



## **Effective strategies for suicide prevention in New Zealand: a review of the evidence**

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### **Abstract**

A national suicide prevention strategy for New Zealand was developed in 2006. There is relatively little strong evidence for the efficacy of many existing suicide prevention initiatives, and this area has frequently been captured by strong claims about the effectiveness of programmes that have not been adequately evaluated. This paper provides a conceptual framework for classifying suicide prevention initiatives, reviews evidence for their effectiveness, and makes recommendations for initiatives to be undertaken as part of suicide prevention activities in New Zealand.

The available evidence thus far suggests that the most promising interventions likely to be effective in reducing suicidal behaviours are medical practitioner and gatekeeper education, and restriction of access to lethal means of suicide. This evidence also suggests a clear agenda for research, which includes evaluating interventions and prevention programmes, developing model and demonstration projects, identifying meaningful outcome measures, and refining and identifying the critical elements of effective programmes.

This paper has been prepared by members of the Suicide Research Network (SRN). The SRN is an informal network of research workers in the area of suicide and psychiatry who have come together to produce evidence based expert consensus on matters relating to suicidal behaviours in New Zealand. In this paper we present a review of the international evidence on suicide prevention. We see this paper as providing the empirical foundations for the development of suicide prevention policies in New Zealand.

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While a recent paper reviewed subject areas of suicide prevention,<sup>1</sup> we attempt to expand this information and place suicide prevention activities in New Zealand on the best possible evidence base by using a four-fold classification of suicide prevention initiatives based on an evidence hierarchy:

- **Initiatives for which *strong evidence of effectiveness* exists**—Initiatives evaluated using a randomised trial design and there is consistent evidence of programme efficacy.
- **Initiatives that appear *promising***—Some evidence of programme effectiveness exists, but this evidence is not sufficient or consistent enough to classify the findings as strong.
- **Initiatives for which no evidence of effectiveness exists but which *may be beneficial in suicide prevention***—These initiatives span a range of macrosocial, mental health, family support, and related programmes that are believed to be beneficial in suicide prevention by providing a context for encouraging positive health and wellbeing, but for which no direct evidence of suicide-specific programme effectiveness exists.
- **Initiatives for which evidence of *harmful effects* exist**—Concerns have been raised regarding their safety and there is reason to believe that they may risk increasing (rather than decreasing) rates of suicidal behaviour.

## Outcome measures

Suicide has a low base rate which leads to problems in relying upon reductions in suicide alone as evidence of effectiveness. In this review we have included programmes in which outcomes included reductions in suicide, suicide attempt, suicidal ideation, and other appropriate measures. Outcome measures are described for each programme discussed.

## Sources

Using the classification derived above a selective review (based upon the authors' familiarity with the field) was conducted of a number of major books, journal articles, reviews, summaries, and reports on programmes and initiatives in the area of suicide prevention. This review yielded the following results:

### Initiatives for which *strong evidence of effectiveness* exists

There are three areas in which strong evidence of effectiveness exists<sup>1</sup>:

**Training for medical practitioners**—Providing medical practitioners in primary care with training to enable them to better recognise and treat depression has been shown to result in improved treatment of patients with depression and in lower suicide rates.<sup>2</sup> This approach is based on knowledge that, often, depression is under-recognised and inadequately treated,<sup>3</sup> and that, in many countries, those who die by suicide see a medical practitioner in the weeks before their death.<sup>4</sup> Further, a range of quality improvement initiatives, collaborative care programmes and nurse case management programmes in primary care settings have been shown to improve identification and management of depression.<sup>5</sup> This approach also needs to be extended to enhance

physician detection and treatment of, not only depression, but other mental illnesses, including substance use disorders, that increase risk of suicidal behaviour.

**Restriction of (suicide) methods**—Evidence from several countries, including New Zealand, suggests that reducing access to particular means of suicide reduces the rate of suicide by that method, and sometimes (if the specific method accounts for a majority of suicides) can reduce total suicide rates. Findings in this area span a range of different methods including reducing access to domestic gas,<sup>6</sup> various forms of legislative restriction on gun possession and control,<sup>7</sup> reducing carbon monoxide emissions from vehicles,<sup>8</sup> restricting availability of pesticides,<sup>9</sup> reducing the pack size of analgesics,<sup>10</sup> installing barriers at sites that become popular for suicide,<sup>11</sup> various restrictions on prescribing drugs which are toxic in overdose,<sup>12</sup> and prescribing drugs which have relatively low lethality if taken in overdose.<sup>13</sup>

**Gatekeeper education**—Programmes which focus on enhancing the skills of community, organisational, and institutional gatekeepers (including clergy; and those who work in schools, prisons, juvenile detention and welfare centres, workplaces, and homes for the elderly) can improve identification and referral of people at risk of suicidal behaviour.

An example is provided by the United States Air Force Suicide Prevention programme which reduced suicides amongst Air Force personnel.<sup>14</sup> This integrated programme focused on a series of approaches which included encouraging early mental health intervention, promoting help seeking, destigmatising mental health problems, and increasing protective factors such as social connectedness and social support and improving coping skills. The programme focused not only on suicidal behaviour but also on domestic violence and substance abuse which were regarded as indicators of stress and distress. Many similar programmes have been developed in various institutions. Few have been evaluated.

We need to encourage evaluation and refinement of existing programmes, development of new programmes, and specific evaluations to learn more about the effective components of gatekeeper education programmes.

### **Initiatives that appear *promising***

In contrast to the paucity of programmes for which strong evidence of efficacy exists, a growing number of studies suggest promising results in various areas. These include:

**Providing support after suicide attempts**—People who make suicide attempts are at increased risk of making further attempts, and of dying by suicide.<sup>15</sup> A small number of interventions which focus on enhancing treatment and support for these people have been shown to reduce the risk of repeated suicidal behaviour. A Norwegian initiative which focused on providing follow-up care to people discharged from hospital after making suicide attempts via an integrated chain-of-care network was shown to be effective in reducing further suicide attempts and in maintaining adherence to treatment regimes.<sup>16</sup>

Relatively simple interventions (sending letters to people after discharge following admission for self-poisoning; providing a 'green card' for emergency access to mental health services; employing counsellors to co-ordinate follow-up services for people

who made suicide attempts) have been successful in reducing further suicide attempts and suicide.<sup>17,18</sup>

These findings suggest there may be a range of minimal cost, but effective, interventions which can be developed to provide follow-up care and support for suicide attempt patients, both in the immediate aftermath of a suicide attempt, and in the longer term, since many of these patients will have chronic mental health problems.

**Pharmacotherapy for mental illness**—Given the high prevalence of mental illness in those who die by suicide, treating mental illness effectively and providing long-term mental health care and support are major approaches to preventing suicide. Some treatments for specific mental illnesses have been shown to reduce suicidal behaviour. These include long-term therapy with lithium for people with bipolar disorder or severe depression,<sup>19</sup> and the use of the antipsychotic medications clozapine and olanzapine by people with psychotic illnesses, including schizophrenia.<sup>20</sup>

Randomised Controlled Trials (RCTs) of antidepressant therapy (versus placebo) show significant reductions in suicidal ideation.<sup>21,22</sup> Patient population studies show reduced suicide attempt rates in adults treated with antidepressants<sup>23</sup> and in adolescents treated with antidepressants for 6 months rather than for 2 months or less.<sup>24</sup>

Population-based studies suggest that the recent widespread introduction and use of the class of antidepressants known as selective serotonin reuptake inhibitors (SSRIs) has been associated with decreased suicide rates.<sup>25-27</sup> For example, in 27 countries, the most marked reductions in suicide rates were observed in those that had the largest increase in SSRI prescribing rates.<sup>27</sup> However, there are conflicting interpretations of these data, with suggestions that suicide rates began to decline prior to the widespread availability of antidepressants.<sup>28,29</sup>

Recent controversy regarding reported adverse events in clinical trials of SSRIs for children and adolescents<sup>30</sup> led to the US Food and Drug Administration (FDA) recommending that a 'black box' warning be added to the health professional labelling of all antidepressant medications to describe an increased risk of suicidal thoughts and behaviour in children and adolescents, and perhaps adults, being treated with antidepressant medications.<sup>31-34</sup> There are concerns that these warnings may lead to decreased use of these medications in depressed patients, and that this, in turn, may influence suicide rates.

There is a need to weigh concerns about possible adverse events with the fact that most depressed people who die by suicide are not receiving treatment. More generally there is a need for better designed evaluations of antidepressants using RCTs to explore how effective antidepressants are in reducing suicidal behaviour in people with depression and with comorbid anxiety and depression.

**Psychotherapy and psychosocial interventions for mental illness**—Several psychological therapies and approaches have been shown to reduce suicidal behaviour, hopelessness and depressive symptoms, and to increase compliance with treatment, when compared with treatment as usual.<sup>35,36</sup> These therapies include cognitive behavioural therapy (CBT), interpersonal behavioural therapy (IPT), dialectical behavioural therapy (DBT), and some forms of problem-solving therapy

(PST).<sup>35</sup> An example is provided by a 10-session cognitive therapy intervention provided to adults who had recently attempted suicide. Compared to treatment as usual, this intervention led to significantly lower reattempt rates, less hopelessness, and less severe self-reported depression, but to no change in suicidal ideation.<sup>37</sup>

Psychosocial interventions that reduce suicidal behaviour include psychoanalytically informed partial hospitalisation, programmes which involve intensive care plus outreach, postal mailings and provision of 'green cards' to people who had made suicide attempts.<sup>17,18,35,38-40</sup>

In young people with psychiatric crises, Multi Systemic Therapy (MST) has been shown to be more effective than emergency hospitalisation in decreasing rates of suicide attempt in the following year.<sup>41</sup> A psycho-educational social network intervention with psychiatrically hospitalised, suicidal young people found significantly less suicidal ideation and parental reports of less functional impairment related to depression.<sup>42</sup>

Such studies provide evidence that psychological and psychosocial therapies can reduce suicidal behaviour either alone or in combination with medication. Further research is needed to explore what combinations of psychopharmacological, psychological and psychosocial interventions are most effective in reducing suicidal behaviour. Evaluations should include assessment of efficacy, effectiveness and cost-effectiveness.

**Public awareness education and mental health literacy**—Improving public knowledge, or literacy, about mental health and suicidal behaviour is an important public health goal in its own right, and may contribute to suicide prevention by changing public recognition and attitudes towards mental illnesses<sup>43</sup>. For example, programmes which aim to increase public awareness and understanding of depression may lead to better recognition, treatment seeking and support for those with depression. However, while it appears relatively easy to change attitudes with depression awareness programmes it appears more difficult to translate attitudinal changes into behavioural changes which are reflected in increased treatment seeking or use of antidepressants.<sup>44</sup>

There is some evidence that generic population-based programmes are largely ineffective and that a more effective approach is to target more modest programmes to clearly defined specific sub-groups<sup>45</sup>.

**Screening for depression and suicide risk**—A series of programmes have been developed that screen directly for suicide risk or for the mental illnesses, such as depression or substance abuse, which are known to increase suicide risk. These programmes have typically been used in schools or universities, or in primary care settings.<sup>46-48</sup>

An example is provided by the US College Screening Project in which college students are invited to complete a brief screening questionnaire for psychiatric illness. Students whose responses suggest problems are invited to come to the college counselling centre for face to face assessment and treatment.<sup>47</sup> While such programmes appear promising, they need further evaluation to determine their cost-effectiveness and to identify and refine the tools for screening which best discriminate between those at risk and those not at risk.

**Crisis centres and crisis counselling**—Based on the premise that most people contemplating suicide are ambivalent, crisis centres and telephone help lines offer crisis counselling to callers, and encourage them to seek assessment and treatment from mental health services. Despite their popularity, few such centres and help lines have been evaluated.<sup>49-51</sup> A recent evaluation of telephone help lines in the United States found that some callers are helped, but not all help lines offered high quality assistance.<sup>52</sup> Increasingly, similar crisis services are being provided via the internet and by text messaging on mobile phones. Such services require evaluation to ensure that services delivered in these ways are safe and effective.

**School-based competency promoting and skill enhancing programmes**—To overcome some of the problems posed by didactic suicide awareness programmes in schools (see below), a series of skill-enhancing, competency-promoting programmes have been introduced as alternatives. These programmes are based on the premise that enhancing self-esteem, and coping and problem solving skills, may protect vulnerable young people against adverse outcomes including suicidal behaviour. Evaluations of these programmes tend to find that improving these types of skills enhances the factors that are thought to protect against suicide, and some programmes have been associated with reduced suicidal behaviours among students.<sup>53</sup>

**Encouragement of responsible media coverage of suicide**—Media coverage of suicide has the potential to precipitate suicidal behaviour in vulnerable people.<sup>54</sup> This evidence has led many countries, including New Zealand, to develop media guidelines for reporting and portraying suicide.<sup>55,56</sup> There are few evaluations of these guidelines, and there is a need to assess the impact of these guidelines on both reporting practices and suicide rates. A related issue which also requires evaluation is how to best develop and implement media guidelines to encourage adherence by media personnel.<sup>57</sup>

In the meantime there is much that can be done to promote responsible and informed media coverage of suicide by maintaining, implementing and promoting the use of existing media resources. Another way forward is to find ways of working collaboratively with media to disseminate factual, accurate evidence and information about suicide and mental health in a non-stigmatising manner and to promote knowledge and information about suicide prevention.

**Support for family, whānau (extended family), and friends bereaved by suicide**—Rates of suicidal behaviour are elevated 2–6 fold in family members of those who die by suicide or make suicide attempts.<sup>58</sup> Providing support to families, whānau, friends and others bereaved by suicide may prevent suicidal behaviour in this vulnerable population. However, there is relatively little evidence from controlled trials about the types of programmes which are likely to be effective in this context.

There is some promising evidence for the following programmes:

- Active outreach to the scene of a suicide which was shown to lead to a shorter time for participants to seek treatment;<sup>59</sup>
- A group intervention of bereaved adults led by a professional and a volunteer which resulted in improvement on eight of nine emotions assessed;<sup>60</sup>
- A group intervention for bereaved children led by psychologists which was more effective in reducing anxiety and depression (but not social adjustment and post-traumatic stress disorder) than no intervention.<sup>61</sup>

Further, there is a need to develop and evaluate a range of interventions designed to support various populations of people bereaved by suicide, and to assess effectiveness using a range of outcome measures.

### **Initiatives for which no evidence of effectiveness exists but which *may be beneficial* in suicide prevention**

A broad spectrum of population-based initiatives focus on increasing population mental health and wellbeing. While the direct contribution of these programmes to reducing suicide rates has not been evaluated they may, nonetheless, make a contribution to suicide reduction by encouraging a positive social climate that minimises risks of mental health and psycho-social problems and maximises the opportunities for more targeted suicide prevention activities to succeed. These programmes include:

**Improving control of alcohol**—National or state strategies which seek to improve control of alcohol may have the added benefit of reducing suicidal behaviour by decreasing the risk of acute alcohol intoxication (which is associated with impulsive suicide attempts), and by reducing the fraction of the population with alcohol-use disorders, which are precursors of suicide attempts.<sup>62</sup> Indeed, suicide rates in both Iceland and the former USSR decreased following the introduction of strong national anti-alcohol policies.<sup>63,64</sup>

**Community-based mental health services and support services**—Community based mental health teams are now accepted as the appropriate setting for treating people with severe mental illness, and the development of these multidisciplinary teams has been national policy in many countries for decades.<sup>65</sup> These teams have been subjected to relatively sparse evaluation, but have been shown to be associated with fewer suicide deaths, less dissatisfaction with care, less drop out from treatment and with overall much lower cost than inpatient care.<sup>66</sup>

Areas in which community based care strategies are likely to be effective include: establishing the care, treatment and management of suicidal patients as a core curriculum component in psychiatric and general practitioner training programmes; encouraging integration between services for those requiring mental health care; establishing clear protocols for assessment, treatment and follow-up of those who present at emergency departments with suicidal ideation or suicide attempt.

**Family support for families facing stress and difficulty**—Young people with suicidal behaviour are frequently characterised by social, educational, and economic disadvantage. Improvements in family wellbeing and health care may contribute to

suicide prevention by reducing risks of childhood and adolescent adjustment disorders which are often precursors of suicidal behaviour.

A range of family support or home visitation programmes have been undertaken in several countries, including New Zealand, with the multiple aims of improving home environments, encouraging family wellness, preventing maternal depression and child behaviour problems, and, generally optimising outcomes for children born into disadvantaged and dysfunctional family environments.<sup>67</sup> There is a need for more research to establish programme efficacy, identify critical components, and assess impacts on a wide range of psychosocial outcomes including the development of psychosocial and psychiatric problems with which suicidal behaviour is associated.

### **Initiatives for which evidence of *harmful* effects exist**

Several approaches directed at suicide prevention have been found to be harmful or potentially harmful. These approaches include:

**School-based programmes that focus on raising awareness about suicide**—There is little evidence that didactic school based suicide prevention programmes which focus on raising awareness about suicide in school students, and which may or may not include youth peer support for suicidal young people, are effective in reducing suicidal behaviour and there are concerns that such programmes may not be safe.<sup>68,69</sup>

There have been suggestions that young people exposed to such programmes either show no benefits or a decrease in desirable attitudes and are less likely to recommend a friend with suicidal ideation seek mental health care, that young males show increased hopelessness and maladaptive behaviour, and there have been concerns that the format and content might inadvertently normalise suicidal behaviour or promote imitation.<sup>70,71</sup> Until there is clear evidence that such programmes are both beneficial and without risk, their use cannot be recommended.

**Public health messages about suicide and media coverage of suicide issues**—It is intuitively appealing to many that media coverage of suicide issues and the media dissemination of information about suicide could make a useful contribution to suicide prevention. However, there is no evidence that public health messages about suicide are beneficial, and there are concerns that such messages might risk normalising suicide rather than preventing it.<sup>72</sup>

Until there is clear evidence that public health messages about suicide prevent, and do not normalise, suicide, and have no deleterious effects, the most prudent approach to this issue is not to include public health messages as part of a suicide prevention strategy.

**No-harm and no-suicide contracts**—The use of no-suicide or no-harm contracts in mental health settings to elicit patient guarantees of safety is widespread, despite no evidence that their use reduces suicide attempts and many cautions about their use.<sup>59,73,74</sup> There are concerns that the use of such contracts may induce a sense of false security in the therapist and anger or inhibit patients.

**Recovered or repressed memory therapies**—General concerns have been expressed about recovered memory therapies<sup>75</sup>, and there is evidence from one, albeit methodologically flawed, study with patients with histories of deliberate self harm treated with such therapy that suggested increased rates of suicide attempt.<sup>76</sup>

## Conclusion

While many national policies for suicide prevention are undertaken as public health campaigns with an explicit focus on universal, population-wide interventions, our current knowledge about suicide causation and prevention suggests that perhaps the most effective approach to reducing suicide may be highly targeted interventions that focus on those who have made suicide attempts who have a long term elevated risk of further suicidal behaviour, and a range of poor psychosocial and mental health outcomes which are likely to precipitate further suicide attempts.

Educating medical practitioners to offer optimal long term care and support for these patients, developing networks of integrated hospital and community care for them, and improving combinations of pharmacotherapy, psychotherapy and psychosocial support may more effectively reduce suicide rates than more generic, broadly based interventions. Exceptions are the population based interventions involving means restriction and careful media coverage and presentation of suicide issues.

In summary, the available evidence thus far suggests that the most promising interventions likely to be effective in reducing suicidal behaviours are medical practitioner and gatekeeper education, and restriction of access to lethal means of suicide. This evidence also suggests a clear agenda for research, which includes evaluating interventions and prevention programmes, developing model and demonstration projects, identifying meaningful outcome measures, and refining and identifying the critical elements of effective programmes.

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