Department of Health

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Suicide risk assessment and management

A systematic evidence review for the *Clinical practice guidelines for emergency departments and mental health services project*

State Government Victoria

A Victorian Government initiative

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Objectives

This literature review provides an outline of the known risk factors for suicide, examining the effectiveness of assessment instruments and interventions for preventing completed suicide, suicidal behaviour and suicidal ideation. A wide-ranging systematic review has been carried out to evaluate the evidence available to emergency departments and acute psychiatric services in Victoria relating to the prevention of suicide.

The review will underpin the recommendations of a Victorian clinical best practice guideline for the assessment and management of people at risk of suicide, who present to emergency departments and mental health service acute assessment services (the Suicide Guideline Project).

Methods

A systematic review of the literature involved identification, critical appraisal, synthesis and summary of literature relevant to the research questions developed. A search was conducted in online databases of peer-reviewed published research (Medical Literature Analysis and Retrieval System Online (MEDLINE), Embase, Allied and Complementary Medicine Database (AMED), PsycINFO), and databases of systematic reviews such as the Cochrane Library Online and Health Technology Assessment Database. The application of the inclusion criteria for this review meant that studies of suicidal thoughts, ideation or suicidal behaviour such as self-harm *without* clear suicidal intent were excluded.

For articles that met the inclusion criteria or the methods section review, the full article was retrieved for further evaluation and critical appraisal. Checklists used for the critical appraisal included an assessment of the methodological quality; a summary of the key points about the study; and the study's applicability to the patient group targeted by the guidelines. The SIGN evidence grading system was used to assess the validity of the literature and to rate the level of evidence in each study.

Findings

Despite the importance of emergency departments and mental health services in the prevention of suicidal behaviour and suicidal ideation, evidence suggesting which suicide risk assessment tools and interventions are most likely to be effective in the acute care setting, is very limited. Moreover, the length of follow-up time necessary to end the risk of future suicide attempts has been poorly researched.

In the emergency care environment, rapid decisions on assessment and treatment are necessary, and often the reasons for suicidal behaviour and personal background are neglected or not well understood by clinicians. This review found that very few well-validated risk assessment measures exist and none of those can accurately predict a suicide attempt. While some measures are useful in the clinical setting, most suicide assessment instruments are not designed to meet the time constraints and practical challenges of the high-stimulus, low-privacy emergency department setting.

The interventions in this setting, which find some support in the literature, include maintenance of ongoing contact following discharge and the provision of specialist follow-up care. Individualised and intensive cognitive and behavioural therapies have shown some promise in reducing attempted suicide and self-harm.

There is currently little evidence relating to the effectiveness of non-pharmaceutical interventions for suicidal ideation. There is some limited evidence from higher-quality studies that suicidal ideation may be reduced, over the short term at least, by the use of telephone-based support, with noninterventionist styles of communication (for example, postcards and letters) demonstrating a greater impact on reductions in suicidal ideation. All of these approaches, however, require further evaluation to confirm their effectiveness in reducing self-harm, attempted suicide and suicidal ideation, particularly in the emergency department, acute care context and post discharge, as any benefit has typically only been observed in one study.

Introduction

While the rate of completed recorded suicides in Australia has remained relatively stable over the last century, suicide remains a major public health problem and one of the leading causes of death (1). Reports from the World Health Organisation (WHO) estimate that 10.4 per cent of the population seriously consider suicide at some point in their lifetime, while 4.2 per cent attempt suicide (2). Suicide is more common in Australian men than women; approximately 21 suicide deaths per 100,000 men and 5.5 suicide deaths per 100,000 women (3). However, the age patterns of completed suicide have changed in the last four decades, with rising rates in Australian males aged 15-24 years and declining rates in similarly-aged females. Males aged 20-24 years have the highest suicide rate at 33.6 per 100,000 males, compared to 6.3 per 100,000 females. The suicide rate peaks again among males over 75 years of age (31.8 per 100,000). While the rate of completed suicide is much lower in females than males, attempted suicides are reported as being more common in females (3).

Suicide prevention can be accomplished only if clinicians can accurately identify suicidal individuals. In the realm of suicide research and clinical practice, there has been increasing recognition of the factors that elevate suicide risk, categorised as psychiatric (for example, major mental disorders), psychosocial (for example, adverse life situations) and sociodemographic (for example, male gender) (4). Prediction of long-term risk of suicide is complicated by the fact that suicidal behaviour is influenced by transient factors such as loss of support, business losses, medical conditions and exacerbation of severe psychiatric symptoms.

Studies have shown that in the days and weeks prior to the act of suicide, a number of people have commonly sought services from an array of service providers (5-8). Consequently, telephone crisis services, emergency departments (EDs), inpatient and outpatient mental health services, and primary care settings all have the potential to significantly reduce the toll of suicide by improving internal practices and inter-agency collaboration (9-11). To bring about these improvements, staff must be trained to recognise individuals who are at imminent risk of suicide and to deliver treatments that have been shown to reduce attempts and completed suicides (12-16). These evidence-based treatments must be combined with more comprehensive risk management strategies.

Objectives

This literature review provides a comprehensive overview of the known risk factors for suicide. It examines the effectiveness of different assessment instruments and interventions aimed at preventing completed suicide, suicidal behaviour and suicidal ideation, both in key risk groups and in the general population. While not restricted to the Australian context, the primary goal of the review is to evaluate the quantitative and qualitative evidence available to emergency departments and acute psychiatric services in Victoria regarding the prevention of suicide. To this end, a wide-ranging systematic review of the available evidence has been carried out.

The review will underpin the recommendations of a Victorian clinical best practice guideline for the assessment and management of people at risk of suicide, who present to emergency departments and mental health service acute assessment services (the Suicide Guideline Project).

To develop our methodology for this project, we have used handbooks from the National Health and Medical Research Council of Australia (NHMRC) and the Scottish Intercollegiate Guideline Network (SIGN). Both these organisations regularly produce evidence-based clinical practice guidelines and are held in high esteem. The handbooks have been peer-reviewed to ensure that they provide clear and unequivocal guidance on guideline development (17). It was found that these 'guidelines for developing guidelines' have strong similarities to the central elements of an evidence-based clinical practice guideline development process.

It must be noted that issues specific to suicide research pose special methodological challenges for a literature review of this sort. Few empirical studies, a poorly developed scientific base and poor co-ordination of existing expertise, knowledge and data collection methods may pose limitations on making entirely evidence-based recommendations. A very small number of studies have included people at either end of the age spectrum (those younger than 15 or older than 65), and from social, cultural and ethnic minority populations, while socioeconomic status has been given scant attention. Intervention in the emergency department setting is particularly under-researched, despite the fact that this setting represents the first point of contact with health services for many people at risk of suicide.

Methods

Definition of suicidal behaviours

Suicidal behaviour is complex and may exhibit different forms and levels of severity ranging from suicidal ideation, suicide gestures, suicide threats, suicide plans, suicide attempts, to completed suicide. There are important differences between suicide ideators, attempters and completers; while there is a large number of people who think about suicide, very few make actual attempts and of those who make attempts only a small subset complete the act. Therefore, it is essential to have an operational definition of what will be investigated in this review.

The lack of consensus among researchers on how suicidal behaviour should be defined has led to difficulties in comparing results from different studies and, as a result, a consensual nomenclature of suicidal behaviour has been recommended (18-20).

For the purpose of this literature review:

- *suicide* is defined as the act of intentionally ending one's own life
- *suicidal behaviours*, or nonfatal suicidal thoughts and behaviours, are classified as *suicidal ideation*, which refers to any self-reported thoughts of engaging in suicide-related behaviour intended to end one's life
- *suicide plan* refers to a specific formulation of a method by which to die
- *suicide attempt* refers to engagement in self-harming behaviour in which there is some wish to die.

While intent to die is difficult to prove in many suicide cases, it is important to distinguish between deliberate self-harm (DSH) and DSH with the intent to die. Some people presenting to EDs with self-induced injuries may not have intended to die and are not deemed suicidal, nor are they the focus of this review.

Systematic identification and review of the scientific literature

Systematic review of the literature involved identification, critical appraisal, synthesis and summary of literature relevant to the research questions developed. Table 1 summarises the search methodology undertaken to identify relevant literature and the methodology used to review the literature collected.

Table 1: Questions specifically addressed in this systematic review

Risk factors
1. What are the risk factors for suicide attempts?
2. What are the key protective factors for suicide attempts?
Assessment of risk of suicide
3. Are there existing reliable and valid screening instruments in emergency departments for use by non-mental health clinicians, as well as trained mental health workers and other acute care providers, to assess suicide risk?
Management and intervention
4. Which interventions have been shown to reduce the risk of suicide in patients who are discharged from hospital after an attempted suicide, compared to usual care?
5. What interventions (in person, printed materials and electronic resources) can facilitate continuity of care post discharge from the emergency department?
6. What length of follow up is needed to reduce the risk of repeated suicide attempts or completed suicide?
7. What is best practice in the clinical management of suicide risk in Indigenous, culturally and linguistically diverse communities and the older population?

Electronic bibliographic database search

An initial search was conducted to identify recent key systematic reviews. To identify further relevant reviews and high-quality primary studies, subsequent searches included online databases of peer-reviewed published research (MEDLINE, EMBASE, AMED, PsycINFO) and databases of systematic reviews such as the Cochrane Library Online and Health Technology Assessment Database.

Hand searching of key journals was not undertaken for the literature review. Given time and resource constraints, it was not feasible for this to form part of the process, although it is accepted that this means some relevant trials may be missed and introduces the possibility of a degree of bias in the process.

A list of key terms (Table 2*)* was used for searching the major electronic bibliographic databases. Only literature published since January 1997 was included. The search was conducted in February 2009. In all, once duplicates were removed, 900 abstracts were downloaded to EndnoteX2 for review.

Table 2: Key search strategy

Search span	1997−2009
Medline MeSH terms and subheadings	Suicide, suicide attempted, crisis intervention, acute care, emergency department, screening, exp self-injurious behaviour, exp antipsychotic agents, exp psychotropic drugs, exp antidepressant agents, exp tranquilising agents, psychosocial risk assessment, psychopharmacology, suicide risk measures, inpatient suicide, outpatient suicide, suicide triage, mental health triage in emergency departments, practice guideline, after care
PsycINFO search terms	Suicide, self-destructive behaviour, attempted suicide, suicidal ideation, suicide prevention, self-inflicted wounds, self-mutilation, side-effects drug, risk factors, risk analysis, exp drugs, drug therapy, inpatient suicide, outpatient suicide, treatment, after care
Inclusion criteria	English, human, inclusion of outcome data, sufficient study size, no duplication

Types of studies

All available systematic reviews, meta-analyses, intervention studies and observational studies (cohort and case control studies) were considered for inclusion. Non-systematic reviews, comments, letters, case reports and editorials were excluded.

Examination of context

In addition to examination of peer-reviewed published literature, we conducted searches to identify international and Australian policy, information and strategic documents relevant to suicide risk assessment and management, including:

- 'grey literature', such as government and health services reports
- websites of research institutes, health organisations, professional organisations (for instance, colleges) and other relevant non-government organisations.

Review process

An initial analysis of abstracts from the literature search was completed. The citation review process included:

- reading the title and abstract of each citation and reviewing the key word list
- scanning the abstract for methods and tools used to assess suicidal behaviour, suicidal ideation, risk factors, protective factors and suicide outcomes

- passing or failing the citation based on inclusion or exclusion criteria (see below) and subcategorising accordingly.

Citations that the principal reviewer felt did not clearly meet all pass or fail criteria were marked 'undecided'.

Limits on the search

To pass the initial screen for ordering the full text article, the title or the abstract had to meet the following criteria.

- The article must have been published in 1997 or later.
- The article must have been published in the English language.
- The article must have included guidelines, systematic review or meta-analysis of primary studies, or be a primary study (randomised controlled trial, cohort study, case control study).
- The article must have included assessments or interventions investigated in emergency departments or other acute care settings.
- The study population needed to contain at least six participants.
- The article must have contained reports of at least one primary outcome measure: repeated presentations for suicidality; repeat suicide attempts; mortality from suicide; suicidal behaviour; or suicidal ideation.
- The article must have included a target population relevant to the characteristics of the proposed guidelines.

Publications were **excluded** if:

- they were available only as abstracts
- the study population concerned primarily children under the age of 12 (more than 50% of participants)
- the studies focused on: people who undertake deliberate self-harm without suicide intent; the treatment of people with drug or substance abuse, or dependence, whose treatment is directed to their addiction rather than any suicide attempt; school-based suicide prevention interventions; economic analyses
- the studies were of small sample size (five or fewer cases)
- the studies dealt exclusively with inpatients
- the studies failed to provide any data relevant to the evaluation of the intervention discussed
- the studies dealt exclusively with post intervention
- the studies focused on interventions for mental illness *not* including outcomes related specifically to suicide or suicidal behaviour
- the studies were of poor quality (inadequate description of methods and results)
- citations were letters to the editor, conference proceedings, dissertations, editorials or comments.

All articles were further categorised according to the following:

- intervention studies
- risk assessment
- risk factors
- youth
- elderly
- culturally and linguistically diverse or Indigenous populations
- rural and remote
- epidemiological studies.

Based on the above methodology, approximately 368 abstracts were selected for further review.

The application of the inclusion criteria for this review means that studies of suicidal thoughts, ideation or suicidal behaviour such as self-harm **without** clear suicidal intent are excluded.

Critical appraisal of studies

For articles that met the inclusion criteria or the methods section review, the full article was retrieved for further evaluation and critical appraisal. The process was guided by the NHMRC's handbook series[1] on preparing clinical practice guidelines and *A Guideline Developer's Handbook: SIGN50*[2]. The SIGN Methodology Checklists 1−5 were used for the critical appraisal. Each checklist includes an assessment of the methodological quality, summary of the key points about the study and the study's applicability to the patient group targeted by the guidelines.

For assessing the validity of the literature, we adopted the SIGN evidence grading system (Table 3) to rate the level of evidence in each study.

The quality appraisal (evidence) tables, together with level of evidence and a summary of the study design and quality assessment for each of the included studies, are shown in Appendices A - E. The evidence tables were then circulated among our Technical Expert Reference Group (TERG) for peer review. The group also met to discuss the overall weight of the evidence pertaining to the topics, and possible recommendations. Appendix F lists the names of group members and their affiliations.

The scope of this report is to evaluate the best evidence currently available of the quality of design and implementation shown by individual studies, rather than to provide an overview of outcomes for the primary literature without any consideration of study quality. Discussion of the body of level three or four evidence is therefore outside the scope of this report, but will be addressed in the guideline itself.

Table 3: SIGN evidence grading system for clinical practice recommendations[3]

1++	Evidence obtained from a high-quality systematic review or meta-analyses of all relevant randomised controlled trials (RCTs), or RCTs with a very low risk of bias
1+	Evidence obtained from at least one properly designed RCT, or RCTs with a low risk of bias
1-	Meta-analyses, systematic reviews or RCTs with a high risk of bias
2++	Evidence obtained from well-designed case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+	Evidence obtained from well-designed cohort or case-control studies with a low risk of confounding or bias, and a moderate probability that the relationship is causal.
2-	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, for example, case reports, case series
4	Opinions of respected authorities based on clinical experience, descriptive studies or reports of expert committees

Relevant articles were narrowed to 62 key studies. To make the main text of this report more readable, the full quantitative data relating to findings of several key included studies have been reported only in the evidence tables (Appendix A).

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[1] *A guide to the development, evaluation and implementation of clinical practice guidelines accessed online 15 January 2009: http://www.nhmrc.gov.au/publications/synopses/cp30syn.htm*

[2] *SIGN50: A Guideline Developer's Handbook accessed online 21 January 2009: http://www.sign.ac.uk/guidelines/fulltext/50/index.html*

[3] *The Scottish Intercollegiate Guidelines Network (SIGN) Methodology Checklists 1-5 accessed online 21 January 2009: www.sign.ac.uk/methodology/checklists.html*

Findings

This chapter presents the results of the systematic review of issues relating to screening for suicide risk and treatments, and is organised in terms of the key questions introduced in the Methods section (Table 1). Tables 4 and 5 provide a brief summary of key information from articles relevant to selected key questions. The hierarchy of evidence for studies of harm (risk) and interventions includes systematic reviews (meta-analyses), the highest level of evidence, followed by cohort studies (prospective or retrospective), and case control studies (retrospective). The basis for non-evidence-based suicide risk factors comes from case reports, case series, clinical opinion and clinical consensus[4]. Clinical opinion and consensus are important in suicide risk assessment, if buttressed by evidence-based studies. Evidence tables, which provide a more detailed abstraction of information for a majority of the articles pertaining to selected key questions, are found in Appendices A-E.

Key question 1: What are the risk factors for suicide attempts?

Research suggests that suicide and suicidal behaviours are strongly associated with certain mental health conditions, such as mood disorders, anxiety disorders, schizophrenia, eating disorders and substance use disorders (2, 21-30). Previous suicidal behaviour, including prior attempts and behavioural rehearsal are significant risk factors for further suicidal behaviour (22, 24, 28, 31, 32). Hopelessness, aggression, recklessness and impulsivity are individual characteristics that have been linked to suicidal behaviour (2, 22, 28). Family factors, including high levels of conflict, parental mental illness and a family history of suicidal behaviour can elevate the risk for suicide (2). Many who die by suicide have a history of childhood physical or sexual abuse (33, 34). Adolescents and young adults with a history of childhood abuse are three times more likely to become depressed or suicidal than those without such a history. Stressful life events, which typically precipitate suicidal acts, further contribute to suicide risk, especially in combination with existing vulnerabilities (2, 23, 29, 35). These events commonly include interpersonal conflict, rejection, failure, unemployment, financial stressors, humiliation and loss. Rurality, and its associated factors such as rural socioeconomic decline, health service availability and accessibility, culture, community attitudes to mental health and help seeking, and access to firearms, has also been identified as contributing to higher rates of suicide (3, 36-39).

Medical or psychiatric comorbidities are independent suicide risk factors. Psychiatric patients often present with more than one psychiatric disorder (26, 27, 40). Using a case-control design, Hawton et al. (2003)(40), assessed 111 patients who had attempted suicide and found that more patients with comorbid disorders had made previous and repeated attempts during the follow-up period. Comorbidity of Axis I disorders and personality disorders was present in 44 per cent of patients. http://www.psychiatrictimes.com/image/image_gallery?img_id=1364999&t=1231962005097Meanwhile, findings from a national population survey of 5,877 respondents showed that a dose-response relationship existed between the number of comorbid psychiatric disorders and suicide attempts (41). Physical illness may increase the risk of suicide in older people, even when the effects of depression are accounted for (42, 43).

[4] National Health and Medical Research Council (NHMRC). *How to use the evidence: assessment and application of scientific evidence.* Canberra: NHMRC, 2000.

Table 4: Suicide risk and protective factors: examples of evidence-based studies

Risk factors	Systematic review and meta-analysis	Prospective cohort study	Retrospective cohort study	Case-control study	Cross-sectional survey
Past psychiatric history	Arsenault-Lapierre et al. 2004[21] Evans et al. 2004[22] Neeleman 2001[29]	Cooper et al. 2005[23]	Tidemalm et al. 2008[24]		
Current mental illness	Arsenault-Lapierre et al. 2004[21] Harris and Barraclough 1997[25] Neeleman 2001[29] Hawton et al. 2005[30]			Agerbo et al. 2002[26]	De Leo et al. 2005[2] Nock and Kessler 2006[27]
Comorbidity				Hawton et al. 2003[40] Agerbo et al. 2002[26]	Nock and Kessler, 2006[27]
Family relationship disturbance					De Leo et al. 2005[2]
Recent suicide of somebody close					De Leo et al. 2005[2]
Childhood physical/sexual abuse	Evans et al. 2004[22]	Brown et al. 1999[34]			
Unipolar depressive disorder	Arsenault-Lapierre et al. 2004[21] Evans et al. 2004[22] Harris and Barraclough 1997[25]		Tidemalm et al. 2008[24]		Rogers et al. 2002[28] Nock and Kessler 2006[27]
Hopelessness	Evans et al. 2004[22]				Rogers et al. 2002[28]
Worthlessness					Rogers et al. 2002[28]
Drug/alcohol abuse/dependence	Arsenault-Lapierre et al. 2004[21] Evans et al. 2004[22] Neeleman 2001[29]	Cooper et al. 2005[23]			De Leo et al. 2005[2] Rogers et al. 2002[28]
Impulsivity					De Leo et al. 2005[2] Rogers et al. 2002[28]
Self-harm	Neeleman 2001[29]	Cooper et al. 2005[23]	Hawton et al. 2003[44]		Nock and Kessler 2006[27]
Suicidal ideation	Evans et al. 2005[22]				Rogers et al. 2002[28]
Prior suicide attempt			Tidemalm et al. 2008[24]		Rogers et al. 2002[28]
Stressful life events	Neeleman 2001[29]	Cooper et al. 2005[23]			De Leo et al. 2005[2]

Physical illness		Cooper et al. 2005[23] Turvey et al. 2002[42]		Quan et al. 2002[43]	De Leo et al. 2005[2]
Social isolation		Cooper et al. 2005[23]			Rogers et al. 2002[28]
Psychiatric illness and/or substance abuse during pregnancy or postnatal period			Gandhi et al. 2006[47]	Comtois et al. 2006[45]	
Antidepressant use	Barbui et al. 2009[49] Bridge et al. 2007[50] Fergusson et al. 2005[51] Gunnell et al. 2005[52]				
Psychiatric hospitalisation				Qin et al. 2005[48]	
Protective factors					
Good communication with family members	Evans et al. 2004[22]				
Problem-solving confidence				Donald et al. 2006[58]	
Social connectedness				Donald et al. 2006[58]	
Locus of control				Donald et al. 2006[58]	
Reasons for living					Malone et al. 2000[59]

Table 5: Risk assessment tools and interventions for suicide: examples of evidence-based studies

Risk assessment	Systematic review and meta-analysis	Randomised controlled trial	Prospective cohort study	Case-control study	Cross-sectional survey
Beck hopelessness scale	McMillan et al. 2007[58]			Beck et al. 1999[62]	
Suicide ideation questionnaire					Horowitz et al. 2001[59] Prinstein et al. 2001[61]
Scale for suicidal ideation				Beck et al. 1999[62]	
Risk of suicide questionnaire					Horowitz et al. 2001[59]
Suicide assessment scale					Nimeus et al. 2000[60]
Suicide intent scale					Nimeus et al. 2000[60]
Parent-reported suicidality					Prinstein et al. 2001[61]
Clinician-rated suicidality					Prinstein et al. 2001[61]
Intervention					
Emergency care		van der Sande et al. 1997[69]	Rotheram-Borus et al. 2000[68]		
Intensive care plus outreach		van der Sande et al. 1997[69]			
Cognitive behavioural therapy	van der Sande et al. 1997[64]	Brown et al. 2005[63]			
Psychotherapy	McMain et al. 2007[72]	Guthrie et al. 2001[71]			
Dialectical behavioural therapy	McMain et al. 2007[72]				
Problem solving		van der Sande et al. 1997[69]			
Psychosocial crisis intervention	van der Sande et al. 1997[64]		Rotheram-Borus et al. 2000[68]		
Day hospital care	Marshall et al. 2001[66]	Arnevik et al. 2009[67]			
Multisystemic therapy		Huey et al. 2004[70]			
Telephone contact		Cedereke et al. 2002[74] Vaiva et al. 2006[73]			
Postcards		Carter et al. 2005[76] Carter et al. 2007[75]			
Intensive contact by letter		Motto and Bolstrom 2001[65]			

Older adults with mental disorders and coexisting cancer, prostatic disorder (excluding prostatic cancer), or chronic pulmonary disease were more likely to complete suicide than those without the medical illness (43).

One prospective cohort study found that the risk of suicide in deliberately self-harming individuals is approximately 30 times higher than in the general population (23). Suicide rates were highest within the first six months after the initial self-harm, and female patients in particular were at high risk for suicide. Similarly, the findings of a meta-analysis of 146 studies, reported from 14 cohorts and over 21,000 subjects, show that persons who self-harm (suicidal intent was not measured by the authors) are 25 times more likely to die by suicide, compared with those who do not self-harm (29). Moreover, in a retrospective follow-up study of nearly 12,000 patients, a significant and persistent risk of suicide remained at 15 years after an episode of deliberate self-harm (44). The authors found the risk was far higher in men than in women. Suicide also increased markedly with older age at initial presentation.

Pre-existing psychiatric illness or substance abuse is a risk factor for postpartum suicide (45-47). A case-control study comparing 355 women who were hospitalised for a postpartum suicide attempt and 1,420 controls found that women with a psychiatric disorder, substance use disorder or a dual diagnosis had a dramatically increased risk of a postpartum suicide attempt (odds ratios, 27.4, 6.2 and 11.1, respectively) (45). Postpartum admission for a psychiatric condition conferred a 70-fold increased risk of suicide in the first year after giving birth in one epidemiological study (46).

Suicide risk is highest in the first month after discharge from psychiatric inpatient care (5, 48), and the increased risk remains present for at least five to ten years after last discharge (1). A large case-control study found that for men and women there were two sharp peaks of suicide risk, occurring in the first week after admission and the first week after discharge (48). Examining the adjusted risk ratio for suicide across the times since psychiatric admission, the authors found the risk of suicide in the first week following discharge was 102 times in men and 246 times in women. The study also found that people admitted for shorter periods are at increased risk, as are people admitted for affective disorders.

Depression is a key risk factor for suicide (25). While data continues to accumulate on the potential increased risk of emergent suicidal thoughts or behaviours with antidepressant use, the present consensus in the literature appears to support the possibility of an increased risk in youth, particularly during the first few months after commencing treatment. It also acknowledges the fact that depression is common, can be associated with significant morbidity, including suicide, and is treatable with these medications (49-52).

In addition to the well-documented individual and family-level risk factors for suicide, research has documented other less visible forms of risk, including the effects of oppressive social practices and historical relations of power on certain groups and populations in western society. These include, for example, the negative historical effects of colonisation on Indigenous youth (53, 54). It has been suggested that many of the mainstream social risk factors for suicide cannot be broadly applied to Aboriginal populations (55, 56). Aboriginal communities and community members have been dealing with the problem of suicide for several decades and any models of understanding and preventing suicide need to be grounded in Indigenous concepts and approaches (54, 55, 57). Among Australian Aborigines, the group who are most likely to commit suicide (young adult males) have predisposing lifestyle factors such as high alcohol consumption and recklessness. They also have immediate socio-cultural factors such as unemployment, social change, and cultural conflict that put them at risk, as well as the developmental experiences of this group in a disadvantaged demographic (55).

Finally, over half of a sample of Australian residents who participated in a postal survey reported that their suicidal process did not follow a continuum of increasing severity over time, but rather fluctuated irregularly before or around the time they attempted suicide (2). This presents few opportunities for suicide prevention strategies to intercept a suicidal ‘pathway’.

Key question 2: What are the key protective factors for suicide attempts?

Protective factors refer to those factors and experiences that appear to reduce risks for suicide. We found very little research that has addressed protective factors and more research is clearly warranted. Preliminary evidence suggests that the following factors may serve to protect youth against a range of social problems: strong individual coping and problem-solving skills; experience with success and feelings of effectiveness; a strong sense of belonging and connection; interpersonal competence; family warmth, support and acceptance; success at school; strong cultural identity; and community self-determination (22, 58).

In a cross-sectional study of 84 patients with symptoms of major depressive disorder, the depressed patients who had not attempted suicide expressed a number of reasons for living, compared to depressed patients who had attempted suicide (59). Reasons for living were anything that the patient believed prevented him or her from attempting suicide, such as greater responsibility toward family, more fear of social disapproval, more moral objections to suicide, greater coping and survival skills, and more fear of suicide. The authors concluded that the assessment of reasons for living should be part of the assessment of patients at risk for suicide.

Key question 3: Are there existing reliable and valid screening instruments in emergency departments for use by non-mental health clinicians as well as trained mental health workers and other acute care providers to assess suicide risk?

Studies have revealed that a significant number (more than 40 per cent) of people who attempted or completed suicide had contact with a healthcare professional in the months, weeks or days prior to their death or attempt (5-7). Identifying people at high risk of suicide is thus an important task for emergency departments and mental health services. Few well-validated screening measures exist and many of the available assessment instruments are cumbersome for health professionals to use given the time restraints and practical challenges of emergency department and acute care settings (60). The assessment instruments generally lack sensitivity and specificity, so they do not suffice as first-tier screenings in acute care settings and must be combined with clinical judgment (60-64). Data from five of these studies appears in Appendix A.

One suicide risk assessment instrument, the Risk of Suicide Questionnaire, was designed as a brief four-item suicide screening for use in emergency departments (61). While the items had good content validity and a sensitivity of 98 per cent for detecting high-risk adolescents, their specificity was only 37 per cent, requiring time-pressured staff to manage false positives.

The assessment of people at risk of suicide can be informed by knowledge of risk and protective factors. The risk factors identified can provide a framework for identifying imminent risk of suicide within a more comprehensive evaluation. Each factor alone is not predictive of an individual's risk; however, the presence of multiple predisposing risk factors should alert the clinician to situations where a more careful assessment is required (15).

As suicidal behaviour is often a symptom of an underlying mental health problem (21, 25), it has been suggested that suicide risk assessments should be conducted in parallel with a psychiatric assessment (15, 62).

Key question 4: What interventions have been shown to reduce the risk of suicide in patients who are discharged from hospital after an attempted suicide, compared to usual care?

Cognitive behavioural therapy

One RCT reported significantly greater reductions in attempted suicide following treatment with cognitive behavioural therapy (CBT), in comparison with treatment as usual for adults (average age 35) attending an emergency department as a consequence of a suicide attempt (a repetition rate of 24 per cent versus 42 per

cent) (65). Although a substantive reduction in attempted suicide was reported for the CBT group, this study found no significant differences in outcomes for suicidal ideation between the intervention group and the treatment-as-usual group at any assessment point.

A systematic review and meta-analysis examined 15 RCTs that tested various psychosocial interventions versus standard care for suicide attempters (66). The authors found a statistically significant protective effect of CBT on repeated suicide attempts, based on four small studies. However, no benefit was determined for psychiatric management of poor compliance versus standard care, guaranteed in-patient shelter or psychosocial crisis intervention. Limitations to these findings were: methodological concerns over the heterogeneity of studies with respect to treatment protocols; treatment population and high baseline rates of suicide; study design and outcome; and publication bias (negative results are less likely to be published).

Contact by letter

One trial tested a low-intensity outpatient intervention to usual care in a group of patients who had been admitted to an inpatient psychiatric facility either depressed or suicidal and who had declined therapy after hospital discharge (67). The intervention group received a brief contact letter once every month for four months, followed by once every two months for eight months and then once every three months for four years. The control group received no letter. The outcome of interest was suicide and at the two-year follow up, the risk of suicide attempts in the contact group had decreased significantly.

Day hospital care

A systematic review of RCTs comparing day hospital versus outpatient care for psychiatric disorders, including personality disorders, found only weak evidence suggesting day treatment programs were superior to outpatient care with respect to improved psychiatric symptoms (68). Day hospital care was defined as a day-treatment program, day-care centre or transitional day hospital. None of the included studies specifically examined post-suicide attempt patients.

A recent randomised controlled study of long-term psychotherapy for 114 patients with personality disorders compared 18-week day hospital psychotherapy (DHP) followed by weekly outpatient conjoint individual and group psychotherapy with outpatient individual psychotherapy (OIP) (69). At the eight-month follow up, the authors found a modest general improvement for a broad range of clinical outcome measures (which included attrition rate, suicide attempts, suicidal thoughts, self-injury, psychosocial functioning, symptom distress, and interpersonal and personality problems), but there were no indications of superiority of one treatment condition over the other.

Emergency department care

The single cohort study that met our inclusion criteria evaluated emergency department intervention targeting both urban Hispanic females aged 12 to 18 years, who presented with a suicide attempt, and their mothers (70). The brief three-component crisis intervention occurred during the emergency room visit and included emergency room staff training, adolescent-mother pairs viewing a video and a family therapy session. Afterwards, both the intervention and control groups received standardised outpatient follow-up treatment. Emergency room, family-based therapy did not produce a statistically significant reduction in repeated suicidal behaviour over 18 months of follow up. However, the authors did find benefit for the intervention group with depressive symptoms at 18 months (4.9 per cent versus 10.1 per cent, $P < 0.01$).

Intensive care plus outreach

One RCT found that intensive psychosocial treatment of suicide attempters, continuity of care and problem-solving treatment did not reduce repeated suicide attempts (71). Patients over 15 years of age who presented to an emergency department following a suicide attempt were randomised to either an intensive intervention involving short hospital admission and outpatient problem-solving therapy with a community, or treatment as usual, which was not described in any detail. This study was limited by the small number of

patients with poor response to follow up. In addition, the broad approach of this study did not pay enough attention to psychological processes that characterise many repeat suicide attempters, such as an inability to cope with daily stressors or to apply problem-solving skills.

Multisystemic therapy

One study evaluated the efficacy of multi-systemic therapy (MST), a community-based family systems therapy, in reducing suicide among predominantly African American youths referred for emergency psychiatric hospitalisation (72). Youths presenting with psychiatric emergencies were randomly assigned to MST or hospitalisation followed by community aftercare. Based on youth reports, MST was more effective than emergency hospitalisation at decreasing rates of attempted suicide at a one-year follow up; also, the rate of symptom reduction over time was greater for youths receiving MST. Treatment effects were not found for depressive affect, hopelessness or suicidal ideation. The results of this study generally support the effectiveness of MST at reducing attempted suicide in psychiatrically disturbed youngsters.

Psychotherapy

In an RCT, Guthrie et al. (2001) (73), measured suicidal ideation by comparing four sessions of interpersonal psychotherapy delivered in the patient's home by nurse therapists to usual care. The patients ranged from 18 to 65 years in age. In the analysis, patients treated with four sessions of interpersonal psychotherapy showed a significantly lower degree of both suicidal ideation and repeated self-harm at six-month follow up. As 56 per cent of participants had a history of psychiatric treatment, the study may not be applied to other people who deliberately self-harm, but have less severe psychological problems.

In a systematic review of 15 RCTs, 15 uncontrolled trials and two meta-analyses on the effectiveness of psychosocial treatments on suicidality in personality disorders, one author determined that there was insufficient data to determine whether any psychosocial intervention can reduce the incidence of completed suicides in individuals with personality disturbance (74). However, there is preliminary evidence that long-term treatments such as dialectical behaviour therapy (DBT), CBT, schema-focused therapy and psychoanalytic day treatment have some efficacy in lowering the rates of suicidal behaviours in patients with borderline personality disorder.

Key question 5: Which interventions (in person, printed materials, and electronic resources) can facilitate continuity of care post discharge from the emergency department?

The evidence is unclear as to whether telephone support after discharge from an emergency department provides an effective intervention to reduce further suicide attempts. Two studies investigated the impact of randomly allocated telephone intervention with the aim of improving motivation for professional treatment, reducing the rate of suicide re-attempts and suicidal ideation (75, 76). The studies found no significant difference between telephone contact and usual care in the proportion of people repeating suicidal behaviour, or in completed suicides, with up to 13 months follow up.

A slightly more optimistic outcome was observed from in an Australian RCT that evaluated ongoing contact via postcards sent to people following discharge from hospital for self-poisoning (77, 78). While no significant differences were found in the absolute likelihood of further admissions, the intervention group, who received eight supportive postcards enquiring about their well-being over a 12-month period, did show a substantive and significant reduction in the total number of episodes recorded (192 episodes for the control group versus 101 for the intervention group). This minimalist intervention has the potential to produce a substantial outcome in clinical terms. Further evidence from this study demonstrated that the impact primarily related to improvements for women rather than men, suggesting that the intervention may benefit from targeted rather than general implementation.

Key question 6: What length of follow up is needed to reduce the risk of repeated suicide attempts or suicide?

We found no studies that addressed the issue of when it is appropriate to stop an intervention. One RCT provided preliminary evidence to suggest that continued contact by letter for at least the first two years after a patient is discharged from psychiatric care can reduce the likelihood of future death by suicide (67). At five-year follow up, intervention and control groups did not significantly differ in the proportion of patients who completed suicide (3.9 per cent versus 4.6 per cent).

It does appear, however, that some patients would benefit from ongoing care. Reductions in care have been associated with suicide in people with mental illness, implying that maintaining care beyond the point of clinical recovery is important in protecting high-risk individuals (79). Furthermore, a retrospective study determined that suicide risk can persist for as long as four decades, or an entire adult lifetime, after an initial suicide attempt by self-poisoning (80).

Key question 7: What is best practice in clinical management of suicide risk in Indigenous, culturally and linguistically diverse communities and the older population?

We found no published intervention study for the geriatric population conducted in an acute care setting. However, the Prevention of Suicide in Primary Care Elderly − Collaborative Trial (PROSPECT) is currently being conducted in the primary care setting. This RCT aims to determine whether placement of a depression health specialist in primary care practices will have a favourable impact on rates of depression, hopelessness and suicidal ideation in elderly primary care patients with major or persistent minor depression. Preliminary results suggest that suicidal ideation and other symptoms of depression declined at a faster rate in intervention patients than the usual care group, peaking at four months of treatment (81).

We also found no published intervention or risk assessment study for Indigenous or culturally and linguistically diverse communities conducted in an acute care setting. Hospital emergency services are often a point of first contact for Aboriginals at risk of self-harm, many of whom present with a confounding association of alcohol and self-harm (55). This means that clinicians must also have expertise in working with Indigenous patients affected by alcohol and ensure that the patient's care is not compromised when alcohol is involved.

A Canadian study demonstrated the feasibility of using DBT with an adolescent inpatient sample, which included Aboriginal youth (25 per cent of the DBT group) (82). Sixty-two adolescent inpatients with suicide attempts or suicidal ideation received either DBT or treatment as usual. Treatment with DBT significantly reduced behavioural incidents compared with usual care. Aboriginal youth responded to treatment with the same outcomes as non-Aboriginal youth, though further empirical studies are needed to define the application of DBT to Aboriginal communities more generally (57).

Discussion

The emergency department setting is the first point of contact for a substantial proportion of people presenting with suicidal behaviour and therefore is a critical point in the care pathway. It is, in many cases, a potential springboard to other mental health services. Despite the importance of this setting in the prevention of suicidal behaviour and suicidal ideation, the availability of evidence to suggest which suicide risk assessment tools and interventions specifically focused on the emergency care setting are likely to be effective is very limited. Moreover, the length of follow up necessary to reduce the risk of future suicide attempts is a poorly researched area.

Defining people at high risk of suicide is an important task and can be informed by knowledge of risk and protective factors. Nevertheless, translating the contribution of multiple risk factors for a given individual into decisions for treatment is difficult. In the emergency care environment, rapid decisions on further assessment and treatment are necessary, and often the reasons for suicidal behaviour and the personal background are neglected or not well understood by clinicians (83). The risk factors identified in this review, though not exhaustive, can provide a framework for categorising individuals at imminent risk of suicide within a comprehensive evaluation. Virtually all psychiatric disorders, except mental retardation, are associated with an increased risk of suicide. The importance of making an accurate psychiatric diagnosis, one of the most important indicators of risk for suicide, is essential to competent suicide risk assessment.

This review found that very few well-validated risk assessment measures exist and none of the existing measures can accurately predict a suicide attempt with high specificity (84). While some measures are useful in the clinical setting, most suicide assessment instruments were not designed to meet the time constraints and practical challenges of the high-stimulus, low-privacy emergency department setting.

In terms of interventions, the approaches most pertinent to this setting, which find some support in the literature, include the maintenance of ongoing contact following discharge and the provision of specialist follow-up care. Individualised and intensive CBT have shown some promise in reducing attempted suicide and self-harm. There is currently little evidence relating to the effectiveness or otherwise of non-pharmaceutical interventions for suicidal ideation. The evidence that does exist presents only equivocal support for the use of CBT in the emergency care context.

There is some limited evidence from higher quality studies that suicidal ideation may be reduced, in the short term at least, by the use of telephone-based support, with noninterventionist styles of communication (for example, postcards and letters) demonstrating a greater impact on reductions in suicidal ideation. All of these approaches, however, require further evaluation to confirm their effectiveness in reducing self-harm, attempted suicide and suicidal ideation, particularly in the emergency department and acute-care context, and post discharge. Currently, there are no interventions that have been evaluated in the emergency department context and shown to prevent suicide.

The three primary limitations of the evidence base are that:

- the studies tend to be underpowered, which may lead to a false conclusion that a particular assessment tool or intervention does not produce a statistically significant benefit
- usual or standard care, the most common comparison group used in the studies, is poorly described or not described at all and, because it is likely to vary across multiple studies, it is often unclear what the experimental intervention is really being compared to
- there are inconsistent age ranges and lack of stratification based on age between studies, which limits our ability to make meaningful conclusions specific to particular age groups. It is also worth noting that although there are trends suggesting benefit from several interventions, all of these studies require further confirmation as the benefit has typically only been observed in one study.

It follows that in the absence of a fully developed evidence base, recommendations for practice need to focus on those approaches for which there is both the most-consistent support and the least evidence of potential harm to the client. Following that approach, this review provides some evidence that both relatively low-key interventions such as maintaining ongoing contact and short, intensive cognitive interventions with a behavioural component (for example, DBT or CBT), or even individual psychotherapy, may be of benefit. Very little is known, however, about the use of screening instruments for suicide risk in acute care settings.

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Glossary of terms

BHS	Beck Hopelessness Scale
CBT	Cognitive behavioural therapy
DBT	Dialectical behavioural therapy
DHP	Day hospital psychotherapy
DSH	Deliberate self-harm
DSM	Deliberate self-mutilation
DSP	Deliberate self-poisoning
ED	Emergency department
MADRS	Montgomery-Asberg Depression Rating Scale
MST	Multisystemic therapy
NCS	National Comorbidity Study
NHMRC	National Health and Medical Research Council of Australia
OIP	Outpatient individual psychotherapy
PRS	Parent-reported suicidality
RCT	Randomised controlled trial
RSQ	Risk of Suicide Questionnaire
SIGN	Scottish Intercollegiate Guideline Network
SIQ	Suicide Ideation Questionnaire
SIS	Suicide Intent Scale
SMR	Standard mortality ratio
SSRI	Selective serotonin reuptake inhibitors
SUAS	Suicide Assessment Scale
TCA	Tricyclic antidepressants
TERG	Technical Expert Reference Group

Appendix A: Evidence tables: Systematic reviews and meta-analyses

Study identification: Arsenault-Lapierre, G et al. 2004, 'Psychiatric diagnoses in 3275 suicides: a meta-analysis', *BMC Psychiatry*, vol. 4, pp. 37-48.				
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are the risk factors for nonfatal and fatal suicide attempts?		
Level of evidence: 2++		Country/setting: Canada, Europe (including one from Israel), North America, Australia, Asia		
In a well-conducted systematic review		In this study, the criterion is:		
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
2.1	How well was the study done to minimise bias? Code ++, +, or –	++		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	As is the case with most systematic reviews, studies have variation in diagnostic criteria used and methodological rigor, and possible between-study variation in demographic variables. These were not controlled in this paper, as it would have limited the number of eligible studies and hence, the statistical power.		
Section 3: Description of the study				
3.1	What types of study are included in the review?	RCT **Case-control**	CCT **Other**	**Cohort**
3.2	How does this review help to answer your key question?	The authors sought to conduct quantitative syntheses of overall and specific psychiatric diagnoses found in suicide studies and to explore possible gender and geographical differences in the distribution of psychiatric disorders among suicide completers. Twenty-seven studies comprising 3275 suicides were included, of which 87.3% (SD 10.0%) had been diagnosed with a mental disorder prior to their death. There were major gender differences. Diagnoses of substance-related problems (OR = 3.58; 95% CI: 2.78-4.61), personality disorders (OR = 2.01; 95% CI: 1.38-2.95) and childhood disorders (OR = 4.95; 95% CI: 2.69-9.31) were more common among male suicides, whereas affective disorders (OR = 0.66; 95% CI: 0.53-0.83), including depressive disorders (OR = 0.53; 95% CI: 0.42-0.68) were less common among males. However, the gender differences were not completely clear-cut, as where there were		

		significant differences, the female sample was older than the male sample. Geographical differences are also likely to be present in the relative proportion of psychiatric diagnoses among suicides, although again, this included a range of age groups. Psychiatric diagnoses were present in the majority of cases in all regions, ranging from 89.7% (SD 4.2%) of the American suicides had at least one diagnosis, whereas 88.8% (SD 8.9%) of the European suicides, 83.0% (SD 18.4%) of the Asian suicides and 78.9% (SD 15.3%) of the Australian suicides had at least one psychiatric diagnosis. Conclusion: Psychological autopsy studies have demonstrated that approximately 90% of suicide cases presented a psychiatric disorder detectable by means of structured diagnostic procedures.

Study identification: Barbui, C et al. 2009, 'Selective serotonin reuptake inhibitors (SSRIs) and risk of suicide: a systematic review of observational studies', *CMAJ,* vol. 180, pp. 291-7.				
Guideline topic: Assessment and management of people at risk of suicide		Key question: What is the latest data regarding antidepressant use and suicide risk? (risks and benefits)		
Level of evidence: 1+		Country/setting: various		
Section 1: Internal validity				
In a well-conducted systematic review		In this study, the criterion is:		
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.4	Study quality is assessed and taken into account.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
Section 2: Overall assessment of the study				
2.1	How well was the study done to minimise bias? Code ++, +, or –	++		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
Section 3: Description of the study				
3.1	What types of study are included in the review?	RCT **Case-control**	CCT Other	**Cohort**
3.2	How does this review help to answer your key question?	This paper reports the results of a meta-analysis of eight large-scale observational studies, involving more than 200,000 patients with moderate to severe depression, which compared the risk of suicide among patients who received SSRIs and those with no exposure to antidepressants. However, the authors found a higher rate of suicide attempts and completions among adolescents (odds ratio 1.92, 95% CI 1.51-2.44). On the contrary, a lower rate of attempted or completed		

		suicide was reported among adults whose depression was treated with SSRIs (OR 0.57, 95% CI 0.47-0.70). By comparison, a meta-analysis performed by the US FDA concluded that there was a neutral effect of SSRIs on the risk of suicide among adults aged 25–64 years. However, Barbui et al. reported a protective effect of SSRIs in this age group, and in particular for persons aged 65 or more (OR 0.46, 95% CI 0.27-0.79). Similar to a study by Gibbons et al (2007), Barbui et al. found a beneficial effect of antidepressants on the risk of suicidality among youth aged 18–24 years. Therefore, observational data suggests that age influences the risk of suicide during exposure to SSRIs, with the under-18 population at most risk and the elderly at least risk. Limitations: Authors note that observational studies have limited ability to adjust for baseline differences and are prone to bias and confounding. Confounding by severity of illness cannot be excluded in these eight selected studies. Differences between drugs could not be elucidated from the data and require further, more-detailed analysis.

Study identification: Bridge, JA et al. 2007, 'Clinical response and risk of reported suicidal ideation and suicide attempts in paediatric antidepressant treatment', *JAMA*, vol. 297, pp. 1683-1696.				
Guideline topic: Assessment and management of people at risk of suicide		Key question: What is the latest data regarding antidepressant use and suicide risk? (risks and benefits)		
Level of evidence: 1+		Country/setting: Various		
In a well-conducted systematic review		In this study, the criterion is:		
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
2.1	How well was the study done to minimise bias? Code ++, +, or –	++		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?*)*	**RCT** Case-control	CCT **Other**	Cohort
3.2	How does this review help to answer your key question?	In 2003, the Food and Drug Administration's meta-analysis of paediatric studies examined clinical trial data for 4582 children and adolescents in		

		24 antidepressant trials of 4–16 weeks' duration and demonstrated an increased risk of drug-induced suicidal behaviour when compared with placebo (relative risk 1.95, 95% CI 1.28–2.98). These results suggest that 1%–3% of children given an antidepressant could be at risk of drug-induced suicidality. In this paper, Bridge et al. conducted a meta-analysis of published and unpublished randomised, controlled and clinical trial reports looking at both the benefits and risks of antidepressants in treating children and adolescents younger than 19 years for MDD (n = 15), OCD (n = 6), and non-OCD anxiety disorders (n = 6), and reported suicidal ideation/suicide attempts. In this meta-analysis of 27 trials, antidepressants were found to be associated with a slightly higher proportion (relative risk 0.7%; 95% CI, 0.1-1.3%) of patients reporting suicidal ideation or a suicide attempt than control patients receiving placebo. There were no completed suicides in these studies. This finding is consistent with other randomised clinical trials in adults treated with SSRI antidepressants, where adults have a similar risk of either non-fatal self-harm or suicidal thoughts to those on placebo (Gunnell et al. 2005; 2006). Also, patient population studies of adolescents report lower rates of suicide attempts and of adults both attempts and completions over time as treatment continues (Valuck et al. 2004; Jick et al. 2004; Simon et al. 2007; Sokero et al. 2006; Simon et al. 2006). This paper suggests that the evidence supports the cautious and well-monitored use of antidepressant medications as one of the first-line treatment options, with the recognition that efficacy appears greatest for non-OCD anxiety disorders, intermediate for OCD, and more modest for MDD. While concerns remain of selective publication of positive trials that could lead to a biased impression of drug effectiveness (Turner et al. 2008), this meta-analysis included both published and unpublished trial data and thus is less prone to publication bias.

Study identification: Evans, E et al. 2005, 'The prevalence of suicidal phenomena in adolescents: a systematic review of population- based studies', *Suicide Life Threat Behav*, vol. 35(3), pp. 239-50.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are the risk factors for nonfatal and fatal suicide attempts?	
Level of evidence: 2++		Country/setting: Various	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	Well covered Adequately addressed	Not addressed Not reported

		Poorly addressed	Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	Not reported	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?		
3.1	What types of study are included in the review?	RCT **Case-control**	CCT **Other**	Cohort
3.2	How does this review help to answer your key question?	128 studies were included, comprising 513,188 adolescents. The mean proportion of adolescents reporting they had attempted suicide at some point in their lives was 9.7% (95% CI, 8.5–10.9), and 29.9% (95% CI, 26.1–33.8) of adolescents said they had thought about suicide at some point. Females were significantly more likely than males to report most suicidal phenomena. A lower prevalence of some suicidal phenomena was found for Asian populations. The prevalence of suicidal phenomena varied depending on the terminology used and tended to be higher in studies employing anonymous questionnaires than in studies employing non-anonymous methods (questionnaires or interviews), although most of these differences were not statistically significant. Results confirm that suicidal behaviours and thoughts are relatively common in adolescents (20-30%). Such thoughts do not always reflect severe pathology.		

Study identification: Evans, E et al. 2004, 'Factors associated with suicidal phenomena in adolescents: a systematic review of population-based studies', *Clinical Psychology Review*, vol. 24, pp. 957-979.			
Guideline topic: Assessment and management of people at risk of suicide		Key questions: i) What are risk factors for nonfatal and fatal suicide attempts? ii) What are the key protective factors?	
Level of evidence: 1-		Country/setting: various	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable

2.1	How well was the study done to minimise bias? Code ++, +, or –	Not enough detail was provided to evaluate this.		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	n/a		
3.1	What types of study are included in the review?	**RCT** **Case-control**	CCT **Other**	**Cohort**
3.2	How does this review help to answer your key question?	Reviews the evidence for specific risk and protective factors for suicidal phenomena in adolescents based on findings in community studies. Categories were 'attempted suicide' (death was the intended outcome of the behaviour) and DSH (death was not necessarily the intended outcome). Exclusions were casual thoughts of suicide. Authors found strong evidence for a direct relationship between depression and suicidal phenomena in adolescents, as well as sexual abuse. Reasonable evidence existed for an association between hopelessness and suicidal phenomena, but the link was not direct. The same was true of sleep disorders; poor body image and unhealthy eating behaviours in females; and anxiety disorders. Substance abuse disorders in general were found to be significantly associated with suicide attempts. Strong protective factors against suicidal phenomena were good communication with family members and involvement in family activities. The authors discuss the findings in the context of primary, secondary and tertiary prevention, mostly in the context of schools.		

Study identification: Fergusson, D et al. 2005, 'Association between suicide attempts and selective serotonin reuptake inhibitors: systematic review of randomised controlled trials', *BMJ*, vol. 330, pp. 396-402.			
Guideline topic: Assessment and management of people at risk of suicide	Key question: What is the latest data regarding antidepressant use and suicide risk? (risks and benefits)		
Level of evidence: 1+	Country/setting: Various		
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	++	

2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?	**RCT** Case-control	CCT Other	Cohort
3.2	How does this review help to answer your key question?	Fergusson et al. systematically reviewed data from 702 published, randomised, controlled trials on SSRIs (involving more than 87,000 patients, all age groups) and analysed the 345 studies (involving over 36,000 subjects) that contained data on suicide attempts. SSRIs were associated with increased risk for suicide attempts, compared with placebo (odds ratio, 2.28) and other therapies (OR, 1.94) but not compared with tricyclic antidepressants (TCAs). Risk for completed suicide (only 24 suicides were reported overall) did not increase for SSRIs compared with placebo, but did increase for SSRIs compared with tricyclic antidepressants (OR, 7.27). In summary, this study found a significant increase in the odds of suicide attempts for patients receiving SSRIs compared with those taking a placebo. They also noted an increase in the odds ratio of suicide attempts in comparing SSRIs with therapeutic interventions other than TCAs. In a pooled analysis of SSRIs versus TCAs, they did not observe a difference in the odds ratio of suicide attempts. See publication for authors' description of limitations of the analysis.		

Study identification: Gunnell, D et al. 2005, 'Selective serotonin reuptake inhibitors (SSRIs) and suicide in adults: Meta-analysis of drug company data from placebo controlled, randomised controlled trials submitted to the MHRA's safety review', *BMJ,* vol. 330, p. 385.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What is the latest data regarding antidepressant use and suicide risk? (risks and benefits)	
Level of evidence: 1+		Country/setting: UK	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.4	Study quality is assessed and taken into account.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	+	
2.2	If coded as +, or – what is the likely direction in which bias might affect the	The authors note some relevant trial data is likely to have been excluded because authors did not carry out a systematic literature	

	study results?	review of published literature, potentially excluding studies conducted by researchers independent of pharmaceutical companies.		
3.1	What types of study are included in the review?	**RCT** Case-control	CCT Other	Cohort
3.2	How does this review help to answer your key question?	Gunnell et al. performed a meta-analysis of all 477 published and unpublished, placebo-controlled, SSRI safety studies (involving 52,503 individuals) that were submitted by pharmaceutical companies to the British drug regulatory agency, MHRA. The researchers found no increased risk for completed suicide with SSRIs (n=16 suicides overall), but they did find modest, nearly significant evidence of increased risk for nonfatal self-harm (OR, 1.57; 95% confidence interval, 0.99-2.55); and estimated that one such event would occur for every 759 patients treated. They also found inconclusive evidence of an increased risk of suicidal thoughts (estimates compatible with a modest protective or adverse effect). Because the meta-analysis is based on both published and unpublished data submitted to MHRA, publication bias is unlikely to be a problem. Authors conclude that the risks of fatal and non-fatal self-harm among adults in this meta-analysis are consistent with findings of placebo-controlled trials in children (odds ratio 1.66, 05% CI 0.83-3.50). An increased risk of suicide and self-harm caused by SSRIs could not be ruled out in this study. It is possible, in the early weeks of treatment, that SSRIs are associated with an increased risk of suicidal behaviour. Patients should be counselled about these possible side effects and receive appropriate monitoring. Limitations: Study was underpowered to detect clinically important benefits and risks. Pooling of data makes the implicit assumption that any adverse or beneficial effects of antidepressants are the same for all products investigated.		

Study identification: Harris, EC & Barraclough, B 1997, 'Suicide as an outcome for mental disorders. A meta-analysis', *Br J Psychiatry*, vol. 170, pp. 205–28.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are the risk factors for nonfatal and fatal suicide attempts?	
Level of evidence: 1+		Country/setting: Various	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered Adequately addressed	**Not addressed** Not reported

		Poorly addressed	Not applicable	
2.1	How well was the study done to minimise bias? Code ++, +, or –	+ The authors did take measures to identify and take into account in their analysis possible biases such as subject exclusion, short follow up, form of analysis and publication bias, where possible. They also omitted 'suicide' from the search terms to avoid bias towards finding papers reporting high suicide risks.		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	Pooling data does carry the risk for reductionism, minimising heterogeneity of samples and variability between studies.		
3.1	What types of study are included in the review?	RCT **Case-control**	CCT **Other**	**Cohort**
3.2	How does this review help to answer your key question?	Harris and Barraclough conducted a systematic review and meta-analysis of 249 reports from the medical literature on the mortality of mental disorders and determined the Standard Mortality Ratio (SMR) for psychiatric disorders. They compared the relative risk of suicide for a given psychiatric disorder with the expected suicide rate in the general population (SMR of 1). The highest SMR (23.14) was associated with eating disorders. All psychiatric diagnoses, except mental retardation, had an increased SMR. The authors conclude that SMR underscores the importance of making a correct psychiatric diagnosis in suicide risk assessment.		

Study identification: Hawton, K et al. 2000, 'Psychosocial versus pharmacological treatments for deliberate self-harm', *Cochrane Database Systemic Review, (*2), CD001764.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: Which interventions have shown a reduction in self-harm (with suicidal behaviour) rates in patients with a history of deliberate self-harm, compared to no treatment or usual care?	
Level of evidence: 1++		Country/setting: Various	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	++ Adequate minimisation of bias and quality assessment	
2.2	If coded as +, or – what is the likely direction in which bias		

	might affect the study results?			
3.1	What types of study are included in the review?	**RCT** Case-control	CCT Other	Cohort
3.2	How does this review help to answer your key question?	This Cochrane Library review examined RCTs various interventions (see results) vs standard care and other comparisons for deliberate self-harm (DSH). The definition of DSH was inclusive of suicide attempts plus episodic self-mutilation. Exclusions were suicidal ideators with no self-harm, depression with DSH as an outcome variable and DSH due to mental disability (handicap). The outcome measure was repetition of DSH (follow-up period < or = 2 years). 23 RCTs were included; meta-analyses were performed where possible. Interventions examined included: • problem-solving therapy vs standard aftercare • intensive intervention plus outreach vs standard aftercare • emergency card vs standard aftercare • dialectical behaviour therapy vs standard aftercare • inpatient behaviour therapy vs standard aftercare • same therapist both in hospital and aftercare vs different therapists • general hospital admission vs discharge • flupenthixol vs placebo • antidepressants vs placebo • long-term therapy vs short-term therapy • home-based therapy vs standard aftercare. The authors concluded that there was insufficient evidence to indicate the most effective forms of treatment for DSH. No guidelines can be recommended. Most trials were small with insufficient power. The term 'standard care' is usually not defined or described, increasing methodological uncertainty. Only useful for our Guideline in so far as it outlines the heterogeneity of study design and power, and lack of evidence to support one therapy over another given those constraints.		

Study identification: Hawton, K et al. 2005, 'Schizophrenia and suicide: Systematic review of risk factors', *British Journal of Psychiatry*, vol. 187, pp. 9-20.	
Guideline topic: Assessment and management of people at risk of suicide	Key question: Risk factors for fatal and nonfatal suicide attempts in schizophrenia
Level of evidence: 2++	Country/setting: Canada, Europe (including 1 from Israel), North America, Australia, Asia

In a well-conducted systematic review		***In this study, the criterion is:***	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed**	Not addressed Not reported

		Poorly addressed	Not applicable
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable

2.1	How well was the study done to minimise bias? Code ++, +, or –	++		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?	RCT **Case-control**	CCT **Other**	**Cohort**
3.2	How does this review help to answer your key question?	Twenty-nine eligible studies were identified. Factors with robust evidence of increased risk of suicide were previous depressive disorders (OR¼3.03, 95%CI 2.06^4.46), previous suicide attempts (OR¼4.09,95% CI 2.79^6.01), drug misuse (OR¼3.21,95% CI1.99^5.17), agitation or motor restlessness (OR¼2.61, 95% CI1.54^4.41), fear of mental disintegration (OR¼12.1,95% CI1.89^ 81.3), poor adherence to treatment (OR¼3.75,95% CI 2.20^6.37) and recent loss (OR¼4.03,95%CI1.37^11.8). Reduced risk was associated with hallucinations (OR¼0.50,95% CI 0.35^0.71).		

Study identification: Mann, JJ et al. 2005, 'Suicide Prevention Strategies: A systematic review', *JAMA*, vol. 294, pp. 2064-2074.	
Guideline topic: Assessment and management of people at risk of suicide	Key questions: i) Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk? ii) What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?
Level of evidence: 1+	Country/setting: USA

In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable

2.1	How well was the study done to minimise bias?	++ low risk of bias		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?	**RCT** **Case-control**	CCT **Other**	**Cohort**
3.2	How does this review help to answer your key question?	Formal meta-analysis was not possible due to heterogeneity between studies in design and populations. A narrative synthesis was adopted instead. This paper summarises the evidence for several key areas in suicide prevention: Awareness and education; screening; treatment interventions; means restriction; and media. However, the section on screening contains no reference to data pertaining to emergency department screening or crisis assessment, and some reference to articles covering screening methods in primary care. In terms of studies on interventions, the paper reviews the evidence from several articles on pharmacotherapies, follow-up care and psychotherapy, but in limited detail. Rather than provide in-depth summaries of the evidence, this paper is useful for pinpointing articles to review individually in more detail.		

Study identification: Marshall, M et al. 2001, 'Systematic reviews of the effectiveness of day care for people with severe mental disorders: (1) Acute day hospital versus admission; (2) Vocational rehabilitation; (3) Day hospital versus outpatient care', *Health Technol Assess,* vol. 5, p. 21.			
Guideline topic: Assessment and management of people at risk of suicide	Key questions: i) What kind of follow up is needed to reduce the risk of repeated suicide attempts/suicide? ii) Which interventions have shown a reduction in self-harm (with suicidal behaviour) rates in patients with a history of deliberate self-harm, compared to no treatment or usual care?		
Level of evidence: 1++	Country/setting: Various, acute day hospital, outpatient care		
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	++ Adequate quality assessment was done and a rigorous search method used to identify eligible RCTs	

2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?	**RCT** Case-control	CCT Other	Cohort
3.2	How does this review help to answer your key question?	This was a Cochrane Library systematic review of randomised controlled trials comparing day hospital versus outpatient care for psychiatric disorders. Studies were excluded if the majority of patients were <18 or >65 years old with a primary diagnosis of substance abuse or organic brain disorder. Day hospital care was defined as day treatment program, day care centre or transitional day hospital. Outcome measures were engagement with treatment, hospital readmission, clinical outcomes, and cost of care. No included studies specifically examined post-suicide attempt patients. The authors found weak evidence suggesting day treatment programs were superior to outpatient care with respect to improved psychiatric symptoms. There was no evidence that day care centres were better or worse than outpatient treatment on any clinical or social outcome variable, or costs. One trial's evidence suggests transitional day hospital may be superior to outpatient care with respect to keeping patients engaged in treatment. Authors' conclusions: Limited evidence to justify day treatment and transitional day hospital; no current evidence to support provision of day care centres. Further research is needed to clarify the situation. This paper has relevance to our Guideline.		

Study identification: McMain, S 2007, 'Effectiveness of Psychological Treatments on Suicidality in Personality Disorders', *Revue canadienne de psychiatrie*, vol. 52 (6 Sup 1), pp. 103S-114S			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 4		Country/setting: various	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable

2.1	How well was the study done to minimise bias? Code ++, +, or –	- Unable to evaluate potential for bias because of insufficient explanation of methodology.		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
3.1	What types of study are included in the review?	**RCT** Case-control	CCT **Other**	Cohort
3.2	How does this review help to answer your key question?	This 'systematic review' identified empirical evidence for the effectiveness of psychosocial treatments of personality disorders. However, the level of evidence in each study was not formally assessed nor reported, which renders this article as more of a narrative review of the published literature rather than a critical one. Inclusion criteria were English publications involving subjects over 18 yrs of age, with preference given to RCTs but uncontrolled trials were also included due to the limited number of RCTs available. The author searched the literature up to December 2006. Exclusion criteria were not listed. Also not detailed was the criteria used to evaluate the evidence. 15 RCTs, 15 uncontrolled trials, and 2 meta-analyses were identified. The author noted a dearth of well-controlled trials in this area. Borderline personality disorder received the most research attention. 25 of the 30 studies evaluated long-term (more than 6 months) psychotherapy such as CBT or psychodynamic therapy. Patient self-reports were the predominant measure of suicidal behaviour. No studies focused on completed suicides. The limited number of controlled studies do not allow for conclusions to be drawn over the relative effectiveness of different interventions. Most of the published studies focus on BPD and not other forms of personality disorders. In addition, there is insufficient data to determine whether any psychosocial intervention can reduce the incidence of completed suicides in individuals with personality disturbance. There is some evidence, however, that psychosocial treatments can be effective in the management of suicidality. The author offers some recommendations for practice based on the literature.		

Study identification: McMillan, D et al. 2007, 'Can we predict suicide and non-fatal self-harm with the Beck Hopelessness Scale? A meta-analysis', *Psychological Medicine*, vol. 37, pp. 769-778.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk?	
Level of evidence: 1++		Country/setting: UK	
In a well-conducted systematic review		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	A description of the methodology used is included.	**Well covered** Adequately addressed	Not addressed Not reported

		Poorly addressed	Not applicable
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Study quality is assessed and taken into account.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	There are enough similarities between the studies selected to make combining them reasonable.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
2.1	How well was the study done to minimise bias? Code ++, +, or –	++ Search methodology and quantitative analysis was sufficiently rigorous.	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?		

3.1	What types of study are included in the review?	RCT Case-control	CCT Other	**Cohort**
3.2	How does this review help to answer your key question?	McMillan et al. conducted a meta-analysis of studies of hopelessness, measured using the Beck Hopelessness Scale (BHS), and suicide and non-fatal self-harm, addressing the question of how well the BHS predicts these two outcomes. The BHS is designed to identify a potential for suicide, rather than the behaviour itself. Inclusion criteria included: cohort design, suicide or self-harm as an outcome, BHS measured at time 1, suicide or self harm measured at time 2, *n* with an outcome of ≥ 10). Four studies that met this criteria provided data on suicide (*n*=2559). The length of follow-up varied substantially between these studies. All studies used adult samples. With regard to suicide (four studies), and self-harm (six studies), the authors found the BHS had high sensitivity (0.8 for both) but low specificity (0.4 for both). Following meta-regression analysis, it was found that the study setting ED vs. in-patient), length of follow up, and baseline risk were not significantly related to the diagnostic odds ratio (the ratio of odds of a positive test among those with subsequent self-harm/suicide to the odds of a positive result among those without subsequent self-harm/suicide). CAVEAT: the small number of studies probably meant insufficient statistical power to detect a substantial effect in these variables. The authors conclude that, while the BHS identifies a high-risk group for suicide and self-harm, the low specificity (indicating a high number of false positives) means it is unlikely to be useful in targeting treatment to reduce these outcomes. The authors' main finding for suicide studies was that the capacity of the BHS to identify suicide potential is less than that reported in the original validation studies (but this conclusion is based on a small number of studies).		

Study identification: van der Sande, R et al. 1997, 'Psychosocial intervention following suicide attempt: a systematic review of treatment interventions', *Acta Psychiatr Scand*. vol. 96(1), pp. 43-50.

Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?		
Level of evidence: 1+		Country/setting: Various		
Section 1: Internal validity				
In a well-conducted systematic review		In this study, the criterion is:		
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable	
1.2	A description of the methodology used is included.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.4	Study quality is assessed and taken into account.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
1.5	There are enough similarities between the studies selected to make combining them reasonable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable	
Section 2: Overall assessment of the study				
2.1	How well was the study done to minimise bias? Code ++, +, or –			
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?			
Section 3: Description of the study				
3.1	What types of study are included in the review?	**RCT** Case-control	CCT Other	Cohort
3.2	How does this review help to answer your key question?	This systematic review and meta-analysis examined 15 RCTs that tested various interventions (see results) versus standard care. Two databases were searched (Medline, PsychLit) + lateral reference search. Exclusion criteria were those mentally handicapped or with learning disabilities. Outcome measure was repetition of suicide attempt. 31 papers were retrieved, 15 met inclusion criteria (published from 1973 to 1995). Papers were grouped into four categories. Authors postulated that efforts to increase compliance with advice about aftercare, guaranteed in-patient shelter, or psychosocial crisis intervention could contribute to a reduction in repeated suicide attempts. A statistically significant difference was found for CBT (4 studies, total 122 patients, overall RR= 0.5, CI 0.3-0.8). This result may not be applicable to all suicide attempters, however, as baseline rate of previous suicide attempts was higher in this cohort. However, no significant difference was found for: 1. psychiatric management of poor compliance vs standard care 2. guaranteed in-patient shelter 3. psychosocial crisis intervention. This finding may apply to those suicide attempters who present to EDs of a general hospital and are not in need of further hospitalisation. Limitations: Authors had methodological concerns over heterogeneity of studies with respect to treatment protocols; treatment population and baseline		

		rates of suicide; study design and outcome; and publication bias (negative results less likely to be published). Also had concerns over homogeneity of categories. CBT result based on four studies, only one with an intention to treat analysis, small numbers in each study. High baseline rates of previous suicide attempts in study possibly biased the results towards high-risk patients only, less effect was seen with longer follow up.

Appendix B: Evidence tables: Randomised controlled trials

Study identification: Brown, G et al. 2005, 'Cognitive therapy for the prevention of suicide attempts: A randomised controlled trial', *JAMA,* vol. 294(5), pp. 563-570.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1+		Country/setting: USA/emergency department	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	Cumulative dropout rate at end of 18 months was 25% (n=15) for intervention and 34% (n=20) for usual care. In the intervention group, 58 of the 60 participants received cognitive therapy (1 no contact, 1 refused)	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias? Code ++, +, or –	++	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	n/a	
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are	Reasonably certain.	

	you certain that the overall effect is due to the study intervention?	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	A large proportion of the study sample was black as this demographic was more willing to participate in the trial (OR 1.2, 95%CI 1.0-1.5). Uncertain how this might have impacted results and how findings would translate to other culturally diverse groups. Also, all participants lived in an urban setting.
Section 3: Description of the study		
3.1	How many patients are included in this study?	N= 120; 60 each assigned to intervention or usual care groups. Inclusion criteria: a suicide attempt within 48 hours prior to being evaluated at the ED; ≥16 yrs old; English-speaking; ability to complete a baseline assessment; ability to provide at least 2 verifiable contacts to improve tracking for subsequent assessments; and ability to understand and provide informed consent. Exclusion criteria: medical disorder(s) that would prevent participation in an outpatient clinical trial.
3.2	What are the main characteristics of the patient population?	Cog. Ther. Usual Care Women 36/60 (60.0) 37/60 (61.7) Age, mean (SD), y 35.1 (10.1) 34.9 (10.5) CALD 42 (70.0) 36 (60.0) .34 Multiple suicide attempts 44 (73.3) 43 (71.7) 99 diagnosed. Major depressive disorder 47 (78.3) 45 (75.0) .83 Substance use disorder 44 (73.3) 37 (61.7) .24.
3.3	What intervention (treatment, procedure) is being investigated in this study?	Control: usual care from clinicians in the community as well as tracking and referral services from the study case managers. Intervention: usual care (as above) plus cognitive therapy (10 outpatient cognitive therapy sessions specifically developed for preventing suicide attempts, provided on a weekly or biweekly basis or as needed.)
3.4	What comparisons are made in the study? Are comparisons made between treatments, or between treatment and placebo/no treatment?	Participants in the cognitive therapy intervention were scheduled to receive
3.5	How long are patients followed up in the study?	18 months
3.6	What outcome measure(s) are used in the study?	Primary outcome measure was the occurrence of a suicide attempt during the follow-up period. The interviewer assessed suicide attempts by participant report. A suicide attempt was defined as 'a potentially self-injurious behaviour with a nonfatal outcome for which there is evidence, either explicit or implicit, that the individual intended to kill himself or herself.' The Suicide Intent Scale (SAI) was used to ascertain suicide intent.
3.7	What size of effect is identified in the study?	From baseline to the 18-month assessment, 13 participants (24.1%) in the cognitive therapy group and 23 participants (41.6%) in the usual care group made at least 1 subsequent suicide attempt (asymptotic z score, 1.97; P=.049). Estimated18-month reattempt-free probability in the cognitive therapy group was 0.76 (95% CI, 0.62-0.85) and in the usual care group was 0.58 (95% CI, 0.44-0.70). Participants in the cognitive therapy group had a significantly lower reattempt rate (P=.049) and were 50% less likely to reattempt suicide than participants in the usual care group (hazard ratio, 0.51; 95% CI, 0.26-0.997). Severity of self-reported depression significantly lower for the

		cognitive therapy group at 6 months (P=.02), 12 months (P=.009), and 18 months (P=.046). The cognitive therapy group reported significantly less hopelessness than the usual care group at 6 months (P=.045). There were no significant differences between groups based on rates of suicide ideation at any assessment point.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	Cognitive therapy does appear to be effective in preventing suicide attempts for adults who recently attempted suicide. However, feasibility, effectiveness and cost-effectiveness of this intervention in community-based mental health treatment settings would need to be evaluated.

Study identification: Carter, GL et al. 2005, 'Postcards from the EDge project: randomised controlled trial of an intervention using postcards to reduce repetition of hospital treated deliberate self-poisoning', *BMJ,* vol. 331, pp. 805 -807.

Follow-up article: Carter, GL et al. 2007, 'Postcards from the EDge: 24-month outcomes of a randomised controlled trial for hospital-treated self-poisoning', *British Journal of Psychiatry*, vol. 191, pp. 548-553.

Guideline topic: Assessment and management of people at risk of suicide	Key questions: i) What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care? Ii) What interventions (in person, printed materials, and electronic resources) can facilitate continuity of care post discharge from the ED?
Level of evidence: 1+	Country/setting: Australia/community

Section 1: Internal validity

	In a well-conducted RCT study:	In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited	100% available at follow up	

	into each treatment arm of the study dropped out before the study was completed?		
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias? Code ++, +, or –	++	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?		
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	Likely	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Yes, though not known to what extent the Hunter Area Toxicology Service referral population is generalisable to other settings.	
Section 3: Description of the study			
3.1	How many patients are included in this study?	Total: 772: Postcard group: 378; Control group: 394	
3.2	What are the main characteristics of the patient population?	People discharged from hospital after suicide attempt/self-harm. Percentage of people with previous admission for self-poisoning was 17% in both groups. Median age was 33 (24-42) in postcard group and 34 (23-45) in control group. Median number of psychiatric diagnoses: 2	
3.3	What intervention (treatment, procedure) is being investigated in this study?	'Postcards from the EDge', postcards were sent from the ED which a person had attended for self-harm to the discharged person at 1,2,3,4,6,8,10 & 12 months after admission for self-poisoning. The postcards contained a short message asking how the person was and suggesting they get in touch if they felt they needed further help.	
3.4	What comparisons are made in the study?	Postcards and treatment as usual versus treatment as usual	
3.5	How long are patients followed up from beginning participation in the study?	12 months (2005 paper) Up to 24 months (2007 paper)	
3.6	What outcome measure(s) are used in the study?	Repetition of self-poisoning, established via medical records.	
3.7	What size of effect is identified in the study?	No significant differences in the absolute likelihood of further admission for self-poisoning were found. However, the postcard group showed a significantly lower number of repeat episodes. Total N of episodes =192 in control, 101 in experimental group (incidence risk ratio 0.55, 95% CI 0.35-0.87, Z-2.56 p=0.01). A subgroup analysis showed that the postcard intervention significantly improved outcomes for women (IRR 0.54 95% CI 0.30-0.96 Z-2.09 p0.037), but not for men. At 24 months follow up, no significant reduction was observed in the proportion of people repeating self-poisoning in the intervention group (21.2%, 95% CI 17.0-25.3) compared with the control group (22.8%, 95% CI 18.7-27.0; χ^2=0.32, d.f.=1, P=0.57); the difference between groups was –1.7% (95% CI –7.5 to 4.2). However, there was a significant reduction in the rate	

		of repetition, with an incidence risk ratio of 0.49 (95% CI 0.33-0.73).
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	The postcard intervention is a cost-effective intervention for reducing the rate of repetition of self-harm by self-poisoning (results cannot be generalised to other forms of self-harm). However, self-harm with suicidal intent was not measured. The intervention maintained the halving of the rate of repetition of hospital-treated self-poisoning events over a 2-year period, although it did not significantly reduce the proportion of individuals who repeated self-poisoning. Data currently not available on mortality or suicide outcomes – intend to report on these at 5-yr follow up. Not known to what extent the Hunter Area Toxicology Service referral population and model of clinical service would be generalisable to other settings.

Study identification: Cedereke, M et al. 2002, 'Telephone contact with patients in the year after a suicide attempt: does it affect treatment attendance and outcome? A randomised controlled study', *Eur Psychiatry*, vol. 17, pp. 82–91.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1-		Country/setting: Sweden/psychiatric inpatient unit	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	The analytic sample was based on only the 178 patients who completed followed up.	

1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias? Code ++, +, or –		
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?		
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	Quality points were deducted for sparse data, incomplete reporting of results, and for no intention-to-treat analysis. The analytic sample was based on only the 178 patients who completed follow up.	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?		
Section 3: Description of the study			
3.1	How many patients are included in this study?	216 people	
3.2	What are the main characteristics of the patient population?	Mean age 41 years, admitted to hospital after deliberate self-harm, 51–54% with a previous history of deliberate self-harm.	
3.3	What intervention (treatment, procedure) is being investigated in this study?	Clients were randomised to either two telephone interventions in addition to treatment as usual, or no such intervention during the subsequent year. The interventions included motivational support to attend and/or to stay in treatment. At 1 month and again after 12 months the following measurements were used: GSI (SCL-90), GAF and SSI.	
3.4	What comparisons are made in the study?	Investigated the influence of repeated telephone contacts on treatment attendance, repetition of suicidal behaviour and mental health the year after a suicide attempt versus usual care (undefined).	
3.5	How long are patients followed up in the study?	12 months	
3.6	What outcome measure(s) are used in the study?	Main outcomes measures were Global Assessment of Functioning (GAF), Symptom Checklist (SCL-90), Global Severity Index (GSI), and Scale of Suicide Ideation (SSI).	
3.7	What size of effect is identified in the study?	This RCT found no significant difference between telephone contact and usual care in the proportion of people repeating deliberate self-harm over 12 months (14/83 [17%] with telephone contact v 15/89 [17%] with usual care; reported as not significant, CI not reported; results not intention to treat, 19% lost to follow up). It found similar rates in overall functioning between telephone contact and usual care (assessed by Global Assessment of Functioning Scale, mean score: 61.4 with telephone contact v 58.6 with usual care; CI not reported). It also found similar scores on the Scale for Suicidal Ideation (mean score: 5.8 with telephone contact v 4.0 with usual care; CI not reported) and on the Symptom Checklist-90 scale at 12 months (mean	

		score: 0.82 with telephone contact group v 0.88 with usual care; CI not reported). At follow-up treatment attendance was high (72% in the intervention group and 65% in the control group had psychiatric or other treatment) and did not differ between the randomised groups.
3.8	How was this study funded?	
3.9	Does this study help to answer your key question?	This study evaluated a very limited form of telephone-based contact (two phone calls at four month intervals). The evidence is unclear as to whether telephone support provides an effective intervention to reduce further suicide attempts.

Study identification: Guthrie, E et al. 2001, 'Randomised controlled trial of a brief psychological intervention after deliberate self-poisoning', *BMJ*, vol. 323, p. 135.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1-		Country/setting: UK/emergency department	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	Psychological assessments were completed on 75% of patients at the end of treatment phase and 80% of patients at follow up.	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable

Section 2: Overall assessment of the study		
2.1	How well was the study done to minimise bias? Code ++, +, or –	+
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	Possible biases include: - the large number not entered into the study - the exclusion criteria excluded people who were possibly at increased risk of suicidal behaviour in the future (e.g. patients who needed to be admitted were excluded, yet these may have been the more serious cases) - only half of the eligible participants agreed to participate
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	The data regarding further episodes of DSP are based on self-reporting and may therefore be affected by 'interpretation' or 'reporting' bias. (Outcome assessment not blinded)
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Population not representative of patients with unidentified suicide risk.
Section 3: Description of the study		
3.1	How many patients are included in this study?	587 adults presented with DSP during the recruitment period, of these 354 were ineligible. Inclusion criteria: Patients presenting at ED with an episode of DSP aged between 18-65, able to read and write English, living within the catchment area of the hospital, registered with a GP and not needing inpatient psychiatric treatment. Exclusion criteria: Requiring inpatient psychiatric treatment; not registered with a general practitioner; living outside hospital catchment area; serious medical illness.
3.2	What are the main characteristics of the patient population?	Of the 233 patients eligible for the study 119 (51%) agreed to participate. These 119 patients were similar to those who declined in terms of sex and employment status but were more likely to have a history of DSH (59% Vs 45%), to have left a suicide note at the time of current episode (23% Vs 5%), and express a wish to die (76% Vs 46%). Of the 119 participants, 66 (56%) were women and mean (SD) age was 31.2 (1.5) years. Seventy-one (60%) had a history of DSH, and 67 (56%) had a history of psychiatric treatment. 57% had made a prior suicide attempt in the intervention group, while this figure was 62% in the control group. The intervention and standard treatment groups were similar in terms of baseline characteristics with the exception of marital status (8 vs 25 married respectively).
3.3	What intervention (treatment, procedure) is being investigated in this study?	Patients in the intervention group (n=58) were offered four sessions of psychodynamic interpersonal therapy, delivered in the patient's home by a nurse therapist (50 minutes weekly), within one week of presentation. The therapy entails identifying and helping to resolve interpersonal difficulties that cause or exacerbate psychological distress. Treatment as usual (n=61) consisted of an assessment

		by a casualty doctor or a junior psychiatrist in the ED and referral back to their GP.
3.4	What comparisons are made in the study?	Four sessions of therapy delivered in the patient's home versus standard treatment.
3.5	How long are patients followed-up in the study?	6 months (including the 1 month of treatment)
3.6	What outcome measure(s) are used in the study?	Primary outcome measure was severity of suicide ideation six months after treatment as assessed by the BSSI and self-reported subsequent attempts at DSH. (Intention to treat) Secondary outcome measure included depressive symptoms at six months follow up as measured by the BDI.
3.7	What size of effect is identified in the study?	Patients who received psychotherapy showed greater improvement on the BSSI (2.8, p = 0.005) and BDI (18.8 vs 23.7, p = 0.037) compared with patients who received standard treatment. When adjusted for differences in marital scale between the groups, the differences in the scores on BSSI remained significant (p = 0.027) but the score for BDI did not (p = 0.11). At six month f/u, five patients (9%) in the intervention group c.f. 17 patients (28%) in the standard treatment group had repeated DSH (p = 0.009). There were no suicides in either group during the follow-up period. Absolute rate difference = 19.3% (95% CI: 8.6%, 30.0%) P = 0.009 The authors concluded that 4 sessions of interpersonal psychotherapy decreased both repeated self-harm attempts (ITT analysis) and SI (non ITT analysis) relative to usual care 6 months after entry into the study.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	These findings suggest that suicidal ideation and self-report of further self-harm were reduced in the intervention group at six-month follow up. The patients reported substantial reductions in both suicidal ideation and depressive symptoms that could not be explained by differential contact with health services. The findings stand in contrast with results of previous trials, which have failed to produce consistent evidence of positive effect (Hawton et al. 1998). This study provides evidence that, in addition to CBT approaches, focal psychodynamic approaches might also be effective and viable. A possible limitation is that 67 (56%) of participants had a history of psychiatric treatment although the psychiatric morbidity is not discussed. The study may therefore not be generalisable to other groups of people who DSH but have less severe psychological problems. Those who refused were at greater suicide risk, more likely to have a history of DSH, to have left a suicide note, and to express a wish to die, which still leaves open a question of the feasibility of this approach in the majority of those presenting with an overdose.

Study identification: Huey, J et al. 2004, 'Multisystemic therapy effects on attempted suicide by youths presenting psychiatric emergencies', *Journal of the American Academy of Child and Adolescent Psychiatry'*, vol. 43, pp. 183-190.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1-		Country/setting: USA/emergency department, community care	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	Not reported	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias?	Because of data limitations, authors were not able to evaluate baseline characteristics such as suicidal method, intent, lethality, and exposure to precipitating factors.	
2.2	What is the likely direction in which bias might affect the study results?	The youth assigned to multisystemic therapy started with significantly higher rates of attempted suicide than the comparison group; therefore, the findings may reflect a regression to the mean effect. In addition, sample characteristics such as the high proportion of African Americans and low-income families may mean the results are not generalisable to other community samples of suicidal youths.	

2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	Note comments above. In addition, authors note that 44% of youths in the MST treatment group were admitted for psychiatric hospitalisation during the course of treatment due to emergencies that could not be handled in community settings. In the overall MST results, the authors included both those who did and did not receive psychiatric hospitalisation during the treatment period.
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Although intensive home-based services such as multisystemic therapy are becoming increasingly available in some countries, these services are frequently not an option.
Section 3: Description of the study		
3.1	How many patients are included in this study?	156 youths, average age 12.9 yrs (SD=2.1) Inclusion criteria: age 10-17; Medicaid funded or without health insurance; residing in a non-institutional environment. Exclusion criterion was listed as autism.
3.2	What are the main characteristics of the patient population?	Youths were approved for psychiatric hospitalisation because of suicidal ideation/planning or attempted suicide, homicidal ideation or behaviours, psychosis or other threat of harm to self or others. Ethnicity: 65% African American, 33% European American, 1% other. Youths were predominantly from low-income households (~70%). 51% of youths referred for admission were classified as suicidal at intake; 49% were classified as non-suicidal.
3.3	What intervention (treatment, procedure) is being investigated in this study?	Multisystemic therapy (MST) -- a community-based family systems therapy. MST is delivered in the family's natural environment (e.g. home, school, community) by therapists trained in the use of a variety of evidence-based interventions (e.g., contingency contracting, communication training, and behavioural parent training).
3.4	What comparisons are made in the study?	Youth referred for psychiatric emergencies with psychiatric crises; suicidality, homicidality or psychosis, were randomly assigned to MST or emergency hospitalisation followed by community aftercare.
3.5	How long are patients followed up in the study?	16 months following recruitment
3.6	What outcome measure(s) are used in the study?	Indices of attempted suicide, suicidal ideation, depressive affect, and parental control were assessed before treatment, at 4 months after recruitment, and at the 1-year post-treatment follow up.
3.7	What size of effect is identified in the study?	MST was significantly more effective in decreasing rates of attempted suicide in youth presenting to psychiatric emergency, compared with hospitalisation and usual services (youth reports). No significant treatment effects were found for caregiver-rated attempted suicide. MST appeared to have no long-term, differential effects on suicidal ideation, hopelessness, youth depressive effect, or youth-rated parental control.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	Based on youth reports, MST was more effective than

		emergency hospitalisation at decreasing rates of attempted suicide at 1-year follow up; also, the rate of symptom reduction over time was greater for youths receiving MST. Treatment effects were not found for depressive affect, hopelessness or suicidal ideation. Results generally support MST's effectiveness at reducing attempted suicide in psychiatrically disturbed youngsters.

Study identification: Motto, JA & Bolstrom, AG 2001, 'A randomised controlled trial of postcrisis suicide prevention', *Psychiatric Services*, vol. 52(6), pp. 828-833.			
Guideline topic: Assessment and management of people at risk of suicide		Key questions: i) What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment? ii) What kind of follow up is needed to reduce the risk of repeated suicide attempts/suicide?	
Level of evidence: 1-		Country/setting: USA/psychiatric inpatient setting followed by community treatment	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	223 could not be contacted at commencement of study	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable

1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias?	Multiple methodological problems: few exclusion criteria, unstated if all admissions considered for enrolment, no description of randomisation process, unstated if researchers blind to allocation, no power analysis.	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?	Limited (age and gender) analysis of sample groups' characteristics (especially note no analysis for severity and/or type of psychiatric morbidity) or sample groups similarity to original population.	
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	Fewer deaths in contact group up to 2 years and there was a statistically significant difference from noncontact group (p=0.043, no CI provided). Weak evidence of effect of study intervention.	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Difficult to ascertain given limited analysis of baseline characteristics of groups.	
Section 3: Description of the study			
3.1	How many patients are included in this study?	From 3005 admissions, 1939 were continuing treatment and 223 could not be contacted. 845 enrolled, 389 into contact group and 454 into no contact group. Patients reviewed for eligibility 30 days post-hospital discharge	
3.2	What are the main characteristics of the patient population?	Mean age 34.4 years and 42% male in contact group; mean age 32.8 years and 46% male in non-contact group. Prior suicide attempt or prior psych comorbidity was not reported. Eligibility: Persons admitted for depressive or suicidal illnesses. Exclusion criteria: Patients who continued with therapy for at least 30 days post-discharge, with therapy provided by psychiatrists, psychologists, social workers, or pastors.	
3.3	What intervention (treatment, procedure) is being investigated in this study?	Intervention: Contact in the form of regular communications using short letters expressing concern and support from the hospital interviewer. Patient could respond using a self-addressed envelope but was not required to respond. Letters were sent once per month for 4 months, every 2 months for 8 months, and then every 3 months for 4 years. Control: No further active involvement post-discharge.	
3.4	What comparisons are made in the study?	Intensive letter contact vs no contact	
3.5	How long are patients followed up in the study?	5 years, from 2 to 24 contacts per patient (amount of contact not consistent b/w patients) Further review of suicides at 15 years	
3.6	What outcome measure(s) are used in the study?	Outcome measures: suicidal deaths at 5- and 15-year follow up. Identified through coroner's records, death certificates, clinical sources and family members. After 5 years: Intervention: 3.9%, Control: 4.6% After 15 years: Intervention: 6.4%, Control: 5.7%	

		Recruitment period between 1969 and 1974.
3.7	What size of effect is identified in the study?	Lower death rates in intervention group in all of the first 5 years but no stat. significant difference seen in suicidal death rates after 5 or 15 years between the two groups. Fewer deaths in intervention group up to 2 years and there was a statistically significant difference from no-contact group (p=0.043, no CI provided).
3.8	How was this study funded?	Government (NIH) funded
3.9	Does this study help to answer your key question?	The study provides some preliminary suggestion that continued contact for at least the first two years after a patient is discharged from psychiatric care can reduce the likelihood of future death by suicide. Further, better-designed studies are needed to confirm this. Limitations: Appears to be a convenience sample from the 9 facilities. Not clear whether the study was powered to detect a difference in completed suicides over the 5 and 15-year follow-up period. Not a well-controlled study; no control for events occurring subsequent to discharge that may have influenced suicide risk. Population not representative of patients with unidentified suicide risk.

Study identification: Vaiva, G et al. 2006, 'Effect of telephone contact on further suicide attempts in patients discharged from an emergency department: randomised controlled study', *BMJ,* vol. 332, pp. 1241–5.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1-		Country/setting: France/13 emergency departments	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable

1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	Overall, about 70% were contacted by telephone in each group: 40/147 dropped out of 1-month treatment group 51/146 dropped out of 3-month treatment group 32/312 dropped out of control group	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias? Code ++, +, or –	+ Single blind (assessors blinded)	
2.2	If coded as +, or – what is the likely direction in which bias might affect the study results?		
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	There was incomplete reporting of results and methodological limitations. The conflicting results at different end points raise questions about consistency of results. The high attempt rate prior to first telephone contact reduces the effect.	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Moderately	
Section 3: Description of the study			
3.1	How many patients are included in this study? Please indicate number in each arm of the study, at the time the study began.	605 adults (18–65 years) discharged from ED following attempted suicide by drug overdose/poisoning. Exclusion criteria: homeless people and people addicted to illegal drugs.	
3.2	What are the main characteristics of the patient population? Include all relevant characteristics – e.g. age, sex, ethnic origin, comorbidity, disease status, community/hospital based	Control 1 month 3 month Mean age, yrs: 35 38 35 Male: 29% 22% 28% Alcohol with OD 45% 32% 36% Multiple SA 9% 9% 9% Family history of mental disorders 27% 30% 33%	
3.3	What intervention (treatment, procedure) is being investigated in this study?	Three groups: Telephone contact at 1 (n=147) or 3 (n=146) months following ED discharge, or no telephone contact (n=312). Calls were made by psychiatrists with at least 5 years' experience in managing suicidal crises and consisted of psychological support (empathy, reassurance, explanation and suggestion), treatment review and promotion of treatment compliance.	
3.4	What comparisons are made in the study?	Telephone contact at 1 month versus telephone contact at 3 months versus treatment as usual, which was mostly referral back to general practitioner.	
3.5	How long are patients followed-up in the study?	13 months. 9% (57) were lost to follow up.	
3.6	What outcome measure(s) are used in the study?	Proportion of people reattempting suicide; number of deaths by suicide; losses to follow up; numbers of contacts with healthcare.	
3.7	What size of effect is identified in the study?	After 6 months, the proportion of people reporting	

		suicide re-attempts was significantly lower in the 1-month telephone contact group compared with control (treatment as usual) (13/107 [12%] with telephone contact at 1 month v 62/280 [22%] with control; AR difference 10%, 95% CI 2 -18, P = 0.03). However, the RCT found no significant difference in the proportion of people reporting suicide re-attempts between telephone contact at 3 months and treatment as usual (16/95 [17%] with telephone contact at 3 months v 62/280 [22%] control; AR difference +5%, 95% CI –4% to +14%, P = 0.27). At 13 months' follow up there was no significant difference in the proportion of people re-attempting suicide between telephone contact groups at 1 month or at 3 months compared with treatment as usual (telephone contact at 1 month, 34/147 [23%] v 93/312 [30%] with controls, AR difference +7%, 95% CI –2% to +15%; telephone contact at 3 months, 36/146 [25%] v 93/312 [30%] with controls, AR difference +5%, 95% CI –4% to +14%). Analysis of follow up at 13 months was by intention to treat (included everyone randomised at the start of the trial) regardless of whether follow up had taken place. Randomisation was stratified by suicide attempts in the 3 years prior to enrolment, with four suicide attempts being the basis for stratification; and the randomisation ratio was 2:1 for the treatment-as-usual group compared with telephone-contact groups. However, 48 of the 103 attempted suicides took place in the first month after randomisation before telephone contact could be made (number of attempts in each group occurring in this period not reported).
3.8	How was this study funded?	Hospital funded
3.9	Does this study help to answer your key question?	There were no significant differences in any outcome (or in numbers of adverse outcomes) between any groups on an intention-to-treat analysis. According to this study and one by Cedereke et al. (2002), the evidence for effectiveness of telephone contact is weak and as such, it cannot be recommended as an effective intervention. Telephone contact as an intervention should not be confused with giving patients emergency telephone numbers to call in a crisis.

Study identification: van der Sande, R et al. 1997, 'Intensive in-patient and community intervention versus routine care after attempted suicide', *British Journal of Psychiatry*, vol. 171, pp. 35-41.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What interventions have been shown to reduce the risk of suicide in patients who are discharged from a hospital after an attempted suicide, compared to no treatment or usual care?	
Level of evidence: 1-		Country/setting: The Netherlands/accident and emergency	
Section 1: Internal validity			
In a well-conducted RCT study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly	Well covered	Not addressed

	focused question.	Adequately addressed Poorly addressed	Not reported Not applicable
1.2	The assignment of subjects to treatment groups is randomised	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.3	An adequate concealment method is used	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	Subjects and investigators are kept 'blind' about treatment allocation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.5	The treatment and control groups are similar at the start of the trial	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.6	The only difference between groups is the treatment under investigation	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.7	All relevant outcomes are measured in a standard, valid and reliable way	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	High drop-out of participants, particularly in control group (33% intensive intervention and 64% control drop-out by 12 months)	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.10	Where the study is carried out at more than one site, results are comparable for all sites	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Section 2: Overall assessment of the study			
2.1	How well was the study done to minimise bias? What is the likely direction in which bias might affect the study results?	Possible biases: researchers not blinded to allocation; conclusions about wellbeing only based on 60% of group. Researchers could potentially have overestimated the effect of intervention.	
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	No power analysis was performed. Study was underpowered by virtue of the high dropout rate. Lack of cooperation from patients post-discharge.	
2.4	Are the results of this study directly applicable to the patient group targeted by this guideline?	Study has applicability.	
Section 3: Description of the study			
3.1	How many patients are included in this study?	140 in intensive intervention group, 134 in standard care. Patients recruited between January 1993 and March 1995. Inclusion criteria: Patients over 15 presenting to ED following suicide attempt not in need of subsequent psychiatric hospitalisation. Exclusion criteria: Habitual self-mutilation; alcohol or drug addiction or heavy user; accidental overdose; non-Dutch speaking; non-resident in hospital catchment area; psychiatric hospitalisation; imprisonment; acute psychosis; recurrent consultations with hospital liaison psychiatry.	
3.2	What are the main characteristics of the patient population?	For intervention group, mean age 35.8, male 34.3%, previous suicide attempt (>1) 48.9%, suicide attempt by self-poisoning	

		85.6%, previous inpatient psychiatric treatment 33.8%. Control group mean age 36.6, male 34.3%, previous suicide attempt (>1) 43.8%, suicide attempt by self-poisoning 83.6%, previous inpatient psychiatric treatment 39.2%. The two groups were heterogeneous in terms of particular problems related to suicide attempt.
3.3	What intervention (treatment, procedure) is being investigated in this study?	Intensive intervention= short hospital admission (1-4 days) + outpatient therapy with community psychiatric nurse using problem-solving therapy + 24 hour access to unit Standard care = ED assessment and treatment (not described). 25% admitted, 75% referred to outpatient clinic Analysis done on intention-to-treat basis
3.4	What comparisons are made in the study?	Intensive in-patient & community intervention vs standard care.
3.5	How long are patients followed-up in the study?	Follow-up assessments done at 3, 6 and 12 months. Suicide attempt defined using WHO multicentre study in parasuicide definition.
3.6	What outcome measure(s) are used in the study?	Repeat suicide rates at 1 year and patient wellbeing as assessed by the SCL-90 and Hopelessness scale.
3.7	What size of effect is identified in the study?	No statistically significant difference in repeat suicide rates between the two groups (p=0.59). No statistically significant difference in psychological wellbeing ratings between the two groups.
3.8	How was this study funded?	Government grant funded
3.9	Does this study help to answer your key question?	Main finding was that intensive psychosocial treatment of suicide attempters, continuity of care and problem-solving treatment, did not reduce repeated suicide attempts compared to usual care, which was not clearly outlined. Small number of patients completing the study limited its power – a difference may have been observed in a larger sample. Patients are also hard to find after discharge and respond poorly to follow up – conclusions on wellbeing must be observed with caution. Broad approach of this study may not pay enough attention to psychological processes that characterise many repeat suicide attempters (e.g. inability to cope with daily stressors and apply problem-solving skills). Emphasis of post-discharge interventions may need to focus on CBT/problem-solving skills.

Appendix C: Evidence tables: Cohort studies

Study identification: Cooper, J et al. 2005, 'Suicide after deliberate self-harm: a 4-year cohort study', *Am J Psychiatry*, vol. 162(2), pp. 297-303.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are risk factors for nonfatal and fatal suicide attempts?	
Level of evidence: 2+		Country/setting: UK/four emergency departments	
In a well-conducted cohort study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrolment is assessed and taken into account in the analysis.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed?	n/a	
1.6	Comparison is made between full participants and those lost to follow up, by exposure status.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
Assessment			
1.7	The outcomes are clearly defined.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.8	The assessment of outcome is made blind to exposure status.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.9	Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.10	The measure of assessment of exposure is reliable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.11	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.12	Exposure level or prognostic factor is assessed more than once.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
Confounding			
1.13	The main potential confounders are identified and taken into account in the design and analysis.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Statistical analysis			

1.14	Have confidence intervals been provided?	yes
2.1	How well was the study done to minimise the risk of bias or confounding, and to establish a causal relationship between exposure and effect? *Code ++, +, or –*	++
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	This is a well-conducted prospective cohort study.
2.3	Are the results of this study directly applicable to the patient group targeted in this guideline?	yes

3.1	How many patients are included in this study?	7,968 people attending ED because of deliberate self-harm between September 1997 and August 2001.
3.2	What are the main characteristics of the study population?	Median age of 30 years; 57% female
3.3	What environmental or prognostic factor is being investigated in this study?	Attendance at ED for deliberate self-harm.
3.4	What comparisons are made in the study?	Suicide rates in the study population were compared with those for general population of Manchester to give SMRs.
3.5	For how long are patients followed-up in the study?	Four years
3.6	What outcome measure(s) are used in the study?	Suicide rates. Deaths by suicide were identified using the National Confidential Inquiry Into Suicide and Homicide by People With Mental Illness database of the Office of National Statistics. Confirmed suicides and deaths from unknown cause (ICD-9 codes) were considered suicides.
3.7	What size of effect is identified in the study?	Between September 1997 and August 2001, the suicide rate was 371 per 100 000 in people who had attended ED because of deliberate self-harm. Suicide rates were greatest within the first six months of the self-harm episode (561.6 per 100 000). Overall, the risk of suicide was 15 times higher in people who had self-harmed than for the general population of the region (SMR 15.4, 95% CI 11.8 to 19.9). The risk of suicide in women who had self-harmed was 23 times higher than for women in the general population of the region (SMR 23.2, 95% CI 14.5 to 35.1). The risk of suicide in men who had self-harmed was 13 times higher than for men in the general population of the region (SMR 12.9, 95% CI 9.2 to 17.8).
3.8	How was this study funded?	Hospital funded
3.9	Does this study help to answer your key question?	People attending ED because of deliberate self-harm have a high risk of suicide. Suicide rates are highest within the first six months of the self-harm episode, and the risk of suicide relative to the general population is greater in women who present with self-harm than in men. The profile of risk factors developed by Cooper et al. should alert emergency room staff to people with DSH at particular risk for suicide. Risk factors include not living with a close relative, endeavouring to avoid discovery of the DSH and current abuse of alcohol, which carries a two- to threefold suicide hazard. Self-cutting (self-mutilation), previous psychiatric treatment, and the presence of physical health problems also emerged as risk factors. Standardised mortality ratios

		for women attempting suicide (calculated against the population of England and Wales) much exceeded those for men. However, a profile of risk factors found by analysis with one cohort may not be replicated with a subsequent cohort. The present study requires replication, preferably by other centres. A 'high-risk approach' to the treatment of DSH may not be warranted as the majority of DSH repeaters came from those evaluated as low risk.

Study identification: Rotheram-Borus, MJ et al. 2000, 'The 18-month impact of an emergency room intervention for adolescent female suicide attempters', *J Consult Clin Psychol* vol. 68(6), pp. 1081-1093.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are promising and/or effective brief interventions that can take place in the ED to improve adherence to an appropriate referral after discharge (e.g. 'patient navigators', referral to mental health, substance abuse treatment, primary care)?	
Level of evidence: 2-		Country/setting: USA/emergency room	
In a well-conducted cohort study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrolment is assessed and taken into account in the analysis.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed?	Not reported	
1.6	Comparison is made between full participants and those lost to follow up, by exposure status.	Well covered Adequately addressed Poorly addressed	Not addressed **Not reported** Not applicable
Assessment			
1.7	The outcomes are clearly defined.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.8	The assessment of outcome is made blind to exposure status.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.9	Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.10	The measure of assessment of exposure is reliable.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.11	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.	Well covered **Adequately addressed**	Not addressed Not reported

		Poorly addressed	Not applicable
1.12	Exposure level or prognostic factor is assessed more than once.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
Confounding			
1.13	The main potential confounders are identified and taken into account in the design and analysis.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
Statistical analysis			
1.14	Have confidence intervals been provided?	No	
2.1	How well was the study done to minimise the risk of bias or confounding, and to establish a causal relationship between exposure and effect? *Code ++, +, or –*	Few criteria have been filled	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Not certain	
2.3	Are the results of this study directly applicable to the patient group targeted in this guideline?	Limited applicability	
3.1	How many patients are included in this study?	140 patients, aged 12-18 yrs (and their mothers), 75 recruited pre-intervention and 65 post-intervention. Recruitment period from March 1991 to February 1994. Inclusion criteria were female adolescent suicide attempters presenting to ER. Participants were excluded if wrong age, low IQ (not defined), no parent/family, out of town residence, admitted to psych unit for >1 week.	
3.2	What are the main characteristics of the study population?	Intervention: Total N = 65. Age: 14.9 (SD = 1.4). Female: All Prior SA: 31.8% Psych comorbidity: 59% (depression) Control: Total N = 75. Age: 14.9 (SD = 1.5). Female: All Prior SA: 29.7% Psych comorbidity: 60% (depression)	
3.3	What environmental or prognostic factor is being investigated?	This study evaluates outcomes over 18-month follow-up period post-ED.	
3.4	What comparisons are made in the study?	Intervention: ED staff received training, patients and mothers watched a 20-minute "soap opera" videotape conveying treatment expectations, and bilingual crisis therapist discussed videotape, provided 1 therapy session and contract for outpatient F/U treatment. Control: Standard ED care and outpatient referral.	
3.5	How long are patients followed up in the study?	18 months	
3.6	What outcome measure(s) are used in the study?	Number of suicide attempts measured by self-report, mother's report, and hospital records. Symptomatology, treatment adherence, depression and suicide ideation (post discharge assessment). Assessments at presentation, discharge and outpatients (3 months).	
3.7	What size of effect is identified in the study?	There were no statistically significant difference across care conditions for suicide reattempts over 18-month follow-up period. Additionally, no statistically significant difference was observed across care conditions for suicide re-ideation over 18-month follow-up period. Participation in 7+ follow-up sessions protective effect for youth with	

		low-moderate symptomatology, p<0.081. Elevated rates of re-ideation in highly symptomatic youth attending 7+ follow-up sessions, p<0.015. Proportion of patients with Beck Depression Inventory scores in the clinical range at 18 months: Intervention: 4.9%. Control: 10.1%. Multivariate linear regression: Beta = -0.546 (P < .01).
3.8	How was this study funded?	Government (NIH) grant
3.9	Does this study help to answer your key question?	Study suggests that in children age 18 years and younger who had a history of attempted suicide, brief emergency crisis intervention involving mother and daughter decreased depressive symptoms at the 18-month follow up (mean of 3.8 more sessions). ED intervention was not associated with decreased suicide behaviours. Limitations: Primarily Latino females in an urban ED; small sample size for main outcome of suicide attempt; population not representative of patients with unidentified suicide risk; lack of stat. sign. effect renders study unhelpful.

Study identification: Tidemalm, D et al. 2008, 'Suicide risk after a suicide attempt by psychiatric disorder: Long-term total population follow up of 39,685 suicide attempters', *BMJ*, vol. 337, p. a2205.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What kind of follow up is needed to reduce the risk of repeated suicide attempts/suicide?	
Level of evidence: 2+		Country/setting: Sweden/Swedish national register based study	
In a well-conducted cohort study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrolment is assessed and taken into account in the analysis.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed?	Not applicable	
1.6	Comparison is made between full participants and those lost to follow up, by exposure status.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
Assessment			
1.7	The outcomes are clearly defined.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.8	The assessment of outcome is made blind to exposure status.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable

1.9	Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.10	The measure of assessment of exposure is reliable.	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1.11	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.12	Exposure level or prognostic factor is assessed more than once.	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Confounding			
1.13	The main potential confounders are identified and taken into account in the design and analysis.	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.14	Have confidence intervals been provided?	yes	
2.1	How well was the study done to minimise the risk of bias or confounding, and to establish a causal relationship between exposure and effect? *Code ++, +, or –*	+	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Included only people with suicide attempts that led to an episode of inpatient care. Also did not study the contribution of physical illness or multiple psychiatric comorbidity.	
2.3	Are the results of this study directly applicable to the patient group targeted in this guideline?	Yes, a proportion of people presenting to EDs following attempted suicide will have a psychiatric comorbidity.	
3.1	How many patients are included in this study?	39,685 individual (53% female), who were admitted to hospital for attempted suicide between 1973 and 1982, and were aged 10 or older at the time of admission. Exclusions: emigration within two years before baseline (n=860); psychiatric diagnosis after one week from discharge but within one year after suicide attempt (n=8964)	
3.2	What are the main characteristics of the study population?	Cases: those people who had psychiatric diagnoses present at discharge from index admission for suicide attempt or within one week of discharge (n=12,681) Reference group: those without a psychiatric diagnosis within one year after suicide attempt (n=27,004). Males: n=18,642, mean age 38.4 years (SD=16.5) Females: n=21,043, mean age 37.0 years (SD 17.0) Psychiatric diagnoses analysed: Alcohol abuse or dependence n=502. Other depressive disorder n=3364. Personality disorder n=335. Anxiety disorder n=899. Bipolar and unipolar disorder n=648. Schizophrenia n=316.	
3.3	What environmental or prognostic factor is being investigated in this study?	How many suicides were completed during the 30-year follow up and if the risk varied with type of psychiatric disorder.	
3.4	What comparisons are made in the study?	Cases: those people who had psychiatric diagnoses present at discharge from index admission for suicide attempt or within one	

		week of discharge (n=12,681) Reference group: those without a psychiatric diagnosis within one year after suicide attempt (n=27,004).
3.5	How long are patients followed up in the study?	21-31 years
3.6	What outcome measure(s) are used in the study?	Completed suicide during the period of 1973-2003, by review of death records.
3.7	What size of effect is identified in the study?	Authors found that over half of all completed suicides took place within the first year of follow up. Death from suicide occurred mostly within the five years after the initial suicide attempt. Risk prevailed throughout the entire follow-up period. The strongest predictor for completed suicide throughout the entire follow up was a diagnosis of schizophrenia, with a hazard ratio (HR) of 4.1 (95% CI 3.5 to 4.8) in men and 3.5 (95% CI 2.8 to 4.4) in women compared with individuals with no major psychiatric disorder. Meanwhile, a diagnosis of bipolar or unipolar depressive disorder carried an HR for completed suicide of 3.5 (95% CI 3.0 to 4.2) in men and 2.5 (95% CI 2.1 to 3.0) in women relative to individuals with no major psychiatric disorder. First-year incidence of suicide was as high 56 and 64 percent in men and 54 and 42 percent in women with schizophrenia or unipolar/bipolar depression, respectively. People suffering with most other psychiatric disorders had a lower but still significantly increased risk of suicide. Interestingly, individuals suffering from adjustment disorder, post-traumatic stress disorder and alcohol abuse (men only) were not at significantly increased risk of re-attempting suicide compared to suicide attempters without a psychiatric diagnosis at baseline.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	The authors suggest that patients who have unipolar/bipolar disorder or schizophrenia and previous suicidal behaviour be given more intensive after-care, especially in the first two years after trying to kill themselves.

Appendix D: Evidence tables: Case-control studies

Study identification: Donald, M et al. 2006, 'Risk and protective factors for medically serious suicide attempts: a comparison of hospital-based with population-based samples of young adults', *Australian and New Zealand Journal of Psychiatry*, vol. 40, pp. 87-96.			
Guideline topic: Assessment and management of people at risk of suicide.		Key questions: What are risk factors for nonfatal and fatal suicide attempts? What are the key protective factors?	
Level of evidence: 2-		Country/setting: Australia/emergency department	
In an well-conducted case control study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The cases and controls are taken from comparable populations	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The same exclusion criteria are used for both cases and controls	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.4	What percentage of each group (cases and controls) participated in the study?	Cases: 78.7% Controls: 67.3%	
1.5	Comparison is made between participants and non-participants to establish their similarities or differences	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.6	Cases are clearly defined and differentiated from controls	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.7	It is clearly established that controls are non-cases	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Assessment			
1.8	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.9	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.10	The main potential confounders are identified and taken into account in the design and analysis	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Statistical analysis			
1.11	Confidence intervals are provided	yes	
2.1	How well was the study done to minimise the risk of bias or confounding? *Code ++, +, or –*	The population survey was sent to young people throughout the state of Queensland. No details were given about the demographics of the final control population – e.g. how many were rural as opposed to city residents. Although samples were matched for place of residence, selection bias in relation to young	

		people from urban areas is likely. Aside from no attempted suicide in their history, no other exclusion criteria were listed.
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Almost all study participants were Australian-born – results cannot be generalised to other culturally diverse groups. Possible underrepresentation of certain groups such as young Indigenous Australians, young adults from CALD backgrounds, homeless young people and those living on campus at universities.
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	Almost all study participants were Australian-born – results cannot be generalised to other culturally diverse groups. Possible underrepresentation of certain groups such as young Indigenous Australians, young adults from CALD backgrounds, homeless young people and those living on campus at universities.
3.1	How many patients are included in this study?	18-24 yr olds recruited via the ED of a large public hospital, following a suicide attempt (n =95; 49 males and 46 females). Compared to sample of 15-24 yr olds who participated in a population-based survey (n=380, matched from a population sample of 475).
3.2	What are the main characteristics of the study population?	Medically serious suicide attempters and matched controls. Matching was conducted by age, gender, indigenous or non-indigenous Australian and location of residence. Overall, 48% of participants were female.
3.3	What environmental or prognostic factor is being investigated in this study?	To investigate risk and protective factors for medically serious suicide attempts among young Australian adults.
3.4	What comparisons are made in the study?	Best-fit multivariate risk model with nine risk factors.
3.5	For how long are patients followed up in the study?	Not applicable
3.6	What outcome measures are used in the study?	Authors examined 6 risk factor and 4 protective factor categories in both samples.
3.7	What size of effect is identified in the study?	Protective factors included social connectedness (OR=0.29, 95% CI = 0.17-0.49), problem-solving confidence (OR=0.18, 95% CI = 0.09-0.36) and locus of control (OR=0.51, 95% CI = 0.29-0.89). There was a trend for social connectedness to be more protective among those with high rather than low levels of depressive symptomatology (OR=0.17, 95% CI =0.09-0.36), and among smokers (OR=0.12, 95% CI = 0.05-0.25) rather than non-smokers. Gender did not have a statistically significant effect and immediate family support was not found to be protective.
3.8	How was this study funded?	Not stated.
3.9	Does this study help to answer your key question?	Study helps to address robust risk factors that may help channel risk assessment efforts but more applicably, suicide prevention practice.

Study identification: Agerbo, E et al. 2002, 'Familial, psychiatric and socioeconomic risk factors for suicide in young people: nested case-control study', *BMJ*, vol. 325, pp. 74–9.	
Guideline topic: Assessment and management of people at risk of suicide.	Key question: What are risk factors for nonfatal and fatal suicide attempts?
Level of evidence: 2+	Country/setting: Denmark/case-control study using Danish population registers

In an well-conducted case control study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The cases and controls are taken from comparable populations	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The same exclusion criteria are used for both cases and controls	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	What percentage of each group (cases and controls) participated in the study?	Cases: 496 Controls: 24,800	
1.5	Comparison is made between participants and non-participants to establish their similarities or differences	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.6	Cases are clearly defined and differentiated from controls	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.7	It is clearly established that controls are non-cases	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Assessment			
1.8	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.9	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.10	The main potential confounders are identified and taken into account in the design and analysis	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.11	Confidence intervals are provided	Yes	
2.1	How well was the study done to minimise the risk of bias or confounding? *Code ++, +, or –*	+	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	The authors compute attributable risks for significant factors (individual mental illness, mental illness of a parent and suicide of a parent) to estimate the reduction in suicide if a risk factor was removed. This strategy is flawed as it is based on the assumptions that (1) these risk factors are causal and (2) the causal factors are independent.	
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	Study highlights the role of mental illness in youth suicide, which should be taken into account during risk assessment.	
3.1	How many patients are included in this study?	496 young people 24,800 matched control cases	
3.2	What are the main characteristics of the study population?	496 young people (aged 10-21 yrs) who committed suicide during 1981-97. 24,800 matched control cases of same sex, age, and	

		had a reference to a biological mother, and who were alive at a particular age and date. Parents and siblings were identified from population-based registers. Inpatient data was gathered from discharge registers of national hospitals and socioeconomic data were collected from administrative registers.
3.3	What environmental or prognostic factor is being investigated in this study?	To determine the effect of familial, psychiatric and socioeconomic factors in young people who had committed suicide.
3.4	What comparisons are made in the study?	Not applicable
3.5	For how long are patients followed-up in the study?	Not applicable
3.6	What outcome measures are used in the study?	Number of cases of suicide between 1981-97
3.7	What size of effect is identified in the study?	Youth mental illness was the factor most strongly associated with youth suicide**.** Parental factors linked to increased suicide risk were parental suicide or early death, hospitalisation for mental illness, unemployment, low income, poor schooling and divorce. Mental illness in siblings and short duration of schooling were also risk factors. Socioeconomic factors were less important after controlling for confounders.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	This study reports that suicide of the biological mother and father was associated with an increased risk of suicide among young people. The authors also collated information about the role of socio-economic risk factors in adolescent suicide. The effect of socio-economic variables lessened when parental history of psychiatric inpatient admission was considered.

Study identification: Beck, A et al. 1999, 'Suicide ideation at its worst point: a predictor of eventual suicide in psychiatric outpatients', *Suicide and Life-Threatening Behavior,* vol. 29, pp 1-9.			
Guideline topic: Assessment and management of people at risk of suicide.		Key question: Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk?	
Level of evidence: 2++		Country/setting: USA/outpatient clinic	
In an well-conducted case control study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The cases and controls are taken from comparable populations	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.3	The same exclusion criteria are used for both cases and controls	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	What percentage of each group (cases and controls) participated in the study?	Cases: not stated Controls: not stated	
1.5	Comparison is made between participants and non-participants to establish their similarities or differences	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable

1.6	Cases are clearly defined and differentiated from controls	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
1.7	*It is clearly established that controls are non-cases*	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Assessment			
1.8	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.9	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.10	The main potential confounders are identified and taken into account in the design and analysis	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Statistical analysis			
1.11	Confidence intervals are provided	Yes	
2.1	How well was the study done to minimise the risk of bias or confounding? *Code ++, +, or –*	++	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Sample is large enough to overcome potential bias; all subjects were treated equally; good reporting of baseline variables; adequate statistical analysis	
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	The patients in this study were assessed as having a psychiatric disorder or history.	
3.1	How many patients are included in this study?	3,701 adults. Inclusion criteria: Outpatients evaluated at a university cognitive therapy centre between 1975 and 1994. Exclusion criteria: Nil stated.	
3.2	What are the main characteristics of the study population?	The non-suicide group (n=3671) sample characteristics: 1584 male (43%), 2087 female (57%); 3386 Caucasian (92%), 205 African American (6%); 3061 completed college or higher (56%); 1688 single (46%), 1396 married (38%); 2751 employed or student (75%), 742 unemployed (20%); 475 prior suicide attempt (13%), 2255 family history of mental disorder (61%), 232 family history of suicide (6%); 2006 mood disorder (55%), 495 primary, secondary or tertiary substance abuse (14%), 1666 with comorbid axis I disorder (45%), 1487 axis II (personality) disorder (57%) Suicide group (n=30) sample characteristics: 18 male (60%), 12 female (40%); 27 Caucasian (90%), 3 African American (10%); 15 completed college or higher (50%); 10 single (33%) 14 married (47%); 14 employed or student (47%), 16 unemployed (53%); 19 prior suicide attempt (63%), 20 family history of mental disorder (67%), 5 family history of suicide (17%); 28 mood disorder (93%), 6 primary, secondary or tertiary substance abuse (20%), 14 with comorbid axis I disorder (47%), 17 axis II (personality) disorder (57%)	
3.3	What environmental or prognostic factor is being investigated in this study?	N/A	
3.4	What comparisons are made in the	Scale for Suicide Ideation – Current (SSI-C) compared with Scale	

	study?	for Suicide Ideation- Worst (SSI-W), & Beck Hopelessness Scale (BHS).
3.5	For how long are patients followed up in the study?	Deaths were ascertained from the National Death Index and subsequent retrieval of death certificates.
3.6	What outcome measures are used in the study?	Utility of these tools in identifying high-risk patients.
3.7	What size of effect is identified in the study?	3,701 adults enrolled in study and completed intake interview with all three tools; 30 progressed to commit suicide, 3671 did not. Mean age for suicides (41.1+/-13.68 years) was significantly higher ($p<0.05$) than mean age for non-suicides (35.8+/-11.84 years). Mean number of years from intake interview to suicide 4.07+/-3.96 years (range 2 weeks to 12 years). Suicide sample scored significantly higher on the SSI-C ($p<0.01$), SSI-W ($p<0.001$) and BHS ($p<0.001$) than the non-suicide sample. Optimal cut-off points identified for all three tools via ROC analyses: Low risk of suicide; 0-1 on SSI-C, 0-15 on SSI-W, 0-7 on BHS. High risk; 2 or 2+ on SSI-C, 16 or 16+ on SSI-W, 8 or 8+ on BHS. Using these cut-off points: SSI-C SSI-W BHS OR 5.42 13.84 6.43 95% CI 2.63-11.17 5.64-33.98 1.95-21.25 sens 53% 80% 90% spec 83% 78% 42% PPV 2.4% 2.8% 1.3% Logistic regression analysis indicated at least one of the tools was a significant predictor ($p<0.001$): the likelihood ratio & 95%CI indicated that only SSI-W significantly contributed unique odds to the estimation of eventual suicide. Suicide sample scored significantly higher on the SSI-C ($p<0.01$), SSI-W ($p<0.001$) and BHS ($p<0.001$) than the non-suicide sample. PPV=positive predictive value Sens=sensitivity, Spec=specificity
3.8	How was this study funded?	Not stated
3.9	Does this study help to answer your key question?	The SSI was first developed for use with adult psychiatric patients. This was a prospective, longitudinal study with a large sample. In adult psychiatric outpatients, suicidal ideation "at its worst point" and current suicidal ideation assessed with the SSI were found to predict later suicide. Methodological concerns: not stated if sample includes all eligible patients; no description or analysis of eligible but not participating patients (if relevant); not stated if other demographic characteristics apart from age were significantly different between the suicide and non-suicide groups; median, mean and range of follow-up times not given; analysis of suicides would have been improved using matched control techniques.

Study identification: Qin, P & Nordentoft, M 2005, 'Suicide risk in relation to psychiatric hospitalisation', *Archives of General Psychiatry*, vol. 62, pp. 427-432.	
Guideline topic: Assessment and management of people at risk of suicide.	Key question: What are the risk factors for nonfatal and fatal suicide attempts in relation to psychiatric hospitalisation?
Level of evidence: 2+	Country/setting: Denmark

In an well-conducted case control study:		***In this study, the criterion is:***	
1.1	The study addresses an appropriate and clearly focused question	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	The cases and controls are taken from comparable populations	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	The same exclusion criteria are used for both cases and controls	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.4	What percentage of each group (cases and controls) participated in the study?	Cases: 13681 male and 7488 female suicides between 1981-1997 Controls: 423,128 matched controls	
1.5	Comparison is made between participants and non-participants to establish their similarities or differences	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.6	Cases are clearly defined and differentiated from controls	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.7	It is clearly established that controls are non-cases	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Assessment			
1.8	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered Adequately addressed Poorly addressed	Not addressed Not reported **Not applicable**
1.9	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.10	The main potential confounders are identified and taken into account in the design and analysis	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.11	Confidence intervals are provided	yes	
2.1	How well was the study done to minimise the risk of bias or confounding? *Code ++, +, or –*	++	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Considering the rarity of suicide, it is difficult to attribute the effect with certainty. The authors have demonstrated they have made every possible attempt to reduce the impact of confounders.	
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	Population studied was from Denmark. Despite the presence of other studies confirming similar findings in other regions and cultures it is difficult to generalise the findings with certainty	
3.1	How many patients are included in this study?	Cases: 13,681 male and 7,488 female suicides, which accounted for 99.6% of the total suicides in 1981-1997 in Denmark.	

		Controls: nested case-control design, matching for sex, age and calendar time, to randomly select up to 20 control subjects per case from a subsample of all individuals of the same age and sex who were alive at the time of suicide of the case. To make the selection feasible and to minimise the computer burden, a random 5% longitudinal sample of the total national population from the Integrated Database for Labour Market Research was used to draw matched controls. This procedure was followed for each suicide, resulting in a sample of 273,371 male and 149,757 female controls matched for the cases. For only a few cases older than 93 years, it was not possible to find 20 eligible controls.
3.2	What are the main characteristics of the study population?	Matched for sex, age and calendar time of suicide.
3.3	What environmental or prognostic factor is being investigated in this study?	To explore suicide risk according to time since admission, diagnosis, length of hospital treatment and number of prior hospitalisations.
3.4	What comparisons are made in the study?	Not applicable
3.5	For how long are patients followed up in the study?	Not applicable
3.6	What outcome measures are used in the study?	Risk of suicide is estimated by conditional logistic regression. Data are adjusted for socioeconomic factors.
3.7	What size of effect is identified in the study?	The crude risk of suicide associated with admission history was 14.1 (95% CI, 13.5-14.7) for men and 22.7 (95% CI, 21.5-23.9) for women. When adjusted for individual marital status, income and place of residence, the risk was reduced slightly to 10.4 (95% CI, 9.9-10.9) for men and 19.8 (95% CI, 18.7-20.9) for women. For men and women, there were two sharp peaks of suicide risk around psychiatric hospitalisation. The risk was extremely high in the first week after admission and particularly in the first week after discharge.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	This study demonstrates that there are two sharp peaks of risk for suicide around psychiatric hospitalisation, one in the first week after admission and another in the first week after discharge; suicide risk is significantly higher in patients who received less than the median duration of hospital treatment; affective disorders have the strongest impact on suicide risk in terms of its effect size and population attributable risk; and suicide risk associated with affective and schizophrenia spectrum disorders declines quickly after treatment and recovery, while the risk associated with substance abuse disorders declines relatively slower. This study also indicates that an admission history increases suicide risk relatively more in women than in men; and suicide risk is substantial for substance disorders and for multiple admissions in women but not in men.

Appendix E: Evidence tables: Cross-sectional analysis

Study identification: Horowitz, LM et al. 2001, 'Detecting suicide risk in a paediatric emergency department: development of a brief screening tool', *Paediatric*s, vol. 107, pp. 1133-1137.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk?	
Level of evidence: 2+		Country: USA	
In an well-conducted case series study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	Cases are clearly defined	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	Did all subjects enter the survey at a similar point in their risk progression?	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Assessment			
1.4	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.5	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.6	The main potential confounders are identified and taken into account in the design and analysis	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.7	Confidence intervals are provided	Yes	
2.1	How well was the study done to minimise the risk of bias or confounding?	Inclusion criteria: 155 children presenting to a Boston teaching hospital ED between 1997 and 1998 'with a chief complaint to be psychiatric in nature'. Exclusion criteria: Five children excluded due to severe cognitive impairment; four excluded because of missing data; one excluded due to refusal to participate.	
2.2	Is the study based on a representative sample selected from a relevant population?	Selection of study participants was non-specific/unbiased and therefore representative of general population presenting to an ED.	
2.3	Taking into account clinical considerations, your evaluation of the methodology used and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Prevalence of suicidality (attempt, ideation, threat) in study population was 0.44. Unknown how RSQ would perform in populations with different prevalence.	
2.4	Was follow up long enough for important events to occur?	Not addressed	
2.5	Are the results of this study directly	Yes	

	applicable to the patient group targeted by this guideline?	
3.1	How many patients are included in this study?	144 children and adolescents in study. Initial selection of study group made by triage nurse on duty at time of presentation to ED.
3.2	What are the main characteristics of the study population?	% females=54. Age range: "75% between 11 and 16 years." Mean + SD age = 13.6 years (2.48). 49% Caucasian; 26% Black; 15% Latino; 1% Asian. Post-evaluation provisional diagnosis: depressive disorders (35%), attention-deficit disorder (10%), bipolar disorder (8%) and adjustment disorder (8%).
3.3	What environmental or prognostic factor is being investigated in this study?	Identify children who were imminently at risk for self-destructive behaviour, rather than predict future behaviour. Accurately identify suicidal youths.
3.4	What comparisons are made in the study?	Risk of Suicide Questionnaire (RSQ; 14 items) c.f. Suicide Ideation Questionnaire (SIQ; 30 items). RSQ administered by triage nurse; SIQ administered by psychologist blinded to RSQ results. If <10th grade got SIQ-JR. Cut-off >41 for SIQ; >31 for SIQJR.
3.5	For how long are patients followed up in the study?	Not addressed; no longitudinal analysis conducted.
3.6	What outcome measures are used in the study?	Outcome measure: Validation of RSQ c.f. SIQ.
3.7	What size of effect is identified in the study?	Agreement between individual RSQ items and suicidality (as determined by the SIQ) was fair to poor (kappas 0.54-0.02). Little improvement in predictive ability obtained after including 4 RSQ items. Best combination of 4 items (items 1, 5, 8, 13 (see below)) had sensitivity=0.98, NPV=0.97 and overall prediction of suicidality c.f. SIQ *c* statistic=0.87. Recommended four items to use are: 1='Are you here because you tried to hurt yourself?', 5='In the past week have you been having thoughts about killing yourself?', 8= 'Have you ever tried to hurt yourself in the past other than this time?' and 13='Has something very stressful happened to you in the past few weeks?'. The four-item screening test administered in the ER setting had sensitivity of 98%, a specificity of 37%, a PPV of 55% and a NPV of 97%. Prevalence of suicidality (attempt, ideation, threat) in study population was 0.44. Unknown how RSQ would perform in populations with different prevalence.
3.8	How was this study funded?	Government funding
3.9	Does this study help to answer your key question?	RSQ assesses suicidal ideation and not necessarily suicidal behaviour. 4-item RSQ version takes less than 2 minutes and can be administered by triage nursing staff c.f. SIQ requiring 30 minutes and trained psychologist to administer. Limitations: ED patients with suspected psychiatric issues who are probably not reflective of clinic population. Focused on adolescent showing up with suicide-related issues rather than an unselected primary care population, a fact that makes these results less generalisable to routine screening in unselected primary care or ED populations. How well this screening instrument performs in general clinic settings has not been tested.

Study identification: Niméus, A et al. 2000, 'The Suicide Assessment Scale: an instrument assessing suicide risk of suicide attempters', *European Psychiatry,* vol. 15, pp. 416-423.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk?	
Level of evidence: 2++		Country/setting: Sweden/inpatient admission to suicide research ward	
In an well-conducted case series study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	Are the participants well defined in terms of time, place and person?	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	Did all subjects enter the survey at a similar point in their risk factor?	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Assessment			
1.4	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.5	The main potential confounders are identified and taken into account in the design and analysis	Well covered Adequately addressed **Poorly addressed**	Not addressed Not reported Not applicable
Statistical analysis			
1.6	Confidence intervals are provided	No	
2.1	How well was the study done to minimise the risk of bias or confounding?	Due to the small number of suicides, a logistic regression analysis was considered inappropriate: suicides completed within 12 months of index attempt (n=8) were compared with 40 gender and axis I diagnosis-matched controls.	
2.2	Are the results of this study directly applicable to the patient group targeted by this guideline?	yes	
3.1	How many patients are included in this study?	273 patients asked to participate; 191 consented. Yearly recruitment ranged from 6-30 per annum. Patients enrolled within 1 week of admission. Inclusion criteria: Inpatient admission to a suicide research ward between 1987 and 1997. Exclusion criteria: Severity of illness requiring immediate treatment prior to enrolment, treatment under commitment, or discharge within a few days of hospitalisation.	
3.2	What are the main characteristics of the study population?	87 men (mean age 39.3+/-14.4 years) and 104 women (mean age 39.9+/-16.3 years). No significant differences with age, gender or previous attempts between those eligible and those consenting to participate. Psychiatric diagnosis made by one (n=117) or two (n=74) psychiatrists. Psychiatric diagnosis (n=191); manic-depressive disorder 27.3%,	

		dysthymia 13.6%, depression 11.4%, adjustment disorders 24.6%.
3.3	What environmental or prognostic factor is being investigated in this study?	SUAS is an interview-based, expert-rated scale with 20 items taking 20-30 minutes to complete.
3.4	What comparisons are made in the study?	Suicide Assessment Scale (SUAS) compared with Montgomery- Asberg Depression Rating Scale (MADRS), BHS & Suicide Intent Scale (SIS).
3.5	For how long are patients followed-up in the study?	Minimum 12 months
3.6	What outcome measures are used in the study?	Comparison and predictive ability of SUAS against other tools with respect to completed suicide attempts (minimum 12-month follow-up period).
3.7	What size of effect is identified in the study?	8 participants (4.2%, 2 men, 6 women) committed suicide within 12 months of admission and study enrolment (mean time between index event and suicide = 8.0+/-3.0 months). Completed suicides significantly older (p=0.005); gender, psychiatric diagnosis, co-morbidities, no. of previous attempts all ns. Longer f/u (16 months to 10 years & 2 months, median 6 years and 11 months) revealed a further 8 completed suicides. SUAS correlated significantly with MADRS (p<0.01) and BHS (p<0.01) but not SIS. SUAS cut-off score of 39 had 75.0% sens, 86.3% spec, PPV 19.4%. This score significantly (p=0.017) discriminated between patients completing suicide within a year from those committing suicide later. Predictive validity of SUAS: SUAS score (unlike MADRS< BHS and SIS scores) was significantly different (p=0.017) between suicides within 12 months and matched controls. Advanced age was the only other significant risk factor identified between these two groups (p=0.034).
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	Predictive ability of SUAS seems reasonable with respect to future suicide. The tool has the most clinical utility when combined with comprehensive DSM diagnostic procedures and demographic factors (e.g. mood disorders, advanced age, gender). Women scored significantly higher SUAS scores than men (p=0.006). Methodological concerns: source(s) of data for completed suicides not stated, ethnicity & SES level of sample not stated, blinding of investigators not stated.

Study identification: Nock, MK & Kessler, RC 2006, 'Prevalence of and risk factors for suicide attempts versus suicide gestures: analysis of the National Comorbidity Survey', *J Abnormal Psych*, vol. 115, pp. 616-623.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: What are the risk factors for nonfatal and fatal suicide attempts?	
Level of evidence: 2+		Country/setting: USA/survey	
In an well-conducted case series study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	Are the participants well defined in terms of time, place and person?	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	Did all subjects enter the survey at a similar point in their	Well covered	**Not addressed**

	risk factor?	Adequately addressed Poorly addressed	Not reported Not applicable
Assessment			
1.4	Exposure status is measured in a standard, valid and reliable way	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.5	The main potential confounders are identified and taken into account in the design and analysis	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.6	Confidence intervals are provided	Yes	
2.1	How well was the study done to minimise the risk of bias or confounding?		
2.2	Are the results of this study directly applicable to the patient group targeted by this guideline?	Demographics of this survey population demonstrate that the sample is representative of the US population on a wide range of sociodemographic variables.	
3.1	How many patients are included in this study?	5,877 respondents who participated in Part II of the NCS, which assessed risk factors and consequences of the disorders evaluated in Part 1, including all questions about suicide attempts/gestures. All respondents screened positive for any lifetime disorder in Part 1.	
3.2	What are the main characteristics of the study population?	Nationally representative sample, described elsewhere in another paper (Kessler, Sonnega et al., 1995). Sociodemographic variables included sex, race/ethnicity, age, years of education, religious affiliation, and current region of residence. Psychiatric diagnoses were obtained using a modified version of the Composite International Diagnostic Interview (CIDI).	
3.3	What environmental or prognostic factor is being investigated in this study?	Prevalence of lifetime suicide attempts that explicitly considers intent to die.	
3.4	What comparisons are made in the study?	Whether those who report engaging in suicide attempt(s) with intent to die differ significantly from those without such intent, but with the intent of communicating with others (suicide gestures).	
3.5	For how long are patients followed-up in the study?	Not applicable	
3.6	What outcome measures are used in the study?	Assessment of suicide attempts/gestures; assessment of sociodemographic variables; assessment of psychiatric diagnosis; assessment of history of physical and sexual abuse.	
3.7	What size of effect is identified in the study?	Suicide attempters (prevalence=2.7%) differed from those suicide gesturers (prevalence=1.9%) in the following ways: Male gender, OR 1.9 (1.1-1.3), p <0.05 Fewer years of education, OR 0.07 (0.02-2.0), p <0.01 Psychiatric diagnoses, e.g. depression, OR 1.7 (1.0-2.9), p <0.05 Comorbidity, e.g. ≥ 3 disorders, OR 2.4 (1.4-4.1), p <0.01 History of multiple physical [OR 2.1 (1.0-4.4)] and sexual [OR 3.2 (1.1-9.9)] assaults.	
3.8	How was this study funded?	Government funded study	
3.9	Does this study help to answer your key question?	Those who report engaging in self-harm with intent to die differ in significant ways from self-harmers without intent. Authors state the importance of using intent to die to define and classify self-harmers and risk factors for such behaviour. Intent to die should be a criterion for defining suicide attempts. Clinicians and researchers should avoid using the terms parasuicide	

		and deliberate self-harm, which ignore or obscure the differences in risk factors between these two groups.

Study identification: Prinstein, MJ et al. 2001, 'Multimethod assessment of suicidality in adolescent psychiatric inpatients: preliminary results', *J Am Acad. Child Adolesc. Psychiatry*, vol. 40, pp. 1053-1061.			
Guideline topic: Assessment and management of people at risk of suicide		Key question: Are there existing reliable and valid screening instruments for ED (for use by non-mental health clinicians as well as trained mental health workers) and other acute care providers to assess suicide risk?	
Level of evidence: 2+		Country/setting: USA/psychiatric inpatient unit	
In an well-conducted case series study:		In this study, the criterion is:	
1.1	The study addresses an appropriate and clearly focused question	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Selection of subjects			
1.2	Cases are clearly defined	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
1.3	Did all subjects enter the survey at a similar point in their risk factor?	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
Assessment			
1.4	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment	Well covered Adequately addressed Poorly addressed	**Not addressed** Not reported Not applicable
1.5	Exposure status is measured in a standard, valid and reliable way	**Well covered** Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
Confounding			
1.6	The main potential confounders are identified and taken into account in the design and analysis	Well covered **Adequately addressed** Poorly addressed	Not addressed Not reported Not applicable
Statistical analysis			
1.7	Confidence intervals are provided	yes	
2.1	How well was the study done to minimise the risk of bias or confounding?	Authors explored impact of age and gender differences on agreement between assessment instruments. Also examined whether concordance or discordance between instruments reflected meaningful clinical differences between suicidal adolescents rather than just measurement error.	
2.2	Is the study based on a representative sample selected from a relevant population?	yes	
2.3	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	Only 41% of PRS data completed: adolescents with completed PRS significantly more likely to have lower suicidal ideation, as measured by SIQ ($p<0.05$) and NIMH-DISC ($p<0.05$) than those with incomplete PRS. All measures assessed suicidality in the month immediately prior to admission rather than life-long prevalence. Methodological concerns: PRS data may be biased towards non-reporting due to structure of instrument and only small subset had PRS data completed (see above); this was a non-prospective study	

		with no external measures of validity, conducted on a limited population; study only measured inpatient population.
2.4	Was follow up long enough for important events to occur?	Not applicable
2.5	Are the results of this study directly applicable to the patient group targeted by this guideline?	Limited applicability to ED setting.
3.1	How many patients are included in this study?	153 adolescents included in study, 54 boys, 99 girls. 70 excluded (59 for incomplete data). Inclusion criteria: Consecutive daily adolescent inpatient admissions to psychiatric unit in New England (dates not specified). Exclusion criteria: Active psychosis, mental disability, incomplete data due to early discharge, readmissions during study period (only counted once).
3.2	What are the main characteristics of the study population?	Mean age 14.8+/- 1.6 years; range 12-17 years. Ethnicity 72.9% Caucasian, 10.4% Hispanic. SES status 15.6% high, 39.2% moderate, 17.6% low, 13.0% poverty, 14.3% unknown. Psychiatric diagnosis not provided. Excluded adolescents did not differ significantly from included in age, ethnicity or S/E status.
3.3	What environmental or prognostic factor is being investigated in this study?	Measurement of suicidality in at-risk adolescents – accuracy of instruments to assess suicidal ideation and suicidal behaviour
3.4	What comparisons are made in the study?	NIMH Diagnostic Interview Schedule for Children (NIMHDISC) c.f. Suicidal Ideation Questionnaire (SIQ), Clinician-Rated Suicidality (CRS) & Parent-Reported Suicidality (PRS).
3.5	For how long are patients followed-up in the study?	Not applicable.
3.6	What outcome measures are used in the study?	Suicidal ideation and behaviour assessed through: NIMH Diagnostic Interview Schedule for Children Suicidal ideation questionnaire Clinician-rated suicidality
3.7	What size of effect is identified in the study?	SIQ identified significantly ($p<0.001$) more suicidal ideation than NIMH-DISC. NIMH-DISC identified significantly ($p<0.003$) more suicide attempts than CRS. Overall agreement between all measures was low to moderate ($k=0.21$-0.49). Poor agreement between PRS and other measures. Non-significant trend for greater agreement between measures for boys c.f. girls. No age-related trends found. No SES trend data given.
3.8	How was this study funded?	Government funded
3.9	Does this study help to answer your key question?	Limited applicability to ED setting.

Appendix F: Technical Expert Reference Group

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