

**The Efficacy of  
Aftercare Strategies  
for Patients who have  
Attempted Suicide:  
A Review of  
Relevant Literature**

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## Table of Contents

<b>Acknowledgements</b>	3
<b>1.0 Executive Summary</b>	4
<b>2.0 Rationale for the Development of Interventions Following Attempted Suicide</b>	12
<b>3.0 Literature Search</b>	
3.1 Objectives	15
3.2 Methods	15
3.3 Results	17
3.3.1 Prior Review of Interventions for DSH (Hawton et al, 2004)	18
3.3.2 Prior Review of Interventions for DSH (Gaynes et al, 2004)	20
3.3.3 Newly Identified RCTs of Interventions for DSH	23
3.3.4 Newly Identified Non-Randomised CCTs	26
<b>4.0 Effects of Treatment on Intermediate Outcome Measures</b>	29
<b>5.0 Discussion</b>	
5.1 Current Evidence for the Efficacy of Treatments for Attempted Suicide	31
5.2 What Evidence Exists to Guide the Selection of Brief Psychological Intervention for Adults Following Attempted Suicide?	33
<b>6.0 Table 1: RCTs of Interventions for DSH Identified by Hawton et al, 2004</b>	39
<b>Table 2: RCTs of Interventions for DSH Identified by Gaynes et al, 2004</b>	42
<b>Table 3: RCTs of Interventions for DSH Identified by Hawton et al, 2004</b>	45
<b>7.0 References</b>	46

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## **1.0 Executive Summary**

Suicide is a major public health concern, both internationally and in New Zealand. Over 500 people die by suicide in New Zealand each year (Ministry of Health, 2003) and suicide rates have been steadily increasing over the last two decades (Gibb & Beautrais, 2004; Ministry of Health, 2001). Currently, public health policy initiatives in New Zealand focus on preventing young people's suicidal behaviours (Ministry of Health, 1998). However, while evidence clearly indicates that suicide rates in young people in New Zealand are high when compared internationally (World Health Organisation, 2000), the greatest burden of suicide deaths in New Zealand is experienced by those aged over 25 years (Ministry of Health, 2001).

One of the most significant risk factors for attempted or completed suicide is a previous history of deliberate self harm (DSH). Between 10 and 20 percent of people who have made a suicide attempt eventually die by suicide (Ministry of Health, 2003), and it has been estimated that in the year following a suicide attempt, the risk of a repeat attempt or death by suicide may be up to 100 times greater than that seen in people who have never attempted suicide (Garland & Zigler, 1993; Hawton & Fagg, 1988). It is therefore extremely important to identify effective treatments for DSH that can be widely utilised in clinical practice (Arensman, Townsend, Hawton *et al*, 2001).

### **1.1 Terminology**

Throughout this literature review we refer to both "attempted suicide" and "deliberate self harm". Deliberate self harm (DSH), and "parasuicide" are terms often used in place of the term "attempted suicide" as they avoid the question of the intent of the action. In many of the studies reviewed, patients were included regardless of any overt intent to die. While we use both terms, this review was conducted in order to provide information to guide the selection of an intervention that is potentially effective in reducing rates of attempted and completed suicides.

## 1.2 Objectives

The current literature overview was conducted in order to:

1. Outline the existing evidence for the efficacy of treatments following attempted suicide; and
2. Provide an evidence base for the development of a pilot study of a brief psychological intervention that has the potential to be effective in reducing repetition rates of attempted suicide in adults following deliberate self harm.

## 1.3 Methods

To identify relevant articles, the MEDLINE, PsychInfo; Embase; Eric; Science Dissertations (ISI Web of Science); Digital Dissertations and Cochrane Collaboration databases from 1999 to August 2004 were searched, beginning with the terms “suicide” or “suicide, attempted”.

The initial search identified a well-conducted systematic review that had been published in the Cochrane Collaboration Database (Hawton, Townsend, Arensman *et al*, 2004). We also identified a more recent systematic review conducted by the U.S. Preventive Services Task Force (USPSTF; Gaynes, West, Ford *et al*, 2004) that included very similar search criteria to our own. Due to the existence of the two previously conducted systematic reviews, we limited the focus of our literature search to studies published subsequently to these reviews. In order to ensure that the search was as comprehensive as possible, we replicated the search criteria outlined in the USPSTF review.

We included RCTs or controlled trials where:

- participants were included if they had a recent episode of deliberate self-harm or a proportion of the participants from a group identified as being at high risk of suicide had had a recent episode of self harm;
- participants were allocated to one of two conditions, allowing direct comparison of outcomes between intervention and control groups; and
- repetition of deliberate self-harm was a primary outcome measure.

## 1.4 Results

A well-conducted, systematic review of treatments for deliberate self-harm was conducted in 1998, and updated in 1999 (Hawton *et al*, 2004), and formed the basis for the current overview. The Hawton review found no conclusive evidence for the efficacy of any single intervention in reducing repetition rates of deliberate self-harm, although promising trends were found for problem-solving therapy, the provision of an emergency access card, dialectical behaviour therapy (DBT) for female patients with borderline personality disorder and treatment with flupenthixol (an antipsychotic medication).

The Hawton review identified numerous methodological issues within the included studies that precluded the reviewers from making firm recommendations regarding potentially effective interventions. Firstly, there was a high degree of variability within the interventions offered, making grouping of studies for meta-analytic purposes difficult. Of the eleven categories of studies, only four categories included more than one trial. Secondly, the majority of studies did not conduct a prior power analysis, resulting in sample sizes that were too small to enable identification of statistically significant effects. A third problem was the high variability in “standard care”. While standard care is regularly used as a control condition, there is little consistency between care providers, so that standard care ranges from little or no follow up to highly structured treatment programmes. Descriptions of standard care in studies are often limited, and few studies contained any analysis of the degree of patient adherence to standard care (Hawton *et al*, 2004).

During the literature search for the current overview, we identified a more recent systematic review conducted by the U.S. Preventative Task Force (USPSTF: Gaynes *et al*, 2004). One part of this review updated and extended findings from the Hawton review, using a slightly broader inclusion criteria that included studies in which participants were identified as being at high risk of attempted suicide without requiring a previous attempt. The USPSTF review did not attempt to group studies for meta-analytic purposes, but rather identified and summarised results from both randomised controlled trials and controlled clinical trials (CCTs).

In studies conducted subsequently to the Hawton review, the USPSTF review found a significant reduction in repetition rates of DSH compared with usual care in a trial of psychodynamic interpersonal therapy for adult patients following deliberate self-poisoning (Guthrie, Kapur, Mackway-Jones *et al*, 2001). In patients with borderline personality disorder, psychoanalytically oriented partial hospitalisation was successful in reducing rates of deliberate self-harm (Bateman & Fonagy, 1999, 2001), and in children and younger adolescents, developmental group psychotherapy resulted in a decrease in repeated suicide attempts (Wood, Trainor, Rothwell *et al*, 2001). The USPSFT review concluded that there was 'fair' and 'mixed' evidence that interventions to treat those at risk of suicide reduce suicide attempts or completions.

We identified six randomised controlled trials and three non-randomised controlled clinical trials published subsequently to the previous reviews. A large randomised controlled trial of manual assisted cognitive therapy compared with treatment as usual revealed no significant differences in either repetition rates or intermediate outcome measures (Tyrer, Thompson, Schmidt *et al*, 2003b). Telephone contact offering motivational support to encourage patients to attend and/or stay in treatment following DSH found no differences between the intervention and control groups in either attendance or repetition rates of DSH (Cedereke, Monti & Ojehagen, 2002). In one recent pharmacological study, Clozapine was found to be superior to Olanzapine in preventing suicide attempts in people with a diagnosis of schizophrenia or schizoaffective disorder (Meltzer, Alphas, Green *et al*, 2002).

In studies that focused on patients with borderline personality disorder, a non-significant reduction in repeat suicide attempts (Verhuel, van den Bosch, Koeter *et al*, 2003) and a significant reduction in self-mutilating behaviours (Bohus, Haaf, Simms *et al*, 2004; Verhuel *et al*, 2003) was observed in patients treated with dialectical behaviour therapy.

In studies of children and younger adolescents, a group of suicidal adolescents with borderline personality features required fewer hospitalisations after treatment with an adapted dialectical behaviour therapy programme, although there was no significant reduction in repetition rates (Rathus & Miller, 2002). A non-randomised controlled

trial of rapid response outpatient follow-up, compared with standard psychiatric care, for suicidal adolescents found no differences between the groups in the number of suicide attempts during the follow-up period (Greenfield, Larson, Hechtman *et al*, 2002). Youth nominated support teams had no effect on repetition rates of attempted suicide in 13-17 year old suicidal adolescents (King *et al*, 2002). Multisystemic therapy was found to be significantly more effective than psychiatric hospitalisation at reducing youth-rated attempted suicide in patients between 10 and 17 years (Huey, Henggeler, Rowland *et al*, 2004).

The evidence base for effective interventions for DSH remains inconclusive. Recent research has focused on the development of novel approaches to treatment, particularly in studies with children and younger adolescents. A strong theme in studies in this population is the delivery of interventions in the context of the child or adolescent's family, peer group and/or community systems. Results to date appear promising for multisystemic therapy (Huey *et al*, 2004) and developmental group therapy (Wood, *et al*, 2001). In adult patients, a growing body of evidence exists for the efficacy of dialectical behaviour therapy, a longer term, intensive intervention, in reducing rates of DSH (Linehan Heard & Armstrong, 1991; Verhuel *et al*, 2003) and self-mutilating behaviours (Bohus *et al*, 2004; Verhuel *et al*, 2003) in patients with borderline personality disorder. Although one study found that personalised contact letters sent at regular intervals to patients who refused treatment following self-harm resulted in reductions in rates of DSH over a two year follow-up period (Motto & Bostrom, 2001), scant evidence exists that other "minimal interventions" such as the provision of emergency contact cards has any significant effect on repetition rates (M Evans, Morgan, Hayward *et al*, 1999; Morgan, Jones & Owen, 1993).

Brief psychological interventions for adults following attempted suicide commonly employ a problem solving approach. The current overview supports the findings of previous reviews that have identified problem-solving therapy as a promising intervention (Gaynes *et al*, 2004; Hawton *et al*, 2004). To date, we have identified seven RCTs that have examined the effect of problem solving approaches on repetition rates of DSH. Early studies were unable to demonstrate a significant reduction in repetition rates following treatment with problem-solving therapy (K Evans, Tyrer, Catalan *et al*, 1999; Hawton McKeown, Day *et al*, 1987; McLeavey,

Daly, Ludgate & Murray, 1994; Salkovskis, Atha & Storer, 1990), although this may be attributable to sample sizes that were too small to allow identification of statistically significant effects. However, evidence has been found for beneficial effects of problem-solving therapy on predictors of attempted suicide such as hopelessness and depression, as well as improvements in patients' problems (Townsend, Hawton & Atman, 2001).

One of the difficulties in determining the efficacy of problem-solving therapy is the wide variation in interventions in this category. Two large trials, using quite different models of problem-solving therapy have recently been conducted (Guthrie *et al*, 2001; Tyrer, Jones, Thompson *et al*, 2003). Else Guthrie and colleagues provided psychodynamic interpersonal problem-solving therapy delivered in patients' homes, and found a significant reduction in repetition rates of DSH in the intervention group compared to patients receiving standard care. Peter Tyrer and colleagues (2003a) provided manual assisted cognitive therapy, consisting of problem-focused cognitive therapy plus a manual. No differences were found between the intervention and control groups on repetition rates or on any of the intermediate outcome measures. The contrasting results of the two recent studies raise several issues that need to be addressed in future studies.

First, future studies need to clearly define and preferably manualise the intervention strategies they employ, in order to enable replication by other researchers.

Secondly, future studies need to clearly describe both the nature of and patient adherence to "treatment as usual" (TAU). In the multi-centre POPMACT study TAU was different in each of the five centres, and patients in the "control" condition commonly received substantially more therapist time than those receiving the intervention, while in the Guthrie study TAU usually consisted of nothing more than GP referral.

Thirdly, future studies need to consider the difficulties typically encountered in engaging patients who have attempted suicide in therapy. In the Guthrie study this was effectively managed by providing home visits, however this approach is unlikely to be a viable addition to existing mental health services. In the POPMACT study

forty percent of patients in the intervention group never attended a single treatment session, and “treatment” consisted only of a 70 page treatment manual given to the patient, although data was not available on whether these patients read or used the information provided in the manual. If patients did not attend their first appointment a second one was offered, but no further contact was made subsequently by the therapists (Tyrer *et al*, 2003b). Intensive outreach appears to be a necessary addition if brief psychological interventions are to be effective, and several strategies to increase patient adherence have recently been outlined in an ongoing study of cognitive behavioural therapy following attempted suicide (Berk, Henriques, Warman *et al*, 2004).

Fourthly, consideration needs to be given to determining which subgroups of patients are most likely to respond to a brief psychological intervention such as problem-solving therapy. Brief psychotherapeutic approaches appear to be most effective for patients with no prior history of deliberate self-harm (Guthrie *et al*, 2001; Van der Sande *et al*, 1997), yet in the POPMACT study, patients were only included if they had a previous history of deliberate self harm, and 42% of patients in the study had a personality disorder. It is possible that brief psychological interventions will be less effective for individuals with numerous self-injurious behaviours or suicide attempts, and that these patients should be treated with more intensive approaches. We recommend that future studies give consideration to tailoring interventions to the needs and risk level of the targeted group, rather than attempting to provide a “one size fits all” intervention.

Although studies to date have not provided conclusive evidence for the efficacy of problem-solving therapy in reducing repetition rates of deliberate self-harm, this may reflect the paucity of well-designed, large-scale, systematic trials of problem-solving therapy. Problem-solving therapy has a sound theoretical basis. Consistent evidence has shown that people who attempt suicide have poor problem solving skills (Linehan, Camper, Chiles *et al*, 1987; McLeavey, Day, Murray *et al*, 1987; Pollock & Williams, 2001; Schotte & Clum, 1987) and it is hypothesized that problem solving deficits contribute to hopelessness and depression, which in turn increase the probability of suicidal ideation and intent (D’Zurilla, Chang, Nottingham & Faccine, 1998; Schotte & Clum, 1982,1987). Problem-solving therapy has been

found to be effective in the treatment of unipolar depression (Mynors-Wallis, Davies, Grey *et al* 1997; Nezu, 1986; Nezu & Perri, 1989), and in reducing levels of depression and hopelessness in patients who have attempted suicide (Townsend *et al*, 2001). In addition, problem-solving therapy is a brief, cost effective, pragmatic intervention that has the potential to be widely utilised in clinical practice.

In conclusion, the problem-solving deficits seen in suicidal individuals indicate that systematic training in problem-solving skills with a focus on problems precipitating the suicide attempt is likely to have a positive effect on predictors of suicidality and repetition of suicidal behaviours. A strong rationale exists for the development of a further, large scale trial of problem-solving therapy in order to clearly determine the efficacy of this intervention following attempted suicide. Findings from recent studies of brief, problem solving approaches have provided important information that should be incorporated into future studies.

## **2.0 Rationale for the Development of Interventions Following Attempted Suicide**

Suicide deaths and hospitalisations resulting from suicidal behaviours are a major public health concern both in New Zealand (Ministry of Health, 2001) and internationally (National Institute of Mental Health, 2001; World Health Organisation, 2000). Over 500 people die by suicide in New Zealand each year (Ministry of Health, 2003), which is a higher rate than deaths from motor vehicle crashes (Ministry of Health, 2001). Suicide accounted for 31% of injury deaths in New Zealand over the period from 1993-1998, making it the second leading cause of injury death (Ministry of Health, 2001). In the United States, suicide accounts for 1.3% of total deaths, which is more than double the number of deaths attributed to HIV infection and AIDS (Gaynes *et al*, 2004), and in the United Kingdom, suicide is the second most common cause of death in people aged 15-24 (Hawton, Fagg, Simpkins *et al*, 1997).

The New Zealand hospitalisation rate for intentional self-harm was 129.2 per 100,000 people in the 2000-2001 period (Ministry of Health, 2002). It is, however, difficult to accurately determine the number of people who attempt suicide in New Zealand each year. Although records are kept of people admitted to hospital through Emergency departments with deliberate self harm (DSH), records are not kept of those who are seen and discharged without admission, those seen by General Practitioners, and those who do not seek medical help (Ministry of Health, 2002). It is likely therefore, that the available statistics on the rates of attempted suicide in New Zealand substantially underestimate actual rates (Howson, 2003).

Currently, public health policy initiatives in New Zealand focus on preventing young people's suicidal behaviours (Ministry of Health, 1998). However, while evidence clearly indicates that suicide rates in young people in New Zealand are high when compared internationally (World Health Organisation, 2000), the greatest burden of suicide deaths in New Zealand is experienced by those aged over 25 years (Ministry of Health, 2001). For the period 1993-1998, those aged 25 years or more accounted for 72% of all suicide deaths. Adult men aged 25-39 years are at the greatest risk for death by suicide. The rate of suicide deaths in this age group has been steadily

increasing over the past decade, from a death rate of 28 per 100,000 population in 1993, to 39 per 100,000 in 1997 (Ministry of Health, 2001). In 1997, the suicide rate for 25-34 year olds in New Zealand was the second highest among OECD countries (Ministry of Health, 2001).

An analysis of trends in admissions for suicide attempt behaviour and mortality undertaken at Christchurch Hospital revealed admissions for attempted suicide rose more than 40% over the decade 1993-2002. Significant increases in the number of admissions during the decade were seen in females, but not males, and significant increases were seen in adults aged 25-54 years, and older adults (aged 55 years and over) but not in youth (less than 25 years) (Gibb & Beautrais, 2004).

There is widespread agreement that suicide attempts and deaths have major impacts on individuals, families/whanau and communities (Cantor & Neulinger, 2000; Kachur, Potter, Powell *et al*, 1995), and considerable efforts have been put into the development of effective prevention strategies. Primary prevention strategies have focussed on areas such as school-based intervention, the effect of the media, reducing access to lethal means such as guns and poisons, and improving safety measures of bridges and walkways (Williams, 2001). Attention has also been directed towards whether suicidal behaviours can be predicted. The main difficulty in attempting to predict suicide is that although risk factors for suicide have been identified (for example, depression, alcohol or drug abuse, physical illness and isolation), the existence of risk factors in an individual is not a reliable method of predicting suicide, due to the relative rarity of completed suicide. More than 90% of those who complete suicide have a diagnosable psychiatric illness at the time of death, usually depression, alcohol abuse or both, however, for every 100 patients in an identified "suicide high risk" category, only one will actually commit suicide in any one year, and it is not possible to be sure which one, or when (Gaynes *et al*, 2004; Williams, 2001).

Of the known risk factors for suicide, the most strongly predictive of a future suicide attempt or completed suicide are hopelessness and a prior history of deliberate self-harm (Brown, Beck, Steer, & Grisham, 2000). Between 10 and 20 percent of people who have made a suicide attempt eventually die by suicide (Ministry of Health,

2003), and it has been estimated that in the year following a suicide attempt, the risk of a repeat attempt or death by suicide may be up to 100 times greater than that seen in people who have never attempted suicide (Garland & Zigler, 1993). For this reason, it is extremely important that effective treatments for deliberate self-harm patients that can be widely utilised in clinical practice be identified (Arensman *et al*, 2001).

## **3.0 Literature Search**

### **3.1 Objectives**

This literature overview was conducted as part of the resource development process to guide the design of a pilot study to examine the feasibility, acceptability and efficacy of an intervention to be offered to adult patients seen in a general hospital emergency department following a suicide attempt.

The current literature overview had two main objectives:

1. To identify and summarise all randomised controlled trials (RCTs) and controlled clinical trials (CCTs) of psychosocial and pharmacological interventions following DSH; and
2. To determine, based on the available evidence, which brief psychological intervention is most likely to result in reductions in attempted suicide within an adult population seen following DSH in a general hospital emergency department.

### **3.2 Methods**

To identify relevant articles, we searched the MEDLINE, PsychInfo; Embase; Eric; Science Dissertations (ISI Web of Science); Digital Dissertations and Cochrane Collaboration databases from 1999 to August 2004, beginning with the terms suicide or suicide, attempted.

The initial search identified a well-conducted systematic review that has been published in the Cochrane Collaboration Database (Hawton *et al*, 2004). We also identified a more recent systematic review conducted by the U.S. Preventive Services Task Force (USPSTF; Gaynes *et al*, 2004) that included very similar search criteria to our own. We then obtained all articles listed as “studies included in the review” from the references section of the previous reviews. The more recent review (Gaynes *et al*, 2004) included studies conducted up to June 2002. We therefore limited the focus of our literature search to studies conducted and published since this date, and using a strategy similar to that by Gaynes and colleagues we have

examined in detail only those studies not included in the prior reviews. In order to ensure that the search was as comprehensive as possible, we replicated the search criteria outlined in the USPSTF review, as follows:

All searches began with the terms “suicide”, or “suicide, attempted”, and we subsequently used MEDLINEs ‘explode” feature, which takes advantage of MeSH heading tree structure and picks up all terms that are more specific than the target term as well as the target term. We re-ran our searches after this initial pass and clarified that this search successfully identified all relevant studies involving “parasuicide”, “suicidal ideation”, “suicidal”, and “deliberate self-harm”.

Reference lists of all studies included in previous reviews were checked, and issues from the previous two years were hand searched in two journals: “Crisis” and “Suicide and Life Threatening Behaviour”. A search of “Grey Literature” was also conducted, by contacting leading international experts in suicide prevention and asking for any information they had relating to unpublished studies.

We included RCTs or controlled trials where:

- participants were included if they had a recent episode of deliberate self-harm, or a proportion of the participants from a group identified as being at high risk of suicide had had a recent episode of self harm;
- participants were allocated to one of two conditions, allowing direct comparison of outcomes between intervention and control group; and
- repetition of DSH was a primary outcome measure.

The primary aim of the current review was to provide a summary of existing systematic reviews, and to outline recently conducted trials of interventions for DSH. We did not attempt to rate the newly identified studies, but rather focussed on providing a comprehensive overview of the types of treatments for DSH trialled to date, in order to provide information guiding the development of a brief intervention study for DSH in adults presenting to the emergency department of a general hospital.

### 3.3 Results

We identified two well-conducted, comprehensive systematic reviews that reported on studies of treatments for deliberate self-harm conducted prior to June 2002 (Gaynes *et al*, 2004; Hawton *et al*, 2004). First we report on the findings from these reviews, and then on results of studies conducted subsequently to these reviews.

A systematic review of psychosocial and pharmacological treatments following attempted suicide using meta-analysis where possible was conducted by Hawton and colleagues, and published in the Cochrane Review (2004). The Hawton review includes 23 RCTs, with the last major amendment to this systematic review being done in 1999.

We identified a more recent systematic evidence review that was conducted by the U.S. Preventive Services Task Force (USPSTF; Gaynes *et al*, 2004). This review consisted of eight key questions related to evidence connecting screening for suicide risk with decreased suicide attempts. Two of the eight questions were relevant to the current review: Question 3 examined the efficacy of treatments to reduce suicide attempts or mortality for those at risk of attempting suicide. The Hawton review was used as a basis for the USPSTF into this question. Question 4 asked, “For those at risk, does treatment result in improved intermediate outcomes, eg, decreased suicidal ideation or depressive severity?” A prior review of Problem Solving Therapies was used as a basis for this question (Townsend *et al*, 2001).

The USPSTF identified 33 randomised controlled trials (RCTs) that met their inclusion criteria for Question 3. This included 23 studies of DSH included in the Hawton review, plus an additional nine RCTs involving repetition of DSH in adult populations, and one RCT conducted exclusively in patients 17 years or younger. An additional four cohort studies were included, of which two were in adults and older adolescents, and two were in child or adolescent populations. The USPSTF review contains studies conducted prior to June 30, 2002.

Following a similar strategy to that used in the USPSTF review, we have checked studies from our search against the studies in the previous two reviews, and

examined in detail only those studies not included in previous reviews. The following sections outline the results found in prior reviews, and then provide information related to studies published after June 2002.

### **3.3.1 Prior Review of Interventions for Deliberate Self-Harm (Hawton *et al*, 2004)**

Twenty one studies included in the Hawton review examined the efficacy of treatments for deliberate self-harm for adults and older adolescents, and a further two were studies conducted exclusively with patients 17 years or younger. The Hawton review grouped the identified studies into eleven groups, with groups based on similarity of treatment strategies (Table 1). Only four of the groups contained more than one trial: problem-solving therapy vs standard aftercare; intensive intervention plus outreach vs standard aftercare; emergency card vs standard aftercare and antidepressants vs placebo.

Meta-analysis of the above groups found no statistically significant effects for any of the interventions. The most promising of the interventions was problem-solving therapy. For the five studies of problem-solving therapy identified, a summary odds ratio (OR) showed a trend towards decreasing DSH (OR 0.70; 95% CI, 0.45-1.11).

The Hawton review also identified a trend favouring the provision of an emergency access card in addition to standard care. One of the trials, in which patients were provided with a card with physician information and an offer of crisis intervention as needed, was compared to standard care, and found a trend toward a decrease in repetition of DSH following the intervention (Morgan *et al*, 1993). The second trial in this group included only patients 16 years or under (Cotgrove *et al*, 1995), and also found a non-significant trend towards decreased DSH in the group given the cards. For the two studies combined, there was a trend towards less repetition of self-harm in the experimental group, although the difference did not reach significance (Summary OR of 0.45, 95% CI = 0.19-1.07).

Analysis of the six studies combining intensive care plus outreach and standard aftercare showed little indication for the efficacy of this combination (Summary OR of 0.83, 95% CI = 0.47-1.48). However, in one of the included studies community follow-up of patients who did not attend outpatient appointments resulted in a significant increase in outpatient attendance and a near significant difference in repetition rates of DSH (van Heeringen *et al*, 1995).

In the only other category that included more than one study, no evidence was found for the efficacy of antidepressant therapy in reducing rates of DSH (OR = 0.83; CI = 0.47-1.48).

Seven other single studies investigated dialectical behaviour therapy vs standard aftercare (Linehan, Armstrong, Suarez *et al*, 1991); inpatient behaviour therapy vs inpatient insight-orientated therapy (Lieberman & Eckman, 1981); same therapist vs different therapist (Torhorst *et al*, 1987); general hospital admission vs discharge (Waterhouse & Platt, 1990); long-term therapy vs short-term therapy (Torhorst, Moller, Burk *et al*, 1988); home-based family therapy vs standard aftercare (Harrington, Kerfoot, Dyer *et al*, 1998); and flupenthixol vs placebo (Montgomery, Montgomery, Jayanthi-Rani *et al*, 1979). Two of these interventions reported statistically significant reduced repetition of DSH. Dialectical behaviour therapy (DBT) is a comprehensive treatment programme, developed to treat people with borderline personality disorder (Linehan *et al*, 1991). In this study, patients experienced significantly lower rates of DSH following treatment with DBT. Flupenthixol (an antipsychotic), was also reported to result in significant reductions in DSH for people with a history of at least two prior suicide attempts compared with placebo administration (Montgomery *et al*, 1979).

#### *Summary of findings from the Hawton review*

The Hawton review reported that there was insufficient evidence to make any firm recommendations regarding treatment following deliberate self-harm, however, they identified promising trends for problem-solving therapy;

dialectical behaviour therapy for patients with borderline personality disorder; the provision of emergency access cards, and treatment with flupenthixol.

### **3.3.2 Prior Review of Interventions for Deliberate Self-Harm (USPSTF)**

The second systematic review of treatments for self harm identified nine additional studies involving repetition of DSH in adults, and one additional study conducted exclusively with young people under the age of 17. The USPSTF reported that of the nine identified additional studies conducted with adults, only two showed significant effects on repetition rates (Bateman & Fonagy, 1999, 2001; Guthrie *et al*, 2001), (Table 2).

Guthrie and colleagues (2001) randomised patients who presented to an emergency department after deliberate self-poisoning to receive either four 50-minute sessions of psychodynamic interpersonal therapy (PIT) delivered in the patients' home, or usual care. PIT is a time-limited psychotherapy that focuses on exploring current interpersonal problems, perceived to have precipitated the self-harm and is based on a psychoanalytical model of therapy. Patients in the PIT group were significantly less likely than those in the control condition to repeat DSH in the six month follow up period (8.6% v. 27.9%,  $p = 0.0009$ ). PIT appeared to be more effective for patients with lower depression scores, and no prior history of self-harm. Of note in this study, the significant differences found were reliant on patient self-report of DSH. Of 29 patients who harmed themselves during the study period, only six reported attending hospital.

Bateman and Fonagy (1999, 2001) compared psychoanalytically oriented partial hospitalization to standard aftercare for patients with borderline personality disorder. Recent deliberate self-harm was not required for patient inclusion in this study, but it was included in the USPSTF review as people with borderline personality disorder are at higher risk of DSH, and 75% of those involved in the study had had a previous episode of self-harm or attempted suicide. Significantly fewer of the patients in the treatment group had made a suicide attempt than in the usual care group at 18 month follow up (four in the intervention group vs 12 in the control group,  $p < 0.04$ ).

The USPSTF reports that no significant benefits from interventions were reported in any of the other seven studies conducted with adults or older adolescents. Psychosocial interventions included emergency information cards vs usual care (M. Evans, Morgan, Hayward & Gunnell, 1999); brief contact by letter for patients who refused therapy after hospital discharge vs no letter (Motto & Bostrom, 2001); outpatient day hospitalization program vs usual outpatient care (Rudd, Rahab, Orman *et al*, 1996); dialectical behaviour therapy vs usual care (Koons, Robins, Tweed & Lynch, 2001); and an intervention aimed at providing GPs of patients who had attempted suicide with information plus guidelines on assessment and management of self harm (Bennewith, Stocks, Gunnell *et al*, 2001). Pharmacological interventions included antidepressant vs placebo (Montgomery, Roberts, Green *et al*, 1978), and low-dose intramuscular fluphenazine (antipsychotic) vs placebo (Battaglia, Wolff, Wagner-Johnson *et al*, 1999).

In one of the studies mentioned above (Motto & Bostrom, 2001), the USPSTF reported no significant difference between the intervention and control groups in the proportion of patients who completed suicide at five year follow up (3.9% vs 4.6%). In this study, follow up inquiry letters were sent to all patients who had been discharged following admission to psychiatric inpatient facilities because of a suicidal or depressive state. Patients who were identified as having refused or discontinued treatment in less than 30 days following discharge were randomised to the contact group or the no-contact group. Patients in the contact group received individualised contact letters at monthly intervals for the first four months, then every two months for eight months, and finally every three months for four years. It was found that the group receiving contact by letter had significantly lower rates of suicides than the no-contact group during the first two years ( $p = 0.04$ ), although this difference was not significant by five year follow up.

In the one new RCT identified that examined an intervention specifically targeted at young people (12-16 years), Wood *et al* (2001) assessed developmental group psychotherapy vs standard care. Developmental

therapy, delivered by a psychiatrist and a senior nurse, consisted of an initial assessment phase of attendance at six “acute” group sessions, followed by weekly group therapy in a long-term group, which continued until the young person felt ready to leave. Developmental group therapy brings together techniques from various other therapies such as cognitive-behavioural and problem-solving interventions. Additionally, individual sessions were available if needed. At seven month follow up, the adolescents in the group therapy condition were significantly less likely than those in usual care to have had repeated suicide attempts (ie, two or more episodes of DSH since randomization), and although the difference did not reach significance, adolescents in the group therapy condition tended to have fewer episodes of DSH than those receiving standard care.

*Non-randomised CCTs identified in the USPSTF review*

Four studies that did not meet criteria to be included as RCTs were identified in the USPSTF study. Two were conducted with adults, and two with children 17 years and younger.

Coryell, Arndt, Turvey *et al* (2001) conducted a nested case-control study, where patients being treated for major affective disorders were identified from five academic medical centres. Two case groups (suicide completers and suicide attempters) and two matched control groups were compared, to evaluate lithium use at the time of suicidal behaviour. Forty percent of suicide completers and 53% of their controls were thought to be taking lithium in the week preceding their deaths. Among attempters and their controls, 21% and 19.5% were taking lithium. Results did not support the hypothesis that lithium has uniquely anti-suicidal properties. Raj, Kumaraiah, Bhide *et al* (2001) examined the efficacy of Cognitive-behavioural therapy following DSH. This study did not fulfill criteria for an RCT as patients were assigned sequentially rather than randomly to the experimental or control conditions. The experimental condition consisted of 10 sessions of cognitive behaviour therapy over a two month period, while the control condition consisted of routine medical care. This was a small study, with twenty patients in each group. One patient in the control group had a repeat suicide attempt within

the six week follow up period compared with no patients in the intervention group.

Pfeffer, Hurt, Kakume *et al* (1994) followed a cohort of 69 children and adolescent psychiatric inpatients receiving routine aftercare and a group of 64 matched community subjects, who were not psychiatric patients, for 6 to 8 years. No association was found between annual rates of combined psychiatric services and the occurrence of a suicide attempt post-hospitalisation or between type of services received and time to first suicide attempt post-hospitalisation. Rotheram-Borus, Piacentini, Cantwell *et al* (2000) evaluated an emergency room intervention targeting urban Latino adolescent females and their mothers. The intervention consisted of staff training, a video for the adolescents and their mothers to view and one family therapy session in the emergency room. The difference in numbers of repeat suicide attempts between the intervention and control groups did not reach significance, but the intervention was associated with less depression and increased use of follow up outpatient therapy in the adolescents.

#### *Summary of findings from the USPSTF Review*

The USPSTF review reported that no statistically significant effects were seen for interventions for which more than one study of the intervention had been performed, however, benefits from some interventions, including problem-solving therapy for patients 15 years of age or older were identified. The most promising interventions for deliberate self harm for which only one study had been conducted included interpersonal problem solving therapy in adults (Guthrie *et al*, 2001), dialectical behaviour therapy for adults with borderline personality disorder (Linehan *et al*, 199) and group therapy in younger adolescents aged 12 to 16 (Wood *et al*, 2001).

### **3.3.3 Newly Identified RCTs of Treatments for Deliberate Self-Harm**

We have identified four RCTs examining the efficacy of treatments for adults and older adolescents, and two RCTs conducted with younger adolescents following attempted suicide conducted since the USPSTF review.

Tyrer *et al* (2003a) conducted a large multi-centre trial of manual assisted cognitive therapy (MACT), which is a brief form of cognitive therapy combined with dialectical behaviour therapy techniques. This study was preceded by a pilot study (K.Evans *et al*, 1999) which found that MACT was effective in reducing depressive symptoms and increasing positive thinking in people with repeated DSH episodes, as well as showing some promise in reducing repetition rates over the six month follow up period. Patients were eligible for inclusion in the study if they had a prior history of at least one episode of deliberate self-harm. Four hundred and eighty patients were recruited over a two year period. No differences were found between the MACT group or control group for repetition rates of DSH at follow up. No differences were found for any of the other outcome measures in this study (including anxiety, depression, hopelessness) at two year follow up, although this was due to improvements experienced by patients in both groups.

In a cost-benefit analysis of the POPMACT study, Byford and colleagues (2003) found that while cognitive therapy had limited efficacy in reducing self-harm repetition, the findings taken in conjunction with the economic evaluation indicate a superiority of MACT over TAU in terms of cost and effectiveness combined. Factors that may have contributed to the lack of evidence of efficacy included the fact that 40% of patients attended no treatment sessions and treatment consisted of a 70 page booklet alone, although there is no data available on whether these patients read the booklet. However, the 95 “non-attenders” had similar rates of further self-harm events to the others in the MACT group. Tyrer *et al* (2003b) suggest that a longer period of treatment or a greater engagement in face-to-face treatment may possibly show more favourable results. A further difficulty in interpreting the data is the variety of “treatment as usual” (TAU) provided in the study. Problem solving was standard therapy in one centre, and dynamic psychotherapy in another, and in many cases the amount of therapeutic time provided in the TAU condition was considerably greater than that received by patients in the MACT group.

Cedereke, Monti and Ojehaagen (2002) compared the effects of telephone support in addition to standard care with standard care alone for patients

treated at a university hospital in Sweden after attempted suicide. Patients assigned to receive the telephone intervention received two calls at four and eight months in which they were offered motivational support to attend and/or stay in treatment during the year after a suicide attempt. Patients in the telephone contact group did not differ from those in the control condition at follow up in terms of treatment attendance or in repetition rates.

Verheul *et al* (2003) compared the efficacy of dialectical behaviour therapy with usual care for patients with borderline personality disorder. DBT consisted of 12 months of treatment as specified in the manual produced by Linehan (1993), which includes individual cognitive-behavioural psychotherapy sessions and skills training groups. Treatment as usual generally involved no more than two sessions per month with a psychologist, psychiatrist or social worker. Fewer patients in the DBT group than in the control group attempted suicide over the one year follow up period, but this difference was not significant. Patients in the DBT condition reduced the frequency of self-mutilating behaviours, while the opposite was seen in patients in the control condition, resulting in a significant time x treatment condition effect ( $t_{1,44.4} = 10.24$ ;  $p = 0.003$ ).

In one new pharmacological study, Meltzer, Alphs, Green *et al* (2002) randomly assigned patients with a diagnosis of schizophrenia or schizoaffective disorder and a high risk of suicide, which was defined as a history of attempts or hospitalisation to prevent attempts, moderate to severe suicidal ideation with depressive symptoms, or command hallucinations for self-harm, to receive either Clozapine or Olanzapine. The study found that Clozapine was superior to Olanzapine in preventing suicide attempts in this population.

In an unpublished study with suicidal adolescents (aged 13-17 years), patients were randomised to receive a youth-nominated support team (YST) plus standard care or standard care alone. In YST, the youth nominates support persons from home, school or the community, and these people are offered psycho-education regarding adolescent psychiatric disorders, the importance of treatment adherence, signs of increased suicide risk,

communication with adolescents, and the availability of professional resources and emergency services. Regular communication between the support person and the youth is recommended for a period of six months. Youth nominated support teams had no effect on rates of attempted suicide in 13-17 year old suicidal adolescents when compared with standard care, although the intervention was associated with decreased suicidal ideation and decreased functional impairment in female patients (King *et al*, 2002).

Huey *et al* (2004) randomised one hundred and fifty six youths, aged between 10 and 17 years, presenting as psychiatric emergencies due to suicidal ideation, planning or attempted suicide; homicidal ideation or behaviour; psychosis or another threat of harm to self or others, to receive either multisystemic therapy (MST) or hospitalisation. The youths were predominantly African-American males (65%), and predominantly from low socioeconomic backgrounds.

MST was originally developed for the treatment of antisocial youths, and has been adapted for use with psychiatrically distressed youths. It is a family centred, home based intervention that targets the systems in which the youth and family are embedded. Therapists primarily intervene at the family level by empowering caregivers with the skills and resources they need to communicate with, monitor and effectively discipline their children; engage their children in prosocial activities; and to address the systemic and individual barriers to effective parenting (Huey *et al*, 2004). MST involves intensive (daily when needed) intervention, ranging from three to six months. Due to the intensive nature of the intervention therapists typically carry caseloads of no more than 4-6 families. Results found that MST was significantly more effective than psychiatric hospitalisation at reducing Youth Rated Attempted Suicide over the course of 16 months following recruitment. However, no significant treatment effects were found for caregiver-rated attempted suicide.

### **3.3.4 Newly Identified Non-Randomised CCTs of Interventions for DSH**

We have identified three new cohort studies of interventions for DSH, one conducted with adults and two with youth under 17 years.

In a recent controlled trial of dialectical behaviour therapy (DBT), patients meeting DSM IV criteria for Borderline Personality Disorder, with either one suicide attempt, or a minimum of two non-suicidal self injurious acts within the past two years were placed on a waiting list for a three month inpatient DBT programme. Patients accepted into the programme were compared with those remaining on the waiting list at baseline and four month follow up. All of the patients were female, with an age range of 18 to 44 years. Within group differences revealed that patients in the DBT inpatient programme had significant reductions in the frequency of self-mutilation, and in eight of the nine measures of clinical outcome following treatment. When compared with patients on the waiting list, those in the inpatient programme reported significantly reduced frequency of self-mutilation and improvements on all but two of the outcome measures (Bohus, Haaf, Simms *et al*, 2004).

Greenfield and colleagues (2002) assigned patients aged 12-17 years who presented at the emergency department of a paediatric hospital to either rapid response outpatient follow up or to a control group, in which the patient's psychiatrist could determine whether to hospitalise the patient, follow up as an outpatient or to refer on the community services. Patients were suicidal adolescents who had experienced a "suicidal event". Approximately half had had an actual suicide attempt in the past six months. Rapid response outpatient follow-up consisted of telephone contact initiated by a case worker to every patient and their family to plan follow up treatment. No statistically significant differences were found between the groups on measures of clinical status, as measured by level of suicidality or the Children's Global Assessment scale. No significant differences were found in the number of suicide attempts made during the six month follow up period.

Rathus and Miller (2002) assigned suicidal adolescents with either a diagnosis of borderline personality disorder, or a minimum of three borderline personality features to receive either a twelve week adapted programme of dialectical behaviour therapy or treatment as usual. The adapted DBT programme consisted of twice weekly individual and multi family skills training,

and the inclusion of parents in aspects of the treatment. The study design consisted of non-random assignment to either DBT (29 patients) or treatment as usual (82 patients), depending on a triage system according to the level of risk and psychological distress. Treatment as usual consisted of twelve weeks of twice weekly individual and family sessions using a short term psychodynamic or support approach aimed towards resolving acute problems. The study found that patients in the treatment group required significantly fewer inpatient psychiatric hospitalisations, and had a significantly higher treatment completion rate than patients receiving treatment as usual. Although no significant differences in the number of suicide attempts between the groups was observed during treatment, the authors note that patients in the DBT group had higher baseline rates of Axis 1 disorders, more impulsivity, a higher rate of borderline personality disorder and twice as many prior hospitalisations, indicating that this null finding might be notable.

#### *Summary of Findings from Newly identified studies*

None of the recent RCTs examining psychosocial treatments for adults following DSH found that the interventions resulted in significant reductions in attempted suicide compared to standard care, however, in trials of dialectical behaviour therapy a non-significant reduction in repetition rates of attempted suicide was found in one study (Verhuel *et al*, 2003) and two studies found a significant reduction in self-mutilating behaviours (Bohus *et al*, 2004; Verhuel *et al*, 2003). In the one pharmacological study identified, Clozapine was found to be significantly more effective than Olanzapine in reducing suicide attempts in patients with a diagnosis of schizophrenia or schizoaffective disorder. In youth, multisystemic therapy appears to be a promising intervention, resulting in significant reductions in youth rated attempted suicide when compared to hospitalisation in youth presenting as psychiatric emergencies (Huey *et al*, 2004).

## 4.0 Effects of Treatment on Intermediate Outcome Measures

Although it is essential that studies evaluating the efficacy of treatments for deliberate self-harm include repetition rates as a primary outcome measure, the low base rate of completed and attempted suicide means that it is also critical that studies assess the effects of treatments of predictors of deliberate self-harm such as hopelessness and depression.

A meta-analysis of the efficacy of problem-solving treatments with respect to depression, hopelessness and improvement in problems was conducted by Townsend and colleagues (2001). In this review, six studies of problem-solving therapy for DSH were examined, and data concerning depression, hopelessness and improvement in problems were extracted. Five of the six studies were included in the Hawton review of the efficacy of treatments for DSH and one trial was added which had been excluded from the review as it did not have repeat attempts as an outcome measure (Patsiokas & Clum, 1995).

Results of the meta-analysis showed that problem solving therapy was significantly more effective than treatment as usual in reducing levels of depression and hopelessness, and in improving patient problems. Standardised measures were used to assess effects of problem-solving therapy on depression and hopelessness. "Improvement in problems" was assessed using the combined results from two studies (Gibbons, Bulter, Unwin *et al*, 1978; Hawton *et al*, 1987), in which independent assessors blind to the treatment condition determined whether problems selected as a focus of treatment had improved or worsened after treatment.

In studies conducted subsequently to the Townsend review, decreases in suicidal ideation following psychological intervention have been shown in studies of psychodynamic interpersonal problem solving therapy (Guthrie *et al*, 2001) and cognitive behaviour therapy (Raj *et al*, 2001). Dialectical behaviour therapy has been associated with decreases several measures of clinical outcome (Bohus *et al*, 2004) including suicidal ideation (Koons *et al*, 2001).

While the current literature provides some promising evidence for positive effects of problem-solving therapy and dialectical behaviour therapy on intermediate outcome measures, what is not known is whether improvement in these areas would mediate a reduction in repetition rates (Townsend *et al*, 2001). Future large trials are needed in order to test the mediational model.

## 5.0 Discussion

The current literature overview aimed to answer two questions. First, what is the current evidence regarding the efficacy of psychosocial and pharmacological treatments for deliberate self harm? Second, what evidence exists to guide the choice of an intervention to be used in a controlled clinical trial of a psychosocial intervention for adults who have been admitted to a general hospital for deliberate self-harm?

### 5.1 Current Evidence for the Efficacy of Treatments for Deliberate Self Harm

The Hawton review concluded that it was not possible to make firm recommendations about treatments for deliberate self-harm based on the evidence in 1999. The literature published since 1999 does not appear to have substantially altered this situation, however, current evidence indicates that some types of psychosocial and pharmacological treatments, including problem-solving therapy, dialectical behaviour therapy, provision of a card for emergency contact and flupenthixol therapy appear promising in reducing rates of repeated deliberate self-harm among adults who have attempted suicide. Recent studies also indicate promising findings for the efficacy of developmental group therapy and multisystemic therapy for young adolescents and children following attempted suicide.

Although there is a lack of conclusive findings among studies investigating the effects of interventions following attempted suicide, development of effective treatments following deliberate self harm is an important element in suicide prevention, and further research is clearly needed. In planning future research, it is important to identify and rectify the methodological limitations that have occurred in previous studies in order to obtain sound evidence to inform effective service provision for patients who have attempted suicide (Arensman *et al*, 2001). Several issues have been identified in previous reviews of interventions following attempted suicide (Arensman *et al*, 2001; Gaynes *et al*, 2004; Guo, Scott & Bowker, 2003; Hawton *et al*, 2004):

- Previous studies have often been too small to identify statistically significant effects of interventions. In future randomised controlled trials it is essential that a prior power analysis is conducted in order to determine the number of participants necessary to detect clinically meaningful differences in the repetition rates of deliberate self-harm between the experimental and control groups. However, it has also been argued that due to the statistical limitations in research with deliberate self-harm patients, alternative research methodologies to the randomised controlled trial should be considered (Goldney, 1998 cited in Arensman et al, 2001).
- Standard care, or treatment as usual (TAU) is commonly used as a control condition in studies, however in previous studies the nature of TAU has often been poorly described. TAU is highly variable across studies, and in many studies it may well be an effective intervention. Future research needs to clearly define what constitutes treatment as usual, including patient adherence to it and the amount of therapeutic contact involved.
- The diversity in interventions, and the wide range of outcome measures used among trials has made it difficult for reviewers to make comparisons among trials. Psychosocial interventions need to be clearly defined, and preferably manualised, so that they can be replicated by other investigators.
- Most studies have included highly heterogenous populations in terms of age, gender, method of self-harm and psychological or psychiatric problems. Arensman *et al* (2001) recommend that treatment studies should consider focussing on meaningful subgroups among deliberate self harm patients, for example, patients with particularly high risk of repetition, patients with co-morbid psychiatric and personality disorders, and patients with specific psychiatric diagnoses.

In summary, the lack of conclusive evidence from previous studies does not equate to evidence that interventions following attempted suicide are ineffective. The challenge for future research is to define and implement methodologically sound

interventions that will provide clear evidence as to their efficacy in reducing repetition rates of deliberate self-harm.

## **5.2 What Evidence Exists to Guide the Selection of a Brief Psychological Intervention for Adults Following Attempted Suicide?**

From the existing evidence, while we acknowledge it is by no means conclusive, problem-solving therapy appears to be the most promising brief psychological intervention for adults following a suicide attempt. Previous reviews have identified promising, but non-significant trends for a reduction in repetition rates of DSH following treatment with problem-solving therapy (Hawton *et al*, 2004; Gaynes *et al*, 2004). Additionally, problem-solving therapy has been shown to have a beneficial effect on intermediate outcome measures that are predictors of repeated deliberate self-harm, such as hopelessness, depression and suicidal ideation (Townsend *et al*, 2001).

Problem-solving therapy for deliberate self-harm has a strong theoretical foundation. Research has provided consistent evidence that people who attempt suicide exhibit poor problem solving skills (Linehan *et al*, 1987; McLeavey *et al*, 1987; Pollock & Williams, 2001; Schotte & Clum, 1987), and that suicide attempters have more severe problem solving deficits than psychiatric patients in general (Linehan *et al*, 1987; Pollock & Williams, 2001; Schotte & Clum, 1987). Suicide attempters tend to be less active in their problem solving efforts, that is, they rely on the actions of others or the passage of time to solve the problem rather than taking an active part in solving the problem (Orbach, Bar-Joseph & Dror, 1990; Pollock & Williams, 2004). Suicidal patients also tend to have difficulty in generating alternative solutions to their problems (Patsiokas & Clum, 1979; Pollock & Williams, 2001; Schotte & Clum, 1987) and the solutions they do generate are less effective (Pollock & Williams, 2001). In one study over a third of patients interviewed following a suicide attempt reported that they had at least one problem that they believed to be insoluble (Milnes, Owens & Blenkiron, 2002).

D’Zurilla, Chang, Nottingham & Faccini, 1998 (p. 1104) summarise that “suicide prone individuals view problems as a significant threat to well-being (ie, potential for

harm or loss), blames himself or herself or problems, doubts his or her own ability to solve problems successfully, believes that problems are unsolvable, and is emotionally sensitive to problems. Instead of viewing problems as a challenge (ie, opportunity for benefit or gain), confronting problems head on, and being persistent in his or her problem solving efforts, the suicide prone individual tends to avoid problems, puts off solving problems for as long as possible, waits for problems to resolve themselves, and attempts to shift the responsibility for solving his or her problems on to others. When the person does attempt to solve problems, these attempts tend to be hurried, narrowed, impulsive, careless and incomplete.

Although it is evident that poor problem solving ability is common among suicide attempters, what is less clear is how poor problem solving ability links to suicidality. It has been hypothesized that problem solving deficits contribute to hopelessness and depression, which in turn increase the probability of suicidal ideation and intent (D’Zurilla, *et al* 1998). The diathesis-stress-hopelessness model of suicidal behaviour theorises that problem solving deficits may predispose individuals to become hopeless and suicidal under conditions of chronic stress (Schotte & Clum, 1982, 1987). A 1994 study by Dixon, Heppner and Rudd supported the diathesis-stress-hopelessness model, and the authors concluded “When people do not think they can cope with life’s problems, they are likely to become hopeless about the future. This hopelessness is primarily what puts the person at risk for suicide ideation” (p.95).

Problem-solving therapy, originally defined by D’Zurilla and Godfried (1971), and revised by D’Zurilla and Nezu (1982) has five components or stages which include: 1) problem orientation, 2) problem definition and formulation, 3) generation of alternative solutions, 4) decision making, and 5) solution implementation and verification. Problem-solving therapy aims to assist patients to identify their problems and teach them a systematic method of overcoming their current problems. Patients are also assisted to recognise the resources they possess for coping with their difficulties, and are taught skills to equip them for tackling problems in the future (Hawton & Kirk, 1989).

Several studies have shown evidence that problem-solving therapy is effective in the treatment of unipolar depression in adults (Mynors-Wallis, 1997; Nezu, 1986; Nezu & Perri, 1989) and in older adults (Arean, 1993), and in reducing psychological distress in cancer patients (Nezu, Nezu, Felgoise *et al*, 2003). Problem-solving therapy has also been found to be effective in reducing levels of depression and hopelessness in patients who have attempted suicide (Townsend *et al*, 2001).

The evidence for the efficacy of problem-solving therapy in reducing repetition rates of deliberate self-harm is less clear. Although Hawton *et al* (2004) determined that problem-solving therapy was a promising intervention following deliberate self-harm, there has yet to be a well-controlled large scale study examining the efficacy of this intervention. One of the difficulties in interpreting results from previous studies is the confusing language of psychotherapy. Hawton *et al* (2004) identified five studies of “problem-solving therapies”, and recently two randomised controlled trials of brief psychological interventions with a problem-solving focus have been conducted, with contrasting results (Guthrie *et al*, 2001; Tyrer *et al*, 2003). However, an analysis of the methodologies used in studies to date reveals wide variations in therapies described as problem-solving therapies. For example, McLeavy *et al* (1994) used a method more accurately described as Problem Solving Skills Training (PSST). The POPMACT study (Tyrer *et al*, 2003a) used a manualised cognitively oriented and problem-focused therapy. Guthrie *et al* (2001) provided Psychodynamic Interpersonal Therapy (PIT), which, although problem-focused, placed an emphasis on exploring problems and developing a rationale linking feelings, problems and relationships rather than on developing specific problem-solving strategies.

Some evidence suggests that problem-focused therapies with depressed patients that do not provide systematic training in problem-solving skills are less effective than those following the model proposed by D’Zurilla and Nezu (1982). In a previous study on unipolar depression, patients were randomly assigned to one of three conditions: 1) problem-solving therapy, 2) problem-focused therapy or 3) waiting list control (Nezu, 1986). Problem-focused therapy involved discussions of the subjects’ current life problems with a problem-solving goal without systematic training. The problem-solving therapy group experienced significantly greater

improvements in their depressive symptoms than either of the other two groups, and the improvements were maintained at six month follow-up.

It should be noted that patients in the study by Guthrie *et al* (2001) did report significantly fewer repeated suicide attempts than those assigned to the control condition, which consisted of GP referral only. Results of this single study show promising evidence for the use of psychodynamic interpersonal therapy, however, the fact that the therapy involved home visiting, and a psychodynamically informed model of therapy which involves extensive clinician training may make this therapy difficult to implement within an already stretched existing mental health service.

Problem-solving therapy has advantages over many other forms of psychological intervention for attempted suicide in that it is a brief, cost effective, pragmatic intervention that is not reliant on the availability of extensively trained therapists. Problem-solving has been described as the most accessible form of cognitive intervention (Hickie, 2000). The potential exists therefore, for problem-solving therapy to be widely utilised in clinical practice. Several issues that may have reduced the efficacy of brief psychological therapies used in previous studies need to be considered if the therapeutic efficacy of problem-solving therapy following attempted suicide is to be clearly established.

The most commonly used control condition in studies of interventions for attempted suicide is “treatment as usual” (TAU), however this is highly variable between studies, and even within studies. Patients in the control group in Else Guthrie’s (2001) study typically received no further contact beyond referral back to their GP. In the POPMACT study (Tyrrer *et al*, 2003b), treatment as usual varied from problem solving approaches, dynamic psychotherapy, GP or voluntary group referral or short-term counselling depending on the geographical location of the patient. The authors also note that in the POPMACT trial, patients in the control condition commonly received substantially more therapeutic contact time than those in the experimental condition, although no official data was kept on the extent of patient adherence to usual care. The type of “standard care” offered and patient adherence to it is an important aspect that needs to be clearly defined in future studies (Hawton & Sinclair, 2003).

Lack of adherence to treatment plans by patients who have self-harmed is a common problem, and is an issue that needs consideration and attention when designing an intervention. Patients in the POPMACT study received a 70 page manual, but no data was kept on whether patients had read it, or to what extent they had used the information. A large proportion of patients in the study (38%) attended no treatment sessions, so that treatment consisted of the manual alone. If patients did not attend their first appointment a second one was offered, but no further contact was made subsequently by the therapists (Tyrer *et al*, 2003b). Guthrie and colleagues (2001) successfully managed the problem of low treatment adherence by offering therapy in the patients' homes. It may be difficult to effectively overcome the problem of high drop-out rates from treatment within an outpatient setting, however it appears critical to follow up patients in a more assertive manner, with the addition of follow-up telephone calls to confirm or re-book appointments. In a current, ongoing study of cognitive behaviour therapy following attempted suicide, the authors recommend that therapists take a very active role in engaging and keeping the patient in therapy, and have been able to increase adherence to treatment by using strategies such as problem-solving around impediments to regular attendance, calling a nominated support person if the patient does not attend appointments, and practical assistance with transportation (Berk, Henriques, Warman *et al*, 2004).

A further area for consideration in designing an intervention for adults following deliberate self-harm is whether the intervention should be targeted at homogenous subgroups of patients rather than attempting to provide a "one size fits all" treatment. (Arensman *et al*, 2001). Problem-solving therapy is by nature a brief, non-intensive therapy. However, a substantial number of people who present at hospitals following attempted suicide have a diagnosis of borderline personality disorder. Dialectical behaviour therapy, an intensive, long-term therapy has been shown to be effective in the treatment of this group (Linehan *et al*, 1991; Verhuel *at al*, 2003) and it is questionable whether the brief nature of problem-solving therapy allows it to be effective within this group of patients. The symptoms of borderline personality disorder, such as emotional dysregulation, instability of interpersonal relationships and frantic efforts to avoid real or imagined abandonment, suggest that the brevity of this therapy and of the therapeutic relationship may well be insufficient to provide any meaningful benefits to this group. This hypothesis is in accordance with findings

in previous studies, in which brief psychotherapeutic interventions appeared to be more effective for patients with no prior history of self-harm (Guthrie *et al*, 2001; Van der Sande *et al*, 1997). Williams (2001) suggests that suicidal individuals can be divided into two groups: those likely to respond to psychosocial interventions and those unlikely to respond (because of their chronic psychological/psychiatric or social problems). An alternative suggestion is that people with chronic or severe psychopathology require more intensive interventions, while brief psychological interventions should be provided for patients with less severe or chronic psychopathology. It is certainly clear that future studies need to consider which subgroups of patients benefit most from the interventions offered.

In conclusion, the problem-solving deficits seen in suicidal individuals indicate that systematic training in problem-solving skills with a focus on problems precipitating the suicide attempt is likely to have a positive effect on predictors of suicidality and repetition of suicidal behaviours. Evidence exists that problem-solving therapy is effective in producing clinical improvements in depressed and psychologically distressed individuals, as well as decreasing psychological predictors of suicide in patients with a previous history of suicide attempts. Future studies of problem-solving therapy need to be large enough to avoid type 2 errors (that is, they need to include enough participants to allow identification of statistically significant effects), and to focus on assertive outreach in order to maximise patient adherence to treatment. Future studies also need to determine which subgroups of patients find problem-solving therapy most beneficial. Although the current evidence for the efficacy of problem-solving therapy in reducing repetition rates of attempted suicide is promising, there is a strong rationale for further large-scale, methodologically sound studies in order to clearly determine the benefits of this intervention.

## 6.0 Tables

**Table 1** *Randomised Controlled Trials of Interventions to Reduce Deliberate Self- Harm*

(Adapted from Gaynes et al, 2004; Hawton et al, 2004)

<b>Study</b>	<b>Sample</b>	<b>Age range</b>	<b>Intervention and Control Groups</b>	<b>Follow up Period (mths)</b>	<b>Participants with DSH during follow up n/n (%)</b>	<b>Odds Ratio (95% CI)</b>
<b>Problem-Solving Therapy vs Standard Follow-Up Care</b>						
Gibbons et al (1978)	Self-poisoning patients in Southampton, UK, with no immediate suicide risk and no formal psychiatric diagnosis	>17	Intervention group: Home-based crisis-oriented problem-solving therapy by social workers over 3 months  Control group: standard aftercare	12	Intervention group: 27/200 (13.5)  Control group: 29/200 (14.5)	0.92 (0.52-1.62)
Hawton et al (1987)	Deliberate self-poisoning patients in Oxford, UK, who were not in psychiatric care, did not require treatment for alcohol and drug addiction, and did not need inpatient psychiatric care	>16	Intervention group: Outpatient therapy by non-medical clinicians for ≤ 8 sessions  Control group: standard aftercare	12	Intervention group: 3/41 (7.3)  Control group: 6/39 (15.4)	0.43 (0.10-1.87)
Salkovskis et al (1990)	Nonpsychotic patients in Leeds, UK, referred by psychiatrist after admission to an emergency department after antidepressant self-poisoning: ≥ 4 on Buglass and Hawton Risk of Repetition Scale or ≥ 2 previous attempts	16-65	Intervention group: Home-based therapy by community psychiatric nurse for 5 sessions  Control group: Standard aftercare	12	Intervention group: 3/12 (25.0)  Control group: 4/8 (50)	0.33 (0.05-2.24)
McLeavey et al (1994)	Nonpsychotic, nonsuicidal patients in Cork, Ireland, without cognitive impairment and not needing psychiatric inpatient care who were admitted to an emergency department for self-poisoning	15-45	Intervention group: Interpersonal problem-solving skills training by trained therapists for approximately 5 sessions  Control group: Brief problem-solving therapy	12	Intervention group: 2/19 (10.5)  Control group: 5/20 (25.0)	0.35 (0.06-2.09)
Evans et al (1999)	Patients in London, UK, with self-harm episode in previous 12 mo and a personality disturbance but no alcohol or drug dependence or schizophrenia who were admitted to Paddington or Chelsea, Westminster, emergency department	16-50	Intervention group: Manual-assisted cognitive-behaviour therapy by trained therapists for 2-6 sessions  Control group: Standard psychiatric treatment	6	Intervention group: 10/18 (55.6)  Control group: 10/14 (71.4)	Not calculated
Overall						0.70 (0.45-1.11)

Intensive Care Plus Outreach vs Standard Care						
Chowdhury et al (1973)	Patients in Edinburgh, UK, with a previous DSH episode admitted for DSH to a general hospital; included patients with psychiatric disturbance, alcohol dependence, and drug addiction	>16	Intervention group: Enhanced aftercare with aggressive outreach and follow-up Control group: standard aftercare	6	Intervention group: 17/71 (23.9) Control group: 19/84 (22.6)	1.08 (0.51-2.27)
Welu (1977)	Patients in Pittsburgh, PA, admitted to an emergency department for DSH	≥16	Intervention group: Special outreach program with weekly or biweekly contact with trained mental health professionals for 4 months Control group: standard aftercare	4	Intervention group: 3/62 (4.8) Control group: 9/57 (15.8)	0.27 (0.07-1.06)
Hawton et al (1981)	Patients in Oxford, UK, not receiving current psychiatric care or treatment for alcohol or drug addiction who were admitted to a general hospital after DSH	≥15	Intervention group: Home-based therapy as often as therapist felt necessary for ≤ 3 mo by mental health professionals Control group: weekly outpatient therapy	12	Intervention group: 5/48 (10.4) Control group: 7/48 (14.6)	0.68 (0.20-2.32)
Allard et al (1992)	Nonsociopathic patients in Montreal, Canada, with a recent suicide attempt who presented to the hospital for another suicide attempt	NR	Intervention group: Enhanced aftercare with aggressive outreach and follow-up by mental health professionals for 12 months Control group: Standard aftercare	12	Intervention group: 22/63 (34.9) Control group: 19/63	1.24 (0.59-2.62)
Van Heeringen et al (1995)	Patients in Gent, Belgium, treated in an emergency department after a suicide attempt	≥15	Intervention group: Enhanced aftercare with aggressive outreach and follow-up by mental health professionals for 12 months Control group: standard aftercare	12	Intervention group: 21/196 (10.7) Control group: 34/195 (17.4)	0.57 (0.32-1.02)
Van der Sande et al (1997)	Patients in Utrecht, the Netherlands, without drug or alcohol addiction and obvious psychiatric comorbidity who were admitted to the hospital after a suicide attempt	≥ 16	Intervention group: Brief psychiatric admission with outpatient therapy by mental health professionals and 24 hr hospital access for unspecified period Control group: Standard aftercare	12	Intervention group: 24/140 (17.1) Control group: 20/134 (14.9)	1.18 (0.62-2.25)
Overall						0.83 (0.61- 1.14)

<b>Emergency Care vs Standard Aftercare</b>						
Morgan et al (1993)	Patients in Bristol, UK, who were admitted to the hospital after a first DSH episode	Mean age 30	Intervention group: Standard care plus card indicating 24 hr access to mental health professional for 12 months  Control group: standard aftercare	12	Intervention group: 5/101 (5.0)  Control group: 12/111 (10.8)	0.43  (0.15-1.27)
<b>Dialectical Behaviour Therapy vs Standard Aftercare</b>						
Linehan et al (1991)	Women in Seattle, US, with borderline personality disorder and ≥2 suicide attempts in past 5 yr, current suicide attempt within past 8 weeks	18-45	Intervention group: DBT (individual and group) with mental health professional for 1 year  Control group: standard aftercare	12	Intervention group: 5/19 (26.3)  Control group: 12/20 (60.0)	0.24  (0.06-0.93)
<b>Inpatient Behaviour Therapy vs Inpatient Insight-Oriented Therapy</b>						
Lieberman & Eckman (1981)	Patients in LA, CA, with ≥ 1 suicide attempt who were not psychotic or addicted to drugs or alcohol and were referred by a psychiatrist after admission to emergency department for DSH	18-47	Intervention group: Inpatient psychiatric treatment with behaviour therapy for 10 days  Control group: Inpatient psychiatric treatment with insight-oriented therapy for 10 days	12	Intervention group: 2/12 (16.7)  Control group: 3/12 (25.0)	0.60  (0.08-4.45)
<b>Same Therapist (Continuity of Care) vs Different Therapist (Change of Care)</b>						
Torhorst et al (1987)	Nonpsychotic patients in Munich, Germany, hospitalised after a self-poisoning suicide attempt	NR	Intervention group: Outpatient appointment with same therapist as seen in hospital for 3 month treatment  Control group: Outpatient appointment with different therapist than seen in hospital for 3 month treatment	12	Intervention group: 12/68 (17.6)  Control group: 4/73 (5.5)	3.70 (1.13-12.09)
<b>General Hospital Admission vs Discharge</b>						
Waterhouse & Platt (1990)	Patients in York, UK, without current medical or psychiatric treatment needs who were admitted to an emergency department for DSH	≥16	Intervention group: General hospital admission for about 1 day  Control group: Discharge from hospital	4	Intervention group: 3.38 (7.9)  Control group: 4.39 (10.3)	0.75 (0.16-3.60)

**Table 2 Randomised controlled trials of Interventions to reduce deliberate self harm identified by USPSTF**  
(Adapted from Gaynes et al, 2004; Hawton et al, 2004)

Study	Sample	Age range	Intervention and Control Groups	Follow Up Period (mths)	Participants with DSH during follow up n/n (%)	Odds Ratio (95% CI)
<b>Interpersonal Psychotherapy vs Standard Aftercare</b>						
Guthrie et al (2001)	Patients presenting to an emergency department with deliberate self-poisoning, but not requiring inpatient psychiatric treatment	18-65	Intervention group: weekly sessions of home-based interpersonal psychotherapy by nurse therapists for 1 month  Control group: standard aftercare	6	Intervention group: 5/58 (8.6)  Control group: 17/61 (27.9)	No OR given: between group difference: 19.3% (95% CI, 8.6%-30.0%); p<0.001
<b>Psychoanalytically Oriented Partial Hospitalisation vs Standard Aftercare</b>						
Bateman & Fonagy, (1999, 2001)	Patients with borderline personality disorder who did not have bipolar or psychotic disorder, substance abuse, mental impairment, or organic brain disorder and were attending a psychiatric clinic	16-65	Intervention group: partial hospitalisation on psychiatric unit for 18 months  Control group: standard aftercare for 18 months	36	Intervention group: 4/22 (18.2)  Control group: 12/19 (63.2)	No OR given: p<0.004 (Fisher exact test)
<b>Emergency Care vs Standard Aftercare</b>						
Evans et al (1999)  Subgroup analysis dichotomised by history of DSH	Patients in Bristol, UK, who were referred from several general hospitals for psychiatric evaluation after DSH and who were not considered dangerous to self or others	Adults	Intervention group: card offering 24 hour phone crisis consultation with psychiatrist for 6 months  Control group: standard aftercare	6	Intervention group: 70/417 (16.8)  Control group: 59/410 (14.4)  OR for previous DSH: 1.85 (CI, 1.14-3.03)	Overall OR: 1.20 (CI, 0.82-1.75)  OR for no previous DSH 0.64 (0.34-1.22)

<b>Brief Contact by Letter vs Standard Aftercare</b>						
Motto & Bostrom (2001)	Persons admitted for depressive or suicidal illnesses to 9 psychiatric inpatient facilities in San Francisco, who discontinued therapy with 30 days d/charge	Mean age 34.4	Intervention group: Brief contact using letters sent over varying time periods for 5 years Control group: no further contact	≤ 180	Intervention group: 15/389 (3.9) Control group: 21/454 (4.6)	OR not reported: patients with suicide as cause of death 5 yrs post-intervention were 3.9% (intervention gp) and 4.6% (control group)
<b>Outpatient Day Hospitalisation vs Usual Care</b>						
Rudd et al (1996)	Patients referred from 2 mental health clinics, 1 emergency department, and 1 psychiatric inpatient unit who had a suicide attempt, mood disorder and suicide ideation without psychosis or personality disorder	22 ± 2.3	Intervention group: outpatient intensive structured group treatment by mental health professionals for 2 weeks. Control group: standard aftercare	12	Several measures of suicidal ideation and behaviour (including Modified Scale for Suicidal Ideation and the Suicide Probability Scale) analysed: no differences between intervention and control groups	
<b>Dialectical Behavioural Therapy vs Usual Care</b>						
Koons et al (2001)	Female veterans with borderline personality disorder without schizophrenia, bipolar disorder, substance abuse, or antisocial personality disorder	21-46	Intervention group: DBT by mental health professional for 6 months Control group: enhanced standard aftercare	6	Intervention group: 1/10 (10) Control group: 2/10 (20)	Not available

<b>Follow-Up Letter and General Guidelines vs Standard Care</b>						
Bennewith et al (2002)  Subgroup analysis dichotomised by history of DSH	Patients without substance abuse or DSH secondary to psychosis: identified from a DSH case register on the basis of weekly reports from local hospitals accident and emergency departments	16-95	Intervention group: one-time education and consultation letter on DSH management provided to primary care physicians whose patients had recent DSH episode  Control group: standard aftercare	12	Intervention group: 211/964 (21.9)  Control group: 189/968 (19.5)	Overall OR: 1.17 (CI, 0.94-1.47)  OR for previous DSH: 0.57 (CI, 0.33-0.98)  OR for no previous DSH: 1.32 (CI, 1.02-1.70)
<b>Fluoxetine (Antidepressant) vs Placebo</b>						
Montgomery et al (1994)	Patients without current major depression with a history of $\geq 2$ suicide attempts, identified from a psychiatric clinic	NR	Intervention group: Fluoxetine twice per week in psychiatric clinic for 6 months  Control group: placebo twice per week for 6 months	6	Intervention group: 18/54 (33.3)  Control group: 18/53 (34.0)	Not available
<b>Fluphenazine (Antipsychotic) vs Placebo</b>						
Battaglia et al (1999)	Nonpsychotic inpatients with a suicide attempt in the previous 30 days who had $\geq$ previous suicide attempts, recruited from a psychiatric emergency department	18-65	Intervention group: Low-dose intramuscular injection monthly for 6 months  Control group: Ultra-low-dose intramuscular injection monthly for 6 months	6	Intervention group: change of $-0.16$ in rate of serious self-harm behaviours per mo over 6 months  Control group: change of $-0.06$ in rate of serious self-harm behaviours per mo over 6 months	$P = 0.146$ (Mann-Whitney test)

**Table 3 Newly Identified Randomised Controlled Trials of Interventions to Reduce Deliberate Self Harm in Adults and Older Adolescents**

<b>Study</b>	<b>Sample</b>	<b>Age range</b>	<b>Intervention and control groups</b>	<b>Follow up Period (mths)</b>	<b>Participants with DSH during follow up n/n (%)</b>	<b>Odds Ratio (95% CI)</b>
<b>Telephone Contact Offering Motivational Support vs No Contact</b>						
Cedereke et al (2001)	Patients seen after a suicide attempt in Lund, Sweden	Mean age 36 yrs	Intervention group: Two telephone contacts at 4 and 8 months after suicide attempt, offering motivational support to attend and/or stay in treatment  Control group: no telephone contact	12	Intervention group: 14/83 (17%)  Control group: 15/89 (17%)	Not stated
<b>Dialectical Behaviour Therapy vs Treatment as Usual</b>						
Verheul et al (2003)	Women with borderline personality disorder in Amsterdam, the Netherlands, without bipolar disorder, chronic psychotic disorder or severe cognitive impairment. Recent parasuicidal behaviour not required	18-70	Intervention group: 12 months of DBT, including individual and group sessions  Control group: Treatment as usual	12	Intervention group: 2/27 (7%)  Control group: 8/31 (26%)	NS: $P = 0.064$
<b>Clozapine vs. Olanzapine</b>						
Meltzer et al (2002)	Patients with schizophrenia or schizoaffective disorder, considered to be at high risk for suicide due to previous attempts or current suicidal ideation recruited from 67 medical centres in 11 countries	18-65	Intervention group: Daily administration of Clozapine, plus seen weekly for 6 months then biweekly for 18 months  Control group: Daily administration of Olanzapine, plus seen weekly for 6 mo then biweekly for 18 months	24	Intervention: 34/490 (6.9%)  Control group 55/490 (11.2%)	NS: $P = .03$
<b>Manual Assisted Cognitive Therapy vs Treatment as Usual</b>						
Tyrer et al (2003)	Patients presenting in 5 major centres in the UK with DSH and a previous episode of DSH, who did not require inpatient psychiatric care, without psychotic disorder or bipolar disorder, and no primary diagnosis of substance abuse	16-65	Intervention group: Received 70 page manual based on CBT principles and offered up to 5 sessions of CBT  Control group: usual care: varied by centre, including problem-solving, dynamic psychotherapy, GP, voluntary group referral or short-term counselling	12	Intervention: 84/213 (39 %)  Control group: 99/217 (46%)	0.78 (0.53-1.14)

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