSH in prison populations are needed.

Background

Epidemiology. DSH is considered to be common among in prison populations, although precise estimates are infrequently reported. A recent epidemiological study in England and Wales (Hawton et al., 2014) reported on 139,195 self-harm incidents in 26,510 individual prisoners between 2004 and 2009. The most common methods of DSH for both sexes were cutting and scratching. Prevalence ranged from 200 to 249 per 1000 prisoners during the study period. DSH occurred in 5–6% of male prisoners and 20–24% of female inmates every year. Repetition of DSH was common. The prevalence of incidents per 1000 prisoners was over 10-fold higher in female than in male prisoners. Male prisoners who self-harmed did so twice per year on average and females did so about eight times per year. A subgroup of women and teenage girls ($n=102$) accounted for 17,307 episodes.

A study of the Western Australian state prison system (Dear et al., 2001) recorded over 108 non-fatal DSH incidents in 91 individual prisoners during a 9-month period. Most incidents involved lacerations of low lethality, although 15% were attempted hangings.

Interventions. A recent systematic review of RCTs identified 10 trials ($n=171$) of interventions relevant to young offenders (mean age <19 years) with mood or anxiety disorders, or problems with self-harm (Townsend et al., 2010). Only one small trial ($n=76$) of a group-based problem-solving and coping skills intervention versus usual care measured suicidal ideation or suicidal behaviour as an outcome, and it reported no significant reduction in the experimental group as compared to a control group (Rohde et al., 2004). A further small study ($n=46$) of a DSH population used a brief problem-solving therapy versus no treatment and found significant benefits in Hospital Anxiety and Depression Scale (HADS) depression sub-scale and HADS anxiety scores but did not examine repeat DSH as an outcome (Biggam and Power, 2002).

A recent systematic review of management of suicidal and DSH behaviours in prison populations (Barker et al., 2014) identified 12 intervention articles of possible relevance: seven from the United States, two from the United Kingdom, and one each from Canada, Austria, and Australia. None used an RCT study design and most used a pre–post analysis of control and intervention periods. The use of standard RCT designs that involve parallel groups and individual allocation is not feasible for evaluating these types of system-wide interventions. However, alternative study designs, such as cluster RCTs or stepped-wedge designs, are available but have not been used.

The studies included in the systematic review were limited by small sample sizes and low numbers or rates of suicide in prison populations. The most common primary outcome measures were the number or rate of suicide, and DSH rates were infrequently reported. The studies reported on complex interventions, which typically had multiple components. Six studies involved multifactorial suicide prevention programmes, of which two involved peer-focused suicide prevention activities and four involved changes to the referral and care of suicidal inmates in prison mental health services.

We also identified a small number of non-randomised trials that were conducted in prison populations and reported DSH as a primary outcome:

- A small ($n=9$) study (Riaz and Agha, 2011) evaluated group-based CBT in women prisoners with a history of DSH by comparing rates of DSH repetition pre- and post-intervention. It reported no difference in the time to first repetition of DSH during follow-up of 1 month (survival analysis model).

- A large (n=898) study (Glowa-Kollisch et al., 2014) evaluated a complex mental health intervention (CBT, motivational enhancement therapy, motivational interviewing, social learning, and key coping and problem-solving skills). The intervention group (n=218) was compared with historical controls (n=413) and non-randomised concurrent controls (n=267). The intervention was associated with a lower rate of self-injurious behaviour events, compared with historical controls: adjusted rate ratio=0.45 (95% CI=[0.21, 0.99]). However, there was no difference compared with concurrent controls: adjusted rate ratio=0.87 (95% CI=[0.31, 2.46]).

There is insufficient evidence to recommend any specific intervention in the prevention or treatment of DSH in prison populations.

Immigration detention populations

Key points

There is insufficient evidence to recommend any specific intervention in the prevention or treatment of DSH in immigrant detention populations.

High-quality studies of interventions to prevent or treat DSH in Australian prison populations are needed.

Background

Epidemiology. Reliable information about DSH in immigration detention is sparse. For example, although suicide is the leading cause of premature death for people in the Australian immigration detention network, the incidence and prevalence of DSH in adults and children are not routinely monitored (Procter et al., 2013). A report by the Commonwealth and Immigration Ombudsman (Neave, 2013) noted a positive association between the time spent in immigration detention and the risk of self-harm. A recent systematic review (Robjant et al., 2009) found 10 studies showing that immigration detainees experience high levels of a variety of mental health problems, which worsen with time in detention.

Several studies have reported elevated risk of suicide among asylum-seekers:

- A recent systematic review (Kalt et al., 2013) noted three population studies that reported elevated suicide rates among some groups of asylum-seekers (Cohen, 2008; Goosen et al., 2011; Van Oostrum et al., 2011).
- A Dutch national registry-based study that measured suicide rates among people aged 15 years and over in asylum-seeker reception centres in the Netherlands for the period 2002–2007 (Goosen et al., 2011) reported that the rate of suicide among male asylum-seekers was higher than among Dutch nationals (age-standardised rate ratio=2.0; 95% CI=[1.37, 2.83]), but there was no difference for females (age-standardised rate ratio=0.73; 95% CI=[0.15, 2.07]). Compared with the local comparison population, hospital-treated DSH rates were higher for asylum-seekers from Europe (age-standardised rate ratio=1.40; 95% CI=[1.06, 1.82]) and from the Middle East and South-West Asia (age-standardised rate ratio=1.44; 95% CI=[1.10, 1.85]).
- Another study (Van Oostrum et al., 2011) reported an elevated suicide rate among male asylum-seekers in Dutch detention centres for the period 2002–2005, compared with male Dutch citizen (age-standardised mortality ratio=1.63; 95% CI=[1.02, 2.46]). There was no difference in suicide rates among female asylum-seekers and female Dutch citizens (age-standardised mortality ratio=0.90; 95% CI=[0.19, 2.63]).
- A UK study (Cohen, 2008) estimated suicide rates among asylum-seekers in UK detention to range from 42 per 100 000 asylum-seekers detained (1997–1999) to 211 (2003–2005). In comparison, the UK national suicide rate was 9 per 100 000 population (1997–2005). Of 38 suicides (35 male) in 2000–2005, data from 22 cases showed 72% died by hanging, 36% reported torture (46% unknown), 44% had a history of DSH and 82% had a history of mental disorders (as rated by GP/psychiatrist or family/friends). Sixteen cases (72%) occurred after initial refusal of asylum (4 cases), loss of appeal without removal directions (8 cases) or within days of removal date (4 cases). Four involved failed psychiatric referrals, two tragically misread information about their case and one was to be deported against the advice of two psychiatrists who warned that he stated he would kill himself. Several recommendations were made including the need for improved data collection, proactive mental health assessments, enhanced communication (including interpreters) psychological support, mandated review especially for those alleging torture and regular auditing (Cohen, 2008).

It is extremely difficult to obtain reliable data about DSH in immigration detention (Cohen, 2008). One Australian report on DSH within immigration detention centres (Dudley, 2003) substantially relied on official data obtained by the Australian Catholic Commission for Justice, Development and Peace (CCJDP), which recorded incidents (not individuals) that came to the attention of detention centre officers (CCJDP 2002). Because of this reporting system, these estimates are likely to be strongly underestimated.

The report recorded 244 DSH incidents among detainees aged over 17 years between 1 March and 30 October 2001: 223 by males and 21 by females. These included 42 instances of hunger strike by males and 11 instances of hunger strike by females. Other methods were not specified, although the author observed from other comprehensive reports the presence of serious and/or near-fatal DSH methods such as

hanging, throat-slashing, deep wrist-cutting and drinking shampoo. The author also noted the involvement of pre-pubertal children in hunger strikes – a behaviour virtually unknown in the general community population (Dudley, 2003).

Direct comparison of DSH rates in immigration detention populations and community populations is limited by multiple methodological difficulties, including under-enumeration, event-based rates (not case-based), unclear population denominators and overlapping concepts of DSH and suicide attempt. However, using these event data and immigration detention populations for the year 2000 as the denominator, the annual rate of DSH among males in immigration detention centres was estimated as 12,343 per 100,000, which is 41 times the rate for 'suicide attempts' among males in the general Australian population (300 per 100,000) (Dudley, 2003). The annual DSH rate among females was estimated as 10,227 per 100,000, which is 26 times the suicide attempt rate for females in the general Australian community (400 per 100,000) (Dudley, 2003).

The CCJDP data set (CCJDP 2002) also identified 20 DSH incidents by children aged 0–17 years for the same period. In all, 15 were by males, 5 by females, including 15 incidents of hunger strike, of which 6 were by children aged under 5 years. The annual DSH rate for boys was calculated to be 7679 per 100,000, which is 2.8 times the rate of suicide attempts among male adolescents aged 12–17 years in the Australian community (2700 per 100,000). The annual rate for girls was 4261 per 100,000 for girls, which is 0.7 times the suicide attempt rate among female adolescents in the Australian community (5700 per 100,000).

Interventions. We identified no intervention trials for DSH in immigration detention. There is no evidence to support any specific intervention in immigration detention populations.

Immigration detention worldwide is inseparable from the political context of interdictory policies against asylum-seekers. Over the past 20 years, quality evidence about the harms to detainees and also to health professional services and ethical practice has accrued from diverse, independent and multinational sources, including legal and medical investigations. In the Australian context at least, political influence and administrative control by immigration, rather than health bureaucracies, continue to hinder epidemiological or intervention research (Dudley et al., 2015).

First-episode psychosis

Key points

The organisation of mental health services to ensure early treatment for patients with first-episode psychosis and availability of specialist early psychosis services may reduce non-fatal suicide attempts.

Clozapine may reduce suicidal behaviours in early psychosis/early-onset schizophrenia.

CBT may reduce suicidal behaviours in early psychosis/early-onset schizophrenia.

Background. DSH (or suicide attempt) is common among people with first-episode psychosis, with 10–14% reporting DSH (or suicide attempt) prior to presentation for treatment (Clarke et al., 2006; Harvey et al., 2008; Robinson et al., 2009). The period immediately before the first presentation to services may be a time of increased risk for DSH and other suicide-related behaviours (Clarke et al., 2006; Fedyszyn et al., 2010; Harvey et al., 2008; Palmer et al., 2005). Rates remain high after treatment has begun: reported rates of suicide are 2.9–11% at 1 year (Addington et al., 2004; Nordentoft et al., 2002; Robinson et al., 2009), 11.3% at 2 years (Verdoux et al., 2001), 18.2% at 4 years (Clarke et al., 2006) and 21.6% at 7 years (Robinson et al., 2010).

Risk factors for DSH in people with first-episode psychosis include substance use disorder, the presence of depressive symptoms, younger age, female gender and greater illness insight (Barrett et al., 2010; Bertelsen et al., 2007; Clarke et al., 2006; Crumlish et al., 2005; Power et al., 2003; Robinson et al., 2009, 2010; Verdoux et al., 2001). However, the best predictor of future DSH is a past history of DSH (Bertelsen et al., 2007; Robinson et al., 2009, 2010; Verdoux et al., 2001). Accordingly, repetition of DSH is a relevant outcome measure for this clinical population.

An Australian clinical guideline for the management of early psychosis (Early Psychosis Guidelines Writing Group, 2010) has recommended intensive treatment during high-risk phases of illness, noting that '*atypical antipsychotics, especially clozapine may be useful for suicidality*'. The guideline also recommended that evidence-based interventions specifically for DSH should be developed for this population.

Interventions

Evidence identified. We identified nine studies that evaluated interventions for DSH by patients with psychosis, including six RCTs (Bateman et al., 2007; Grawe et al., 2006; Meltzer et al., 2003; Nordentoft et al., 2002; Power et al., 2003; Tarrier et al., 2006) and three cohort studies (Chen et al., 2011; Harris et al., 2008; Melle et al., 2006).

Seven studies (Chen et al., 2011; Grawe et al., 2006; Harris et al., 2008; Melle et al., 2006; Nordentoft et al., 2002; Power et al., 2003; Tarrier et al., 2006) were conducted in populations of patients with recent-onset schizophrenia, one study (Meltzer et al., 2003) in people with schizophrenia and schizoaffective disorder at increased suicide risk and another (Bateman et al., 2007) in patients with treatment-resistant schizophrenia.

Four studies evaluated interventions targeting individuals, including pharmacological treatment (Meltzer et al., 2003) and CBT (Bateman et al., 2007; Power et al., 2003; Tarrier et al., 2006). Five studies evaluated organisation of services (Chen et al., 2011; Grawe et al., 2006; Harris et al., 2008; Melle et al., 2006; Nordentoft et al., 2002).

Only two RCTs specifically evaluated interventions for people with first-episode psychosis presenting to treatment services with DSH or related behaviours: an Australian study of CBT in a specialty early psychosis service (Power et al., 2003) and a multicentre study of clozapine in schizophrenia or schizoaffective disorder patients with a history of self-harm (Meltzer et al., 2003).

Pharmacological treatment. A large ($n=980$) multicentre trial (Meltzer et al., 2003) compared clozapine with olanzapine in patients with schizophrenia. Clozapine treatment was associated with a significant reduction in suicidal behaviour (a composite outcome of suicide attempt or hospitalisation as a result of imminent suicide risk) – HR = 0.76 (95% CI = [0.58, 0.97], $p=0.03$) – and a significant reduction in suicide severity (Clinical Global Impression of Suicide Severity Scale) – HR 0.78 (95% CI = [0.61, 0.99], $p=0.04$).

Psychological treatment. Three RCTs (Bateman et al., 2007; Power et al., 2003; Tarrier et al., 2006) evaluated CBT:

- A small ($n=56$) Australian study (Power et al., 2003) compared a 10-week CBT intervention with treatment as usual in patients aged 15–29 years with first-episode psychosis and a score higher than 4 on the Brief Psychiatric Rating Scale (BPRS) suicidality sub-scale (frequent suicidal ideation or a suicide attempt). It reported no differences between groups on measures of suicidal ideation or suicide attempt at 6-month follow-up.
- A small ($n=90$) study (Sensky et al., 2000) compared CBT (mean of 19 sessions) with a 'befriending' intervention (equivalent contact hours) over 9 months in patients with treatment-resistant schizophrenia. Post hoc analysis of results (Bateman et al., 2007) found that CBT was associated with a reduction in suicidal ideation ratings (Comprehensive Psychopathological Rating Scale) at the end of treatment and at 9-month follow-up (statistics not reported, $p=0.001$).
- A medium-sized ($n=309$) trial (Lewis et al., 2002) compared CBT with either supportive counselling or treatment as usual in patients with recent-onset schizophrenia treated at 11 UK mental health units. Long-term follow-up (Tarrier et al., 2006) reported no difference between groups in rates of DSH at 6 weeks, 3 months and 18 months.

Service organisation. Five studies measured the effects of service organisation on rates of DSH and/or suicide-related behaviour: two RCTs (Grawe et al., 2006; Nordentoft et al., 2002) and three cohort studies (Chen et al., 2011; Harris et al., 2008; Melle et al., 2006).

A medium-sized ($n=281$) retrospective cohort study (Melle et al., 2006) evaluated a community-wide early psychosis detection programme (general population education campaigns, frontline healthcare personnel in schools and accessible early detection and treatment clinical teams). The study recruited consecutive patients with psychosis presenting to psychiatric treatment services and compared suicidal behaviour (thoughts, plans and attempts) between those in two regions in which the programme was delivered with those in two regions without access to the programme. The programme was associated with reductions in rates of life-time suicidal behaviour ($\chi^2=11.98$, $p<0.01$) and suicidal behaviour in the month prior to presentation to the mental health services ($\chi^2=10.72$, $p<0.01$).

Four studies (Chen et al., 2011; Grawe et al., 2006; Harris et al., 2008; Nordentoft et al., 2002) evaluated specialist early psychosis services:

- A medium-sized ($n=341$) RCT (Nordentoft et al., 2002) compared specialist early intervention for first-episode psychosis (assertive community treatment, antipsychotic medication, psychoeducational family treatment and social skills training) with standard clinical care. It reported no differences in rates of suicide attempts or suicidal ideation.
- A small ($n=50$) RCT (Grawe et al., 2006) compared an early intervention service (standard care plus cognitive behavioural family treatment) with standard care (optimal pharmacological treatment and case management) in patients with recent-onset schizophrenia. It reported no difference in rates of DSH (or suicide attempt).
- A large ($n=700$) cohort study (Chen et al., 2011) compared an early intervention service with standard care over 3 years. It reported no differences in the number of suicide attempts but fewer suicide deaths in the intervention group (1.1% vs 3.4%): HR = 0.32 (95% CI = [0.13, 0.75], $p<0.009$).
- A large ($n=7760$) Australian retrospective cohort study (Harris et al., 2008) compared suicide rates among young people attending a specialised early intervention programme and those with no early intervention. The intervention service was associated with a reduction of almost 50% in suicide mortality at 3 years after admission into the service (HR = 0.51; 95% CI = [0.27, 0.99], $p=0.048$). No difference was sustained beyond this 3-year period ($\chi^2=0.04$, $p<0.84$).

Interpreting the evidence for interventions to manage DSH in first-episode psychosis. There is very limited evidence on how to best reduce DSH among patients with first-episode psychosis. The only interventions that have shown promise in observational studies, specifically in first-episode psychosis samples, are early psychosis detection services (Harris et al., 2008; Melle et al., 2006) and early intervention services (Chen et al., 2011; Harris et al., 2008). Early

psychosis detection services have been associated with reduced rates of DSH prior to treatment in the mental health services (Harris et al., 2008; Melle et al., 2006), possibly by engaging and treating people earlier in the course of illness (Melle et al., 2006). Early intervention services have been associated with reduced suicide mortality for the duration of treatment and in the immediate follow-up period (Chen et al., 2011; Harris et al., 2008).

The use of both clozapine (Meltzer et al., 2003) and CBT (Bateman et al., 2007) has been shown to reduce 'suicidality' or suicidal thoughts among patients with schizophrenia. Clozapine has previously been recommended as a possible treatment for patients with first-episode psychosis who are at risk of suicide (Early Psychosis Guidelines Writing Group, 2010).

Research priorities

Further evaluation of the effectiveness of the following interventions in reducing DSH or suicidal behaviour among older adults is warranted:

- Strategies for detection and management of late life depression in primary and secondary care;
- Population-based multi-modal interventions that include local government leadership, education of the general public to reduce stigma and increase awareness, training programmes for community gatekeepers and screening and increased support for individuals at high risk;
- Outreach telephone support and 24-hour emergency contact for isolated older people;
- Multifaceted management for patients with DSH who present to mental health services.

Research aiming to develop effective prevention and intervention strategies for DSH among Māori and Aboriginal and Torres Strait Islander peoples is needed.

Well-designed studies are also needed to evaluate interventions to prevent or treat DSH among prison populations and Australian immigration detention populations.

Further research is warranted to evaluate the effectiveness of specific interventions that have been reported to reduce suicidal behaviours in people with early psychosis/early-onset schizophrenia (e.g. clozapine treatment and CBT).

Section 7: rarer forms of DSH

Recommendations	Type	Level of evidence
Patients with major self-mutilation should be considered to have a psychotic illness until proved otherwise.	EBR	IV
Immediate treatment after major self-mutilation should aim both to facilitate optimal surgical care and to prevent further self-injury by close nursing supervision.	EBR	IV
People presenting with self-immolation should have access to suitably experienced mental health clinicians as part of their burn care.	CBR	N/A
Mental health care should include the following: 1. A thorough assessment and formulation of premorbid difficulties to inform multidisciplinary treatment planning; 2. The identification and treatment of acute trauma responses; 3. Ongoing psychiatric care and therapy to facilitate adjustment to physical disfigurement in the rehabilitation phase.	CBR	N/A

CBR: consensus-based recommendation; EBR: evidence-based recommendation; N/A: level of evidence category does not apply. Recommendation based on a combination of available evidence, clinical experience and expert consensus.

Major self-mutilation

Key point

People with major self-mutilation are likely to have a psychotic illness.

Major self-mutilation differs from other forms of DSH: it is very rare, suicide intent is usually absent, it usually results in a loss of bodily function and it is strongly associated with psychosis (Favazza and Rosenthal, 1993; Large et al., 2009).

Epidemiology. The three most well-described forms of major self-mutilation are genital amputation, self-enucleation of the eye and upper limb self-amputation (Nakaya, 1996). A range of rarer sites of major self-mutilation have been described, most notably of other parts of the face (Ciorba et al., 2014).

The combined probability of all forms of major self-mutilation, severe enough to result in ongoing disability, has been conservatively estimated to be about 1 in 4 million people per annum (Large et al., 2009). People who remove their own eyes or self-amputate a hand almost invariably have a psychotic illness, usually a schizophrenia spectrum psychosis (Large et al., 2009).

Interventions. No clinical trials have evaluated interventions for this patient group. Most relevant studies are case reports or case series.

Major self-mutilation is a medical and psychiatric emergency that can be complicated by the patient having limited capacity to consent to highly time-sensitive surgical interventions, where patients should be provided with optimal medical treatment.

Self-enucleation is a neurosurgical emergency with the possibility of subarachnoid haemorrhage, cerebrospinal fluid leaks, disruption of the optic chiasm and pituitary failure (Large et al., 2008). Bilateral self-enucleation occurs in a substantial minority of cases and after a unilateral self-enucleation might be prevented by close nursing care and antipsychotic treatment (Large and Nielssen, 2012). Physical restraint might sometimes be required in the cases of unilateral self-enucleation, attempted self-enucleation or, in some cases, threatened self-enucleation.

There are numerous reports of penile re-implantation with full restoration of erectile and urinary functions (Roche et al., 2012). Re-implantation of amputated testes can obviate the need for long-term testosterone therapy. Successful limb re-implantation after self-amputation has been described (Schlozman, 1998). Re-amputation appears to be rare.

Following major self-mutilation, patients may have a lucid (non-psychotic) period. However, even those who are not obviously hallucinated or deluded should be provisionally considered to be suffering from psychosis (Large et al., 2009). Most self-amputations occur in association with delusions that the amputated part is in some way a threat to them or others. Appropriate antipsychotic and sedative treatment should be instituted as rapidly as possible and should have the aims of both treating the underlying psychosis and facilitating urgent medical care.

Most patients who present with major self-mutilation will usually require a surgical admission, followed by a period of observation and treatment in an acute psychiatric unit and then a period of rehabilitation.

Self-immolation

Key point

People who present to acute care services after self-immolation need access to suitably experienced mental health clinicians as part of their burn care.

Epidemiology. Self-immolation is a relatively rare method of self-harm that accounts for around 1% of all suicides in developed countries. However, the physical and psychological sequelae of surviving a serious burn are complex. Self-immolation is more common among men in developed countries and women in developing countries. Affective disorders (and, to a lesser extent, substance abuse, psychosis and personality disorders) are commonly found in developed countries, whereas lower levels of psychiatric disorder and higher levels of psychosocial stress are observed in developing countries. Estimates of previous self-harm are mixed (Poeschla et al., 2011). Very few studies have measured rates of repetition of self-harm among this population; one study found that four out of five patients reported an intention to kill themselves, and another study reported that three out of eight patients had made a further suicide attempt (Hahn et al., 2013).

In New Zealand, an average of seven self-immolation patients per year are seen at the National Burn Centre for treatment (A Moazzam, 2014, personal communication). Between 2006 and 2013, 62% were male, 43.6% were New Zealand European, 25.5% Māori and 12.7% Pacific Islander. The mean total body surface area burned was 28%, and 18% of patients died (A Moazzam, 2014, personal communication). Between 1987 and 2008, approximately five suicide deaths per year are recorded due to self-inflicted burns. These deaths were mainly among men in their early adulthood, although 12% (both male and female) were aged 15–19 years (A Moazzam, 2014, personal communication).

The socio-cultural meaning and history of self-immolation vary in different settings and are reflected in migrant communities. For example, women of South Asian origin who had migrated to Yorkshire, England, had much higher-than-expected rates of self-immolation (Poeschla et al., 2011).

Interventions

No studies were identified that evaluated interventions for self-immolation.

People who survive self-immolation can present challenges for clinicians; the fact they have set fire to themselves can horrify staff, and pre-existing psychiatric disorders may interfere with their ability to engage with both acute and long-term treatment. In addition, they tend to have longer length of stay and lower survival rates compared with other serious burns (Hahn et al., 2013), which may compound the issues outlined above.

Mental health clinicians have several important roles in the care of patients who have attempted self-immolation (Hahn et al., 2013):

- Thorough assessment and formulation of premorbid difficulties, including psychiatric disorders, to inform multidisciplinary treatment planning;
- Identification and treatment of acute trauma responses;
- Support to access appropriate treatment in the rehabilitation phase, including ongoing psychiatric care and adjustment to physical disfigurement.

Section 8: other interventions and populations

Recommendations	Type	Level of evidence
All GPs should maintain up-to-date training in the detection and effective treatment of mental illness, particularly depression	EBR	I
Access to lethal methods of self-harm should be restricted, where possible (e.g. by limiting sale of medicines associated with overdose).	EBR	I
Gatekeeper training programmes should be delivered to relevant professions (e.g. GPs, youth workers, teachers, police, ambulance staff, human resources professionals and employers) to equip them to facilitate access to appropriate services for people at risk of suicide or self-harm.	EBR	III-1
Public awareness campaigns should be implemented to reduce stigma associated with depression and suicidal behaviour and to promote help-seeking behaviour and attitudes among those at risk.	EBR	III-1
Inpatient and outpatient acute care services should improve their capacity to provide immediate aftercare for people who self-harm.	EBR	III-2
Media, health policy-makers and academics should actively participate in developing and adhering to media guidelines on public reporting of suicide.	EBR	III-2

CBR: consensus-based recommendation; EBR: evidence-based recommendation; GP: general practitioner.

Community-based interventions for DSH and suicide

Key points

- All GPs need training in the detection and effective treatment of mental illness, particularly depression.
- Training selected professionals on how to identify those at high risk of suicidal behaviours and how to refer for treatment may be effective in directing at-risk people to appropriate services.
- The manner of reporting suicide in the media may affect community rates.

Most interventions for DSH that are delivered at the community level come under the umbrella of suicide prevention and aim to reduce the incidence of suicide and non-fatal DSH. Multilevel interventions are required due to the multifactorial nature of DSH and the impact of risk factors at both the individual and population levels.

Multilevel strategies simultaneously target more than one population, level of healthcare provision or mechanism of therapy (Coppens et al., 2014; Van der Feltz-Cornelis et al., 2011). Both Australia and New Zealand have national suicide prevention strategies that posit multilevel interventions (New Zealand Ministry of Health, 2006) with associated research priorities. Positive synergy, where the combined effects of multiple interventions are greater than any one intervention alone, is a potential benefit of this approach to community-level interventions (Van der Feltz-Cornelis et al., 2011).

Non-clinicians often call for public awareness campaigns that aim to improve recognition of those at risk of suicidal behaviour and enhance help-seeking behaviour. However, a review of systematic reviews (Van der Feltz-Cornelis et al., 2011) highlighted conflicting results for the effectiveness of public awareness campaigns in reducing self-harm.

Studies in Germany, United Kingdom, Australia and New Zealand have shown modest effects on the causes and treatment of depression, but no impact on prevalence of DSH, treatment seeking or use of antidepressants (Mann et al., 2005). More recently, a large suicide prevention project (Optimising Suicide Prevention Programmes and Their Implementation in Europe [OSPI-Europe]) has built on the successful Nuremberg Alliance against Depression trial (Hegerl et al., 2009). The main findings of OSPI-Europe are yet to be published.

'Gatekeeper' training (teaching people how to identify those at high of for suicidal behaviours and how to refer for treatment) is most effective when pathways to treatment are clearly identified (Mann et al., 2005) and when it targets gatekeepers with low basic skills (Coppens et al., 2014). This approach has been reported to be effective in Australian Aboriginal communities (Capp et al., 2001). Some caution should be exercised when considering peer gatekeeper programmes among school students, given concerns about contagion and the lack of demonstrated effectiveness of such programmes on rates of suicidal ideation, suicide attempts or deaths by suicide (Isaac et al., 2009).

The effectiveness of screening for suicide risk at a general population level has yet to be established; most work in this area has been conducted with adolescents in educational settings (Mann et al., 2005). The sensitivity and specificity of instruments continue to be refined (Williams et al., 2009), but uptake of appropriate treatment interventions remains a challenge. Screening for depression in primary care can enhance detection and treatment of depression (Mann et al., 2005), but it is only effective when

accompanied by adequate follow-up and adequate availability of treatment (Gilbody et al., 2008).

Restricting access to highly lethal means of suicide leads to a decrease in suicide deaths associated with that method (Van der Feltz-Cornelis et al., 2011), although monitoring for substitution of methods should be undertaken (Mann et al., 2005). In Australia and New Zealand, limiting access to medicines taken in overdose might be possible. However, it is not feasible to restrict access to hanging, which is a relatively common method of suicide in the Australasian region, compared with many other developed nations.

The research literature demonstrates a clear relationship between certain types of media reporting and suicide (Pirkis and Blood, 2001; Stack, 2003). The development and adoption of media reporting guidelines for suicide have had mixed success in New Zealand (McKenna et al., 2010) and Australia (Pirkis et al., 2002). There is an ongoing tension between research findings and a perception that it is in the public interest to debate suicide through the media. In addition, the rapid expansion of the Internet has prompted concerns about the effects of contagion and easy access to information about methods of DSH and suicide.

Studies in the United Kingdom (Baker and Fortune, 2008) and New Zealand (Collings et al., 2011) have found that people who self-harm often use online resources to access peer support, which may facilitate utilisation of specialist mental health services. They have also reported that most readily accessible websites are those that aim to provide support, rather than those promoting suicide (Biddle et al., 2008; Collings et al., 2010). The findings of a recent New Zealand study suggests that media coverage of such suicide deaths tended to overstate the contribution of the Internet relative to other pertinent factors (Thom et al., 2011).

Based on the existing evidence of proven or potential effectiveness, the following elements should be included in a multilevel prevention intervention aimed primarily at reducing suicide mortality (Coppens et al., 2014; Mann et al., 2005; Van der Feltz-Cornelis et al., 2011):

- GP training in the detection and effective treatment of mental illness, particularly depression;
- Gatekeeper training to facilitate access to appropriate services, particularly among those with poor knowledge;
- Restriction of access to lethal methods of self-harm;
- Awareness campaigns to reduce stigma around depression and promote help-seeking behaviour;
- Enhancement of existing healthcare services, particularly appropriate inpatient or outpatient care after an episode of self-harm;
- Active participation by media, health service decision-makers and academics in developing and adhering to media guidelines on the reporting of suicide.

Web-based programmes for suicidal behaviour

Key points

Web-based CBT interventions targeting people with depression may be effective in reducing suicidal behaviours. Further evaluation in DSH populations is warranted.

Web-based CBT interventions may be effective in reducing suicidal behaviours in the community. Further evaluation in DSH populations is warranted.

Web-based and other digital applications are increasingly used to deliver CBT to individuals with depression and anxiety. Over the last 5 years, web-based interventions targeting suicidal behaviour and ideation have also been developed and tested.

Web-based interventions typically are classified into those that are guided or those that are automated. Guided interventions involve a therapist or a researcher assisting the user through the programme either through email or over the telephone. Two reviews of web-based suicide prevention have been published (Christensen and Petrie, 2014; Lai et al., 2014), one of which (Lai et al., 2014) covered a broad range of interventions, including online screening approaches and short text message interventions.

Web-based interventions have not usually been evaluated in populations of patients with hospital-treated DSH or community DSH. However, these interventions have the potential to be applied in these clinical populations in the future. Many users of Internet programmes, while residing in the community, have very high symptom levels of both depression and suicide ideation and report previous DSH. We reviewed published literature for two types of approaches using web-based applications:

- Those that target suicidal behaviour and ideation using websites designed to treat depression;
- Those that target suicidal behaviour using websites designed to target suicide-specific behaviours and thoughts.

Interventions targeting depression. We identified six studies that evaluated programmes targeting people with depression and reported DSH-related outcomes, including three RCTs (Christensen et al., 2013; Merry et al., 2012a; Moritz et al., 2012) and three pre–post studies (Van Voorhees et al., 2009; Watts et al., 2012; Williams and Andrews, 2013).

Two studies (Merry et al., 2012a; Van Voorhees et al., 2009) evaluated interventions designed for adolescents and reported suicidal behaviour outcomes:

- A small ($n = 83$) pre–post study (Van Voorhees et al., 2009) evaluated an Internet depression prevention

intervention ('PROJECT CATCH-IT', which included CBT, interpersonal therapy and a parent workbook) in general practice patients with suicidal ideation (but not frequent ideation or actual intent). The intervention was associated with reductions in self-harm thoughts and depressive symptoms at 6 and 12 weeks.
- A small ($n=94$) non-inferiority RCT compared a computerised CBT-based self-help programme ('SPARX') with treatment as usual (face-to-face therapy) in psychiatric outpatients with depression (Merry et al., 2012a). It reported that the intervention was non-inferior for a proxy measure of suicidal ideation. Caution needs to be used in interpreting this result since the outcome measure of hopelessness may not considered to be an adequate proxy for suicidal ideation.

Four studies (Watts et al., 2012; Williams and Andrews, 2013) evaluated interventions designed for adults:

- A medium-sized ($n=299$) Australian pre–post study (Watts et al., 2012) evaluated an Internet intervention for depression (CBT, homework and clinician contact) in general practice patients with suicidal ideation. It reported a reduction in suicidal ideation compared with baseline.
- A medium-sized ($n=359$) Australian pre–post study (Williams and Andrews, 2013) evaluated an Internet-based intervention (the 'Sadness Program', involving Internet-based CBT, homework and supplementary resources) in depressed or suicidal general practice patients. It reported a reduction in suicidal ideation compared with baseline.
- A small ($n=105$) RCT (Moritz et al., 2012) compared an online CBT intervention for depression ('Deprexis') with wait list in depressed patients with suicidal thoughts. The intervention was associated with a reduction in scores for depression, dysfunctional attitudes and improved quality of life in favour, but there was no difference between groups in measures of suicidal thoughts and behaviour.
- A small ($n=155$) four-armed RCT (Christensen et al., 2013) compared (1) web-based CBT, (2) web-based CBT plus telephone call, (3) telephone call back line and (4) treatment as usual in depressed callers to Lifeline. It reported that there were no differences in the rate at which suicidal thoughts dissipated between the four treatment groups.

Taken together, these findings from both the adult and the adolescent studies show that suicide ideation drops over time, although any specific effect of the interventions is less apparent. The RCT data (Christensen et al., 2013; Moritz et al., 2012) demonstrate that depression websites do have specific beneficial effects on depression.

Interventions targeting suicidal thoughts and behaviour. One small ($n=116$) RCT (Van Spijker et al., 2014) compared an online self-help programme (six modules of CBT with DBT, problem-solving therapy, MBT, weekly assignments and automated motivational emails) with wait list in a general public population with mild-to-moderate suicidal ideation, recruited via the Internet. The intervention was associated with reductions in suicidal thoughts and levels of hopelessness, as well as improved cost-effectiveness Van Spijker et al. (2012).

School-based interventions

Key point

There is insufficient evidence about the effectiveness of school-based interventions to reduce the rates of DSH or NSSI.

Schools are potentially an important setting for responding to the challenge of self-harm. Self-harm peaks in prevalence during the mid-teens when, in the Australian context, the great majority of adolescents are still attending school (Moran et al., 2012). Approaches to the prevention of self-harm theoretically extend from universal to selective and indicated preventive interventions.

Until recently, the main finding from studies that evaluated universal programmes targeting suicidal behaviour in secondary schools was that these programmes can achieve measurable changes in student and staff attitudes to suicide risks (Katz et al., 2013). Screening for suicide risk has also attracted the attention of researchers. Clearly, it is possible to identify a group at high risk of self-harm and suicidal behaviour (Shaffer et al., 2004), yet there had been very little evidence that screening had the potential to affect rates of self-harm beyond the short-term (Aseltine et al., 2007).

One recent large-scale trial, the SEYLE, found that a universal mental health awareness programme with 15-year-olds (a 5-hour classroom-based programme for mental health awareness) halved the risks of suicidal ideation and suicide attempts at 12-month follow-up, compared with a control group (Wasserman et al., 2015). Intervention arms that focused on gatekeeper identification of risks or screening, followed by professional mental health assessment, were not associated with any benefits. These findings are encouraging, but require replication.

Alternative approaches to the prevention of self-harm might address risk factors, for instance, antecedents of self-harm such as depressive symptoms or alternatively social stressors in the school context (Fisher et al., 2012). A recent systematic review of targeted and universal interventions for depression in educational settings (Merry et al., 2012b) concluded that the evidence for effectiveness remains mixed, with important methodological limitations in many studies. In contrast, there is growing evidence that

preventive programmes targeting school bullying can be effective (Salmivalli and Poskiparta, 2012; Waasdorp et al., 2012). The effects of interventions on rates of DSH are not clear in any of these studies.

Current evidence on the effectiveness of school-based interventions targeting DSH and suicidal behaviour is limited, but does provide encouragement that scalable programmes promoting mental health awareness might reduce rates of DSH and suicide. It is also more likely that interventions promoting more positive peer interactions, including the prevention of bullying, will have beneficial effects on mental health that may include reducing DSH.

Research priorities

Further research is needed to determine the effectiveness and roles of community-based interventions for reducing DSH and suicidal behaviours, particularly web-based CBT and school-based interventions. Outcome measures should include potential adverse effects.

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Declaration of Conflicting Interests

Members of the Deliberate Self-harm CPG Working Group signed a deed of undertaking at the time of appointment in which they agreed to declare any conflict, whether actual, potential, perceived or likely to arise. To manage conflicts of interest of the Working Group during the CPG development process:

- As a part of the standing items of all meetings, all Working Group members were asked to declare their conflicts of interest during each teleconference meeting and these were recorded. If a conflict of interest was declared, the individual(s) concerned was excluded from the discussion and right to vote/contribute.
- The Working Group members signed an updated COI form at the time of submitting the clinical practice guideline for the management of deliberate self-harm for publication.

Working Group member's declarations of interest are listed in Appendix A.

Disclaimer

Compiled for the Royal Australian and New Zealand College of Psychiatrists (RANZCP), this information and advice is based on current medical knowledge and practice as at the date of publication. It is intended as a general guide only, not as a substitute for individual medical advice. The RANZCP and its employees accept no responsibility for any consequences arising from relying upon the information contained in this publication.

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Notes

1. Formerly 'National Institute of Clinical Excellence' and 'National Institute of Health and Clinical Excellence'
2. The evidence appraisal undertaken for this guideline determined that one of these studies (Chowdhury et al., 1973) was not a randomised controlled trial (RCT), so it was excluded from further analysis.

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Appendix A

Table i. Deliberate self-harm committee.

Name	Titles and affiliations
Professor Gregory Carter	Conjoint Professor, Centre for Translational Neuroscience and Mental Health, Faculty of Health and Medicine, University of Newcastle Acting Director, Departmental Consultation-Liaison Psychiatry, Calvary Mater Newcastle Hospital, Waratah, NSW
Dr Andrew Page	Chair, Epidemiology, Centre for Health Research, Western Sydney University
Professor Matthew Large	Conjoint Professor, School of Psychiatry, The University of New South Wales
Dr Sarah Hetrick	Clinical Psychologist and Senior Research Fellow, Orygen, The National Centre of Excellence in Youth Mental Health, Melbourne Centre for Youth Mental Health, University Melbourne
Dr Allison Joy Milner	Deputy Director, Work, Health & Wellbeing, Population Health Strategic Research Centre, School of Health & Social Development, Deakin University School of Population and Global Health, The University of Melbourne
Dr Nick Bendit	Conjoint Lecturer, School of Medicine and Public Health, Faculty of Health and Medicine, The University of Newcastle Casual Academic, School of Psychology, Faculty of Science and Information Technology, The University of Newcastle
Dr Carla Walton	Senior Clinical Psychologist, Centre for Psychotherapy, Hunter New England Mental Health Service, Newcastle / Centre for Translational Neuroscience and Mental Health, University of Newcastle
Professor Brian Draper	Conjoint Professor, School of Psychiatry, University of New South Wales, Sydney Clinical Leader, Academic Department for Old Age Psychiatry, Prince of Wales Hospital, Randwick
Professor Philip Hazell	Conjoint Professor of Child and Adolescent Psychiatry, Discipline of Psychiatry, Sydney Medical School, University of Sydney

(Continued)

Table i. (Continued)

Name	Titles and affiliations
Dr Sarah Fortune	Consultant Clinical Psychologist and Honorary Research Fellow, The University of Auckland, New Zealand and the University of Leeds Paediatric Consult Liaison, Kidz First, Middlemore Hospital, Auckland, New Zealand
Associate Professor Jane Burns	Chief Executive Officer, Young and Well Cooperative Research Centre, The University of Melbourne Adjunct Professorial Fellowship, Brain & Mind Research Institute, University of Sydney Principal Research Fellowship, Orygen Youth Health Research Centre, Melbourne
Professor George Patton	Professorial Fellow, Adolescent Health Research, Department of Paediatrics, University of Melbourne, Victoria Senior Principal Research Fellow, National Health and Medical Research Council Director of Adolescent Health Research, Centre for Adolescent Health, The Royal Children's Hospital, Melbourne, Victoria Leader Population Health Studies of Adolescents, Murdoch Children's Research Institute, Melbourne, Victoria
Dr Mark Lawrence	Consultant Psychiatrist, Tauranga Hospital, Bay of Plenty, New Zealand
Dr Lawrence Dadd	Senior Staff Specialist, Mental Health & Substance Use Service, Hunter New England, NSW Health Senior Consultant, AWABAKAL Aboriginal Medical Service Pital Tarkin, Aboriginal Medical Student Mentoring Program, Wollotuka Institute, University of Newcastle Consultant Psychiatrist, Specialist Outreach, Northern Territory
Dr Jo Robinson	Senior Research Fellow, Orygen, The National Centre of Excellence in Youth Mental Health, Melbourne
Professor Helen Christensen	Chief Scientist and Director, Black Dog Institute, The University of New South Wales, Sydney, NSW, Australia

Table ii. Working Group members' declarations of interest.

Name	Declarations of interests
Professor Gregory Carter	Non-financial administrative support, RANZCP Contracted scientific writer, RANZCP Co-author, observational and interventional studies and systematic review studies used in developing the CPG
Dr Andrew Page	None
Professor Matthew Large	Speaker fees, AstraZeneca for presentation of own research
Dr Sarah Hetrick	Editor, Cochrane Depression Anxiety and Neurosis Group
Dr Allison Joy Milner	NHMRC Capacity Building Grant in Population Health, Health Services Network ID 546248
Dr Nick Bendit	None
Dr Carla Walton	None
Professor Brian Draper	None

(Continued)

Table ii. (Continued)

Name	Declarations of interests
Professor Philip Hazell	Received payment from Eli Lilly and Janssen for consultancies; Eli Lilly, Janssen, Novartis and Shire for participation in advisory boards; Eli Lilly, Janssen, Pfizer and Shire for speaker's bureau; Eli Lilly and Celltech for the conduct of clinical trials Co-author of a Cochrane Review of treatments for deliberate self-harm and is the author of several papers and book chapters on the subject
Dr Sarah Fortune	Coinvestigator, Family Therapy vs TAU for adolescents who self-harm in the United Kingdom
Associate Professor Jane Burns	CEO, Young and Well Cooperative Centre VicHealth Principal Research Fellow, Orygen Youth Health Research Centre, Centre for Youth Mental Health, University of Melbourne Director, CRC Association Director, Thomas Kelly Youth Foundation Limited VicHealth Senior Research Fellowship, Victorian Health Promotion Foundation Honorary Research Fellow, Brain & Mind Research Institute (BMRI), University of Sydney ARC Linkage Grant with Inspire Foundation and UWS ARC Linkage Grant with BMRI
Professor George Patton	None
Dr Mark Lawrence	None
Dr Lawrence Dadd	None
Dr Jo Robinson	None
Professor Helen Christensen	Non-Executive Director, R U OK? Board