Youth suicide prevention

Evidence briefing

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Foreword

In 1999 the white paper, *Saving Lives: Our Healthier Nation*, was published. It signalled that the Health Development Agency (HDA) would be established and that it would have, as one of its roles, building the evidence base in public health with a special focus on reducing inequalities in health. In April 2001 the Department of Health published its Research and Development Strategy. The strategy identified the task for the HDA as 'maintaining an up-to-date map of the evidence base for public health and health improvement, advising on the setting of standards in the light of evidence for public health and health promotion practice, and effective and authoritative dissemination of evidence to practitioners' (Department of Health, 2001). To translate this into reality the HDA has developed a number of ways of taking a systematic approach to compiling the evidence, identifying gaps and making the evidence base accessible. The publication of this, one in a series of evidence briefings, marks a significant milestone in that activity.

In 2001, the United Kingdom and Ireland Public Health Evidence Group (UKIPHEG) was set up to promote collaboration in the development of the public health evidence base. This evidence briefing represents the fruit of collaboration between the Institute of Public Health in Ireland (IPHI), the HDA and other members of this group including the Health Research Board, Ireland. In this review the IPHI with the Programme of Action for Children in Ireland took the lead on developing the briefing, drawing on the experience and resources of the HDA in the process. We are particularly grateful to the Health Research Board, Ireland, and the Department of Health, Social Services and Public Safety, Northern Ireland, which funded this initiative.

This evidence briefing is a review of reviews about the effectiveness of public health interventions to prevent suicide among young people. The necessity for reviewing

reviews, or tertiary level research, stems from the proliferation over the last decade or more of systematic and other types of review in medicine and public health. The HDA has published other evidence briefings that deal with the prevention of alcohol misuse, teenage pregnancy and parenthood, HIV prevention, the prevention of sexually transmitted infections, obesity, prevention of low birth weight, breastfeeding, the prevention and reduction of accidental injuries in children and older people, the promotion of physical activity, smoking and public health, drug use prevention among young people, and health impact assessment.

Taken together these briefings provide a comprehensive synthesis of the evidence drawn from systematic and other kinds of reviews. They are available on the HDA's website – www.hda.nhs.uk/evidence – and the electronic versions are updated on a regular basis as new evidence becomes available. This evidence briefing will be widely disseminated in England, Northern Ireland and Ireland.

The first editions of the briefings have been based on evidence drawn from systematic and other kinds of reviews. This means that the type of evidence that does not traditionally find its way into reviews has not been considered in detail for these documents. In future editions of the evidence briefings it is planned to extend the coverage of evidence beyond reviews to other methodologies and other types of study, where these are available.

The construction of the HDA Evidence Base has involved collaboration with a number of partners who have interests and expertise in practical and methodological matters concerning the drawing together of evidence and its dissemination. In particular the HDA would like to acknowledge the following: the Centre for Reviews and Dissemination at the University of York; the EPPI-Centre at

the Institute of Education at the University of London; Health Evidence Bulletins Wales; the ESRC UK Centre for Evidence Based Policy and Practice at Queen Mary College, University of London and its nodes at the City University London and the MRC Public Health Sciences Unit at the University of Glasgow; members of the Cochrane and Campbell collaborations; the United Kingdom and Ireland Public Health Evidence Group and the members of the Public Health Evidence Steering Group. This latter organisation acts as the overall guide for the evidence-building project of the HDA. The cooperation of colleagues in these institutions and organisations has been of significant help in the general work in preparing the framework for how we assess the evidence. The authors, the HDA and the IPHI are, however, responsible for the presentation, organisation and content of the material in this briefing.

We would also like to express our gratitude to the reference group and to HDA colleagues who assisted in organising the literature searches and have supported our work throughout.

Every effort has been made to be as accurate and up to date as possible in the preparation of this briefing. However, we would be very pleased to hear from readers who would like to comment on the content or on any matters relating to the accuracy of the briefing. We will make every effort to correct any matters of fact in subsequent editions. Comments can be made by using our website www.hda.nhs.uk/evidence

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Acknowledgements

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Summary

Introduction

This evidence briefing is a review of reviews of the evidence of effectiveness for the prevention of youth suicide.

The aims of this briefing are to:

- Identify all relevant systematic reviews, syntheses and meta-analyses
- Analyse and synthesise the evidence and highlight what works to prevent youth suicide
- Highlight conflicting evidence and gaps in the evidence, and provide a steer for future research commissioning.

Youth suicide is a major global public health issue. While suicide rates are higher among 20-24 year olds, suicidal behaviour that may precede suicide is established in the earlier years. Suicide consistently ranks as one of the leading causes of death for adolescents between 15 and 19 years of age. Suicide accounts for 30% of deaths in the 15-24 year age group (Carr, 2002). There has been an increase in suicide mortality and morbidity over most of the 20th century among white adolescents in the US and Europe (Guo and Harstall, 2002; Diekstra, 1996).

Research from around the world has consistently indicated that suicide and suicide attempts in young people are complex behaviours with multiple causes (Beautrais, 1998). Studies of youthful suicidal behaviour consistently report that many young people who die by suicide or who make serious suicide attempts have a recognisable psychiatric disorder at the time of their attempt, such as depression, anxiety, conduct disorders and substance misuse.

There is a clear social class gradient in suicide among men aged 20-64 in England with suicide rates in social class V

twice as high as in social class IV and almost four times as high as in social class I (Department of Health, 2002; Platt and Hawton, 2000). This social class gradient is evident in Ireland and Northern Ireland for both men and women (Balanda and Wilde, 2001).

Protective factors are predominantly the reverse or mirror of risk factors. A previous history of suicide attempts, a history of depression, substance misuse, poor family circumstances and certain personality traits such as poor problem-solving ability, impulsiveness and aggression, and the availability of the means to commit suicide are key risk areas needing attention when future prevention programmes are designed.

UK and Ireland policy

In Ireland the *Report of the National Task Force on Suicide* (Department of Health and Children, 1998) sets the policy context for suicide prevention, although no measurable targets are set. While this policy document is not specific to young people it provides a framework for youth suicide prevention.

In Northern Ireland the *Promoting Mental Health – Strategy and Action Plan 2003-2008* (Department of Health, Social Services and Public Safety, 2003) identified the prevention of suicide as one of four key areas for taking the strategy forward.

In England mental health is one of the five priorities for action set out in *Saving Lives: Our Healthier Nation*, which set a target to reduce the death rate from suicide and undetermined injury by at least a fifth by 2010 (Department of Health, 1999a).

Methodology

In limiting this review to an analysis of the evidence from review-level studies and by applying the traditional hierarchy of evidence that places primary importance on randomised controlled trials (RCTs), we have had to exclude a considerable body of research based on non-randomised studies and on expert consensus.

In reading this review one must remember that when studies find an intervention that has not been effective this does not necessarily mean it is ineffective. The study may not have had adequate power to detect a small positive difference, but ruling the intervention as ineffective is too judgemental, as future studies using the intervention, perhaps delivered by different individuals or adapted in some way, may turn out to be effective.

The effectiveness of pharmacological/psychiatric treatments for young people with depression or other mental illnesses was not a primary area for review in this briefing. However, as some reviews covered treatments their findings are included, although it should be stressed that there may be bias in these findings as they are not the outcome of a systematic review of this topic area.

Electronic databases were searched from 1980 to April 2003 using appropriate terms. Each of the papers was assessed independently by two of the three reviewers (P. Crowley, J. Kilroe and S. Burke) and critically appraised in terms of transparency, systematicity and relevance according to the HDA's Evidence Base methodology (Swann et al., 2003).

Only seven reviews satisfied the quality inclusion criteria. Three were carried out in the UK, two in North America, one in New Zealand and one in Australia. Four were carried out prior to 2000 and three since then.

Findings

Curriculum-based suicide prevention programmes
Five reviews (Ploeg et al., 1999; Harden et al., 2001; Guo and Harstall, 2002; Gunnell, 1994; Patton and Burns, 1998) looked at the evidence for school-based interventions. Insufficient evidence was found to recommend universal (non-targeted) school-based programmes, or programmes applied to high-risk groups and/or behaviours.

In one review, attitudes about suicide improved in five studies, were unchanged in two and worsened, especially among males, in two studies. Holistic, multi-dimensional self-esteem based programmes were found to have positive impacts on young people's mental wellbeing, but were not measured for impact on attitudes to suicide or suicide as an outcome.

Recognition, management and prevention of youth suicidal behaviour by primary care practitioners
Two systematic reviews (Hider, 1998; Gunnell, 1994) suggest that it is possible to predict young people at higher risk of suicide. Only one small evaluation study which investigated the effectiveness of education of GPs on risk factors was found. It revealed a positive impact of GP education on general suicide rates. The apparent potential for GPs in identifying and managing at-risk youth remains unproven.

Interventions targeting family risk factors
Two reviews (Hider, 1998; Patton and Burns, 1998) found some evidence that universal interventions to diminish conflict and enhance cohesion between parents and children had persisting benefits in terms of the behaviour and mental health of offspring but no effect on suicide was found. The impact of interventions to promote family cohesion on youth suicide prevention has yet to be studied adequately but may be a potential area for effective intervention.

Suicide prevention programmes for at-risk groups
Four systematic reviews (Guo and Harstall, 2002; Patton and Burns, 1998; Hawton et al., 2003; Gunnell, 1994) examined interventions targeting at-risk groups of youths. No strong studies were found on 'postvention' programmes (support in the aftermath of a suicide – see

also Appendix B – Glossary), intensive follow-up, or studies comparing general practice to outpatient care. There is some weak evidence for programmes for at-risk youth focusing on behaviour change and coping skills. There is a lack of evidence from studies with suicide as an outcome.

Potential points of access to those contemplating suicide

Three systematic reviews (Patton and Burns, 1998; Hider, 1998; Gunnell, 1994) looked at interventions to promote access to support or advice for those at risk of suicide. There is no current evidence for effectiveness of crisis hotlines but there is some weak evidence for contact cards. Primary care practitioners were identified as a potential point of assessment and management for those at risk of suicide.

Prevention of access to means

Three systematic reviews (Gunnell, 1994; Hider, 1998; Patton and Burns, 1998) considered the evidence on limiting access to suicide means among youths. There was a lack of studies that have evaluated the effect of restrictions on access to means of self-harm on actual suicide rates. There was some evidence for restricting the amount of paracetamol sold per packet. Evidence on firearms' restriction is contested, as substitution of other methods may occur.

Media restrictions

One systematic review (Gunnell, 1994) looked at the potential for preventing youth suicide through influencing how the media reported incidents of youth suicide. The potentially contagious nature of youth suicide could be reduced through responsible reporting of incidents of suicide. The evidence for preventing youth suicide through influencing responsible media reporting is conflicting.

Psychosocial and pharmacological treatments for deliberate self-harm

One systematic review (Hawton et al., 2003) looked at the treatment of deliberate self-harm. The evidence was weak due to the small size of the primary studies. Problem-solving therapy and the provision of a contact card showed some promise. There was some limited evidence of the effectiveness of depot flupenthixol (a long-acting anti-psychotic drug) and dialectical behaviour therapy. There was some evidence for the use of cognitive behavioural therapy to prevent suicidal behaviour among high-risk young people. No indication

of benefit was found for the antidepressants mianserin or nomifensine, with mixed results for paroxetine. There was a potential effect of selective seretonin re-uptake inhibitors (SSRIs) seen in treating depression but not suicide.

There is insufficient current evidence to recommend pharmacological interventions with the possible exception of SSRIs for young people with mental illness. There is limited evidence for dialectical behavioural and cognitive behavioural therapy for their impacts on deliberate self-harm.

Analysis of the evidence

While we cannot say that any intervention provides strong evidence of effectiveness using the criteria recommended by the HDA methodology, there are a number of approaches that provide some evidence of effectiveness and these should be pursued and evaluated rigorously.

There are considerable variations in programme intensity, dosage levels, duration and external context for programmes that make comparability between studies difficult.

Different school, family and community based strategies have been shown to modify suicide-related risk, but none of these studies have looked at suicidal behaviour as an outcome. This review uncovered some work on youth psychiatric treatment but did not systematically search this area. A future review should focus on this.

Some of the review authors comment that the relatively low rate of completed suicide in the population makes it difficult to establish a reduction in the suicide rate arising from the different interventions.

In general there is a lack of controlled studies and RCTs on the effectiveness of interventions on preventing youth suicide.

Recommendations for policy and practice

Multi-year (interventions with young people that extend over many years of their lives), multi-component strategies to address high-risk behaviour in school

including prevention, intervention and postvention need to be developed and evaluated systematically.

Promising interventions that need further development and evaluation:

- Interventions to improve the material and physical circumstances of people's lives need to be developed and evaluated
- Restricting access to paracetamol
- Education and general coping skills training as they have beneficial effects on suicidal potential and depression
- 'Moderate' studies (ie studies that were rated as having used moderately robust methodology) gave encouraging evidence for indicated suicide prevention programmes (these are programmes aimed at those identified as at-risk of suicide) targeting at-risk youths
- Problem-solving therapy and provision of emergency contact cards as they showed some effectiveness in preventing deliberate self-harm
- Promoting responsible reporting by the media.

Recommendations for future research

- There is a need for youth-specific studies examining the impact of the socio-economic gradient and health inequality on suicide.
- There is a need for larger trials involving more people because with some interventions the study sizes were too small to yield strong evidence.
- There is a need for research on wider structural barriers and enablers to mental wellbeing.
- Process and qualitative information should be included in the evaluation of interventions to allow features of effective interventions to be identified.
- Future research should focus on the needs of socially excluded young people including those in care or the homeless.
- Interventions to foster supportive family relationships, use of activities to promote self-esteem and reduce depression, interventions promoting coping skills, and social support initiatives and peer counselling should all be further evaluated.
- There is a need to research the effectiveness of hotlines in suicide prevention due to lack of evidence of effectiveness to date.
- The effectiveness of heightened awareness among clinical practitioners of mental illness and suicidal risk

factors among young people should be further evaluated.
- The impact of reducing access to the means of suicide and the role of media should be further researched.

Conclusion

The reviews suggest that complex interventions in many areas of young people's lives over many years may be most successful at preventing youth suicide. This is a considerable challenge to designing coherent interventions, and even more so to evaluating them rigorously enough to be able to attribute outcomes to specific interventions.

Introduction

This evidence briefing is a review of reviews of the evidence for the prevention of preventing youth suicide.

The aims of this briefing are to:

- Identify all relevant systematic reviews, syntheses and meta-analyses
- Analyse and synthesise the evidence and highlight what works to prevent youth suicide
- Highlight conflicting evidence and gaps in the evidence, and provide a steer for future research commissioning.

This briefing is focused on studies that examine the effectiveness of interventions in young people (referred to as youth) who are aged 15 to 24 years of age as defined by the World Health Organization.

The findings are important because of the need to develop clear evidence-based strategies to tackle a major problem. Youth suicide and parasuicide places a significant burden on individuals, families, society and health services.

Outline of this evidence briefing

This briefing:

- Outlines the Health Development Agency (HDA) Evidence Base
- Reviews the background to youth suicide in terms of policy and prevalence
- Reviews literature on risk and protective factors in youth suicide
- Outlines the methods employed to review the evidence
- Analyses, reviews and summarises the reviews accepted onto the HDA Evidence Base for key messages

- Highlights the key evidence and interventions not covered in this review
- Outlines gaps in research and makes recommendations for future research policy in this area
- Provides a table summarising the evidence for effective interventions and a table highlighting sources of useful information for practitioners.

The HDA Evidence Base

Decisions about policy and practice in the public sector are increasingly driven by consideration of the best available evidence. The process of drawing together, analysing and synthesising evidence from research is a central principle of evidence-based practice. Typically, the process of reviewing an area of practice or intervention will include a systematic review of effectiveness, a meta-analysis or some other review-level synthesis and interpretation of evidence from research.

As more reviews and meta-analyses are carried out across the spectrum of public health, there is an increasing need to map the areas that they cover, assess their quality, and pull together any common findings about what works in particular areas to improve health and reduce health inequalities. The task of keeping abreast of such large amounts of information is now too difficult for any one person. Systematic reviews are able to condense this large amount of information, via a structured method, into summary documents.

The HDA has taken on the task of mapping and synthesising the best available review-level evidence for the effectiveness of interventions to improve health and reduce health inequalities across priority areas of public health. Mapping and synthesis of review-level data will enable practitioners and policy makers to view the

aggregate strength of the evidence in key areas, see clearly where review-level evidence is lacking, and will inform the commissioning of future research and reviews.

The HDA evidence briefings are essentially reviews of reviews, analysing the strengths and weaknesses at this level in a topic-specific evidence base, identifying gaps in the evidence, analysing future primary and secondary research needs and discussing the implications of findings for policy and practice. Each briefing has a freestanding summary that is published separately. The briefings are also published on, and supported by, the HDA Evidence Base website (www.hda.nhs.uk/evidence).

The HDA Evidence Base website contains the latest edition of this briefing and the authors recommend that readers refer to the website to ensure they have the latest version. Access to the original reviews on which these briefings are based can also be found on the website, when they are available. Evidence briefings are designed to be accessed by a variety of users including those simply looking for headline findings, those wanting complete and detailed syntheses, and those who need to track back to the original primary and secondary sources.

Presently, a three-tier structure underpins the HDA's work to develop the public health evidence base:

- A Public Health Evidence Steering Group (PHESG) with membership drawn from universities, public health and research and development divisions of the Department of Health, other government departments, public health practitioners, representatives of research funding bodies, the Centre for Reviews and Dissemination, Cochrane and Campbell collaborations, the EPPI-Centre, and other UK and World Health Organization representatives. The group is chaired by a high-ranking official from the Department of Health on behalf of the Chief Medical Officer for England. This overarching group advises on the broad strategic direction of the evidence base and has a remit to quality assure the processes developed by the HDA to construct the evidence base.
- For each topic area covered (eg accidental injuries, prevention of low birth weight), there is a reference group. These groups report to the PHESG, and consist of key academics, practitioners and officials with expertise in the area. Reference groups advise on the content of the HDA Evidence Base and guide the production of evidence briefings.

- Finally, the HDA is working to establish a robust evaluation framework for the entire HDA Evidence Base project.

Providing comprehensive, up-to-date syntheses of the literature available in reviews is the chosen first step in a process of building the public health evidence base. As the programme of work continues, we will turn our attention to bringing into our evidence briefings research that does not usually find its way into systematic reviews.

This briefing does not contain advice or guidance for practice. Evidence into practice requires gathering evidence from all sources and combining it with political and social information, mindful of resource constraints, to develop learning that can be passed on to practitioners. The HDA piloted this process of evidence into practice in two topic areas (physical activity and the prevention of accidental injuries) during 2002-03 and are now implementing it through its network of collaborating centres.

Who is this briefing for?

This briefing is intended to inform policy and decision makers, health service providers, planners and managers, educators and others working with young people, public health physicians and other public health practitioners in the widest sense. The limitations of this briefing, the data on which it is based and alternative sources of evidence that may be helpful to inform policy and practice are set out in Chapter 3 – Methodological issues.

What is effectiveness?

In this briefing we use the term effectiveness to describe 'demonstrable, intended effects on (usually quantitative) outcomes'. However, the term is not uncontested. First, while 'demonstrable' effects, in this context, usually imply those that are statistically significant, in some situations – particularly where interventions require careful, long-term evaluation – this may be an ambitious definition. Second, there are some tensions between different kinds of outcome measures, depending on the focus of the study.

The critical appraisal tool that we have used (see Appendix C) favours reviews that have a transparent and

replicable data search, methodology and analysis. This means that systematic reviews of effectiveness and meta-analyses tend to be rated highest (if they are well conducted) because of their clear methodology, relative to literature or other non-systematic reviews. This is not to say that literature reviews cannot be counted as strong evidence – where review rationale, methodology and analytic techniques are clear, they are rated highly.

Note, however, that reviews are not always comparing the same thing – some reviews examine outcome data studies, others look at more prospective studies – so interpretation of what we have found is complicated by the state of the data pool. Equally, the reviews themselves sometimes make difficult or inappropriate comparisons between and across evaluation studies that examine different aspects of the problem.

Overview of youth suicide prevention

Introduction

In this section, youth suicide policy is reviewed and the data on suicide prevalence outlined. Key risk and protective factors are summarised.

Youth suicide is a major global public health issue. While suicide rates are higher among 20-24 year olds, suicidal behaviour that may precede suicide is established in the earlier years. Suicide consistently ranks as one of the leading causes of death for adolescents between 15 and 19 years of age. Suicide accounts for 30% of deaths in the 15-24 year age group (Carr, 2002). There has been an increase in suicide mortality and morbidity over most of the 20th century among white adolescents in the US and Europe (Guo and Harstall, 2002; Diekstra, 1996).

'Suicide may be seen as the extreme result of poor mental and emotional health and wellbeing. The traumatic impact of suicide on individuals, families, communities and society warrants a specific focus by those involved in promoting mental health and emotional wellbeing. It should also be emphasised in policies and practices developed and implemented across many sectors whether government, statutory, community, voluntary or private' (Department of Health, Social Services and Public Safety, 2000: 31).

'Population suicide rates are widely regarded as a measure of a society's social and psychological health' (Durkheim, 1897 in Gunnell et al., 1999: 263). The phenomena of suicide and parasuicide among adolescents and young adults has been described as a 'public health problem of primordial importance' (Diekstra, 1996).

Policy context

Ireland

The National Children's Strategy. Our Children – Their Lives (Department of Health and Children, 2000b) provides an integrated framework and the policy context for child health initiatives including the priorities and actions outlined in the new health strategy *Quality and Fairness – A Health System for You* (Department of Health and Children, 2001a). This recommends the development of an integrated national programme for child health and the expansion of family support services.

Relevant initiatives to date in the area of child health include:

- *The Health of Our Children. Annual Report of the Chief Medical Officer* (Department of Health and Children, 2000a)
- *Get Connected – Developing an Adolescent Friendly Health Service* (National Conjoint Child Health Committee, 2000)
- *Working Group on Child and Adolescent Psychiatric Services*. First and second reports (Department of Health and Children, 2001b; 2003).

The *Report of the National Task Force on Suicide* (Department of Health and Children, 1998) sets the policy context for suicide prevention in Ireland, although there are no measurable targets. While this policy document is not specific to young people it provides the framework for youth suicide prevention. A National Suicide Review Group is in place to review ongoing trends in suicide and parasuicide, to coordinate research into suicide and to make recommendations to the chief executives of the health boards. It has recently carried out a comprehensive review of progress in implementing the recommendations of the National Task Force on Suicide (NSRG) which

indicated that the strategic direction for suicide prevention should be reviewed to take account of developments that have taken place in Ireland in the past five years. The Health Board's Executive (HeBE) and the NSRG have now come together, with the support of the Department of Health and Children, to develop a national strategy and action plan for the reduction of suicide and suicidal behaviour in Ireland. This will be completed in March 2005.

Northern Ireland

In January 2003, the *Promoting Mental Health, Strategy and Action Plan 2003-2008* (Department of Health, Social Services and Public Safety, 2003) was published. Preventing suicide is one of the four core areas identified for taking the strategy forward. It singles out a range of preventive actions to be taken by the health and social service boards in conjunction with relevant partners during 2004.

Investing for Health (Department of Health, Social Services and Public Safety, 2002) is a framework for action to improve health and reduce health inequalities in Northern Ireland based on partnership working between departments, public bodies, local communities, voluntary bodies and district councils. There is no specific section on children but several child-related objectives and goals are outlined, eg to reduce poverty in families with children and to improve school and youth service health education and promotion in the area of mental health. A 10 year children's strategy is being developed.

England

Mental health is one of the five priorities for action set out in *Saving Lives: Our Healthier Nation*. This set a target to reduce the death rate from suicide and undetermined injury by at least a fifth by 2010 (Department of Health, 1999a). One of the objectives of the *National Suicide Prevention Strategy for England* (Department of Health, 2002) is to promote the mental health of children and young people under 18 years of age. Another is to improve the identification and management of childhood depression. It commits to piloting a mental health promotion project for young men, to monitor non-fatal deliberate self-harm, to identify suicide 'hotspots' and promote cross-governmental action on social risk factors such as unemployment and housing.

Enhancing a sense of wellbeing or promoting positive mental health is a key Department of Health goal (Department of Health, 2002). Standard One of the

National Service Framework for Mental Health, which focuses on adults of working age, commits to promoting mental health and gives health authorities a clear remit to work with the government social exclusion agenda (Department of Health, 1999b). Promoting young people's mental health is also part of the National Healthy Schools Standard programme. The Children's Fund and Children and Young People's Unit are to coordinate policy to reduce social exclusion among children and young people (Harden et al., 2001). The Royal College of Psychiatrists' guidelines *Managing deliberate self harm in young people* (Royal College of Psychiatrists, 1998) have set standards for the assessment of deliberate self-harm in accident and emergency departments.

Suicide epidemiology

Rates of suicide may be under-reported by between 30% and 200% because of problems with certification of suicide. Thus some have suggested that official statistics are most useful for looking at trends (Diekstra, 1996; Guo and Harstall, 2002; Madge, 1999). Although ranking as a major cause of death, completed suicide is still a rare event in young people. Suicide ranks as a major cause of death mainly because very few adolescents die from other causes (de Wilde, 2000). Suicide accounts for 1% of all deaths in Ireland and Northern Ireland (National Suicide Review Group (NSRG), 2001). Attempted suicides are uncommon in childhood and early adolescence, but increase markedly in the late teens and continue to rise until the early 20s (Gould et al., 2003). The rarity of completed suicide before puberty is a universal phenomenon (Gould et al., 2003).

- In the last 30 years, suicide rates have increased by more than 10% on average among the Organisation for Economic Co-operation and Development countries (eg western Europe, US, Australia, Mexico, Japan (OECD, 2002).
- Some four million adolescents attempt suicide annually. More than 100,000 young people (aged 15-24 years) commit suicide each year (OCPR, 2004).
- Every 40 seconds a person commits suicide somewhere in the world. Every three seconds a person attempts to die. Suicide is among the top three causes of death among young people aged 15-35 years (WHO, 2000).

About 43,000 European citizens take their lives every year and a further 700,000 attempt to do so. In Ireland suicide is the second leading cause of violent death in the 15-24

Figure 1: United Kingdom death rates from suicide and undetermined injury: people aged 15-24 years (1990-2000)
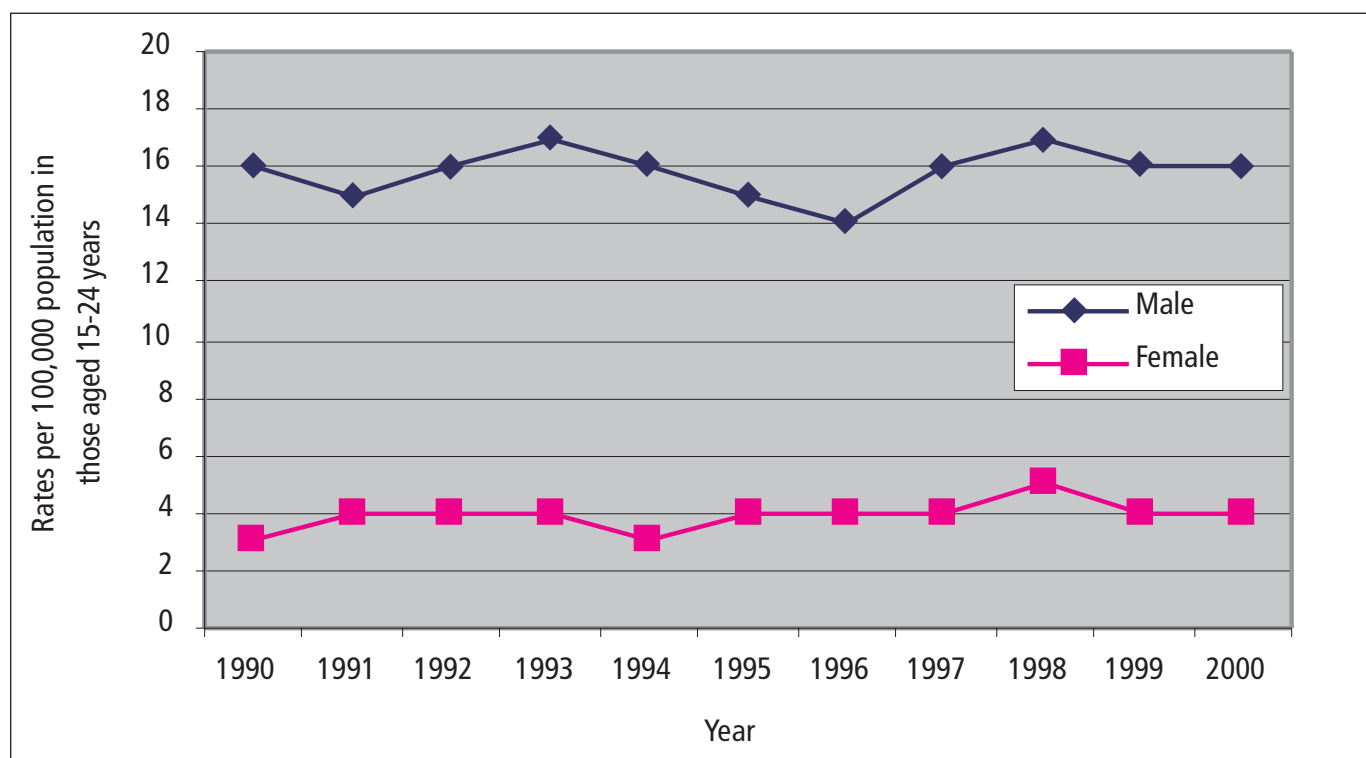
All data based on ICD9 apart from the Scotland data for 2000, which are based on ICD10. Source of data: Office for National Statistics; General Register Office for Scotland; Northern Ireland Statistics and Research Agency. www.statistics.gov.uk/statbase/Expodata/spreadsheets/D5228.xls

year age group, after traffic accidents (National Suicide Review Group (NSRG), 2000).

Accurate statistics on numbers of suicides based on death registrations are difficult to produce as there are problems with definitions of suicide. The underlying cause of death is coded according to the International Classification of Diseases, which has been in use since 1979 and maintained by the World Health Organization (WHO, 1977, 1992).

The current classification for annual data is the Ninth Revision, ie Deaths registered as suicide, ICD-9 Code E950-E959 and Deaths registered as cause undetermined, ICD-9 Code E980-E989. All statistical data used in these tables for comparisons across Ireland, Northern Ireland, Scotland, England and Wales are based on the Ninth Revision of the International Classification of Diseases. The Tenth Revision was implemented in mortality data in January 2001.

United Kingdom data
Male suicide rates in the UK ranged between 14 and 17 per 100,000 population over the decade 1990-2000 (see Figure 1). Female suicide rates in the UK ranged between 3 and 5 per 100,000 population over the decade 1990-2000. Rates

of 3 per 100,000 and 4 per 100,000 were reported for 1990 and 2000 respectively.

15-24 year age group
Suicide and undetermined injury in Scotland among those aged 15-24 ranged from 14-18 per 100,000 population from 1991-2001 (see Figure 2). From 1991-1996 Scotland had the highest rates of suicide and undetermined injury; Ireland reported the highest rates from 1997-2000.

In Ireland, suicide and undetermined injury rates for the decade were 12 per 100,000 population in 1991 and 17.5 per 100,000 in 2001. In 2002 and 2003 records show deaths by suicide and undetermined injury in the 15-24 year old age bracket as 96 (91 suicides) and 117 (108 suicides) respectively.

Northern Ireland rates ranged from 10.5 per 100,000 in 1991 to 14.2 per 100,000 population in 2001. In 2002 rates of 10 per 100,000 occurred. Rates of 10-15.4 per 100,000 population in those aged 15-24 were recorded in Wales for suicide and undetermined injury. The lowest rates for the decade, however, were recorded in England, 7.2-10 per 100,000 population.

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Figure 2: Suicide and undetermined injury: persons aged 15-24 years (1991-2001)

Sources of data: **Ireland** Central Statistics Office: Deaths from suicide ICD-9 Code E950-E959 and from cause undetermined ICD9 – E980-E989
Scotland General Register Office for Scotland: Suicides (Intentional self-harm) (ICD9 E950-959, ICD10 X60-84, Y87.0) and Events of Undetermined Intent (ICD9 E980-989, ICD10 Y10-34, Y87.2)
Northern Ireland Statistics and Research Agency: Deaths due to suicides (ICD-9 – E950-E959, ICD10 – X60-X84) and undetermined deaths (ICD9 – E980-E989, ICD10-Y10-Y34)
England and Wales Office for National Statistics: Suicide and undetermined injury, by sex in those aged 15-24, 1991-2001. Suicide and undetermined injury ICD-9 Code E950-E959, E980-E989 excluding E988.8 ICD10 – X60-X84, Y10-Y34 excluding Y33.9 (where verdict pending). Crude rate per 100,000.

In summary, suicide trends in the 15-24 year old age group over the last 10 years show a decrease in England and Wales, and an increase in Scotland, Northern Ireland and Ireland.

15-24 year age group – males
The highest reported suicide and undetermined injury rates in the male 15-24 age group were in Scotland with a range of 21-38 per 100,000 population across the decade (see Figure 3). In 2002 rates of 30 per 100,000 have been reported in Scotland.

Suicide and undetermined injury rates in Ireland ranged between 14.9 and 35.5 per 100,000 population, and were higher than Scotland between 1997-1999.

Northern Ireland figures ranged between 16.7 and 31.8 per 100,000 population and were frequently higher than Wales. In Wales suicide and undetermined injury rates ranged between 13.1 and 26.6 from 1991-2001.

In England suicide rates for males aged 15-24 years were reported as the lowest with a range of 11.6-16.3 per 100,000 population.

15-24 year age group – females
The highest female suicide and undetermined injury rates in the 15-24 age group between 1991 and 2001 have been reported in Scotland with a range of 5-10 per 100,000 population (see Figure 4). In 2002 rates of 10 per 100,000 occurred.

Figure 3: Suicide and undetermined injury: males aged 15-24 years (1991-2001)

Sources of data: **Ireland** Central Statistics Office: Deaths from suicide ICD-9 Code E950-E959 and from cause undetermined ICD9 – E980-E989
Scotland General Register Office for Scotland: Suicides (Intentional self-harm) (ICD9 E950-959, ICD10 X60-84, Y87.0) and Events of Undetermined Intent (ICD9 E980-989, ICD10 Y10-34, Y87.2)
Northern Ireland Statistics and Research Agency: Deaths due to suicides (ICD-9 – E950-E959, ICD10 – X60-X84) and undetermined deaths (ICD9 – E980-E989, ICD10-Y10-Y34)
England and Wales Office for National Statistics: Suicide and undetermined injury, by sex in those aged 15-24, 1991-2001. Suicide and undetermined injury ICD-9 Code E950-E959, E980-E989 excluding E988.8 ICD10 - X60-X84, Y10-Y34 excluding Y33.9 (where verdict pending). Crude rate per 100,000.

In Ireland rates of female suicide and undetermined injury in the 15-24 age group have ranged from 1.4-7.4 per 100,000 population. In Wales female suicide and undetermined injury rates in the 15-24 age group ranged between 1.6-6.9 per 100,000 population.

In England female suicide and undetermined injury rates in the 15-24 age group showed least fluctuations and ranged from 2.7-4 per 100,000 population between 1991 and 2001. Northern Ireland rates ranged from 0.8-7.7 across the decade.

Ireland rates
The average annual number of suicides occurring in the five year period 1996-2000 was 468. Figure 5 shows that suicide begins to rise in the late teens and peaks in the 20-29 year age brackets, particularly in males (NSRG, 2002).

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Figure 4: Suicide and undetermined injury: females aged 15-24 years (1991-2001)

Sources of data: **Ireland** Central Statistics Office: Deaths from suicide ICD-9 Code E950-E959 and from cause undetermined ICD9 – E980-E989
Scotland General Register Office for Scotland: Suicides (Intentional self-harm) (ICD9 E950-959, ICD10 X60-84, Y87.0) and Events of Undetermined Intent (ICD9 E980-989, ICD10 Y10-34, Y87.2)
Northern Ireland Statistics and Research Agency: Deaths due to suicides (ICD-9 – E950-E959, ICD10 – X60-X84) and undetermined deaths (ICD9 – E980-E989, ICD10-Y10-Y34)
England and Wales Office for National Statistics: Suicide and undetermined injury, by sex in those aged 15-24, 1991-2001. Suicide and undetermined injury ICD-9 Code E950-E959, E980-E989 excluding E988.8 ICD10 – X60-X84, Y10-Y34 excluding Y33.9 (where verdict pending). Crude rate per 100,000.
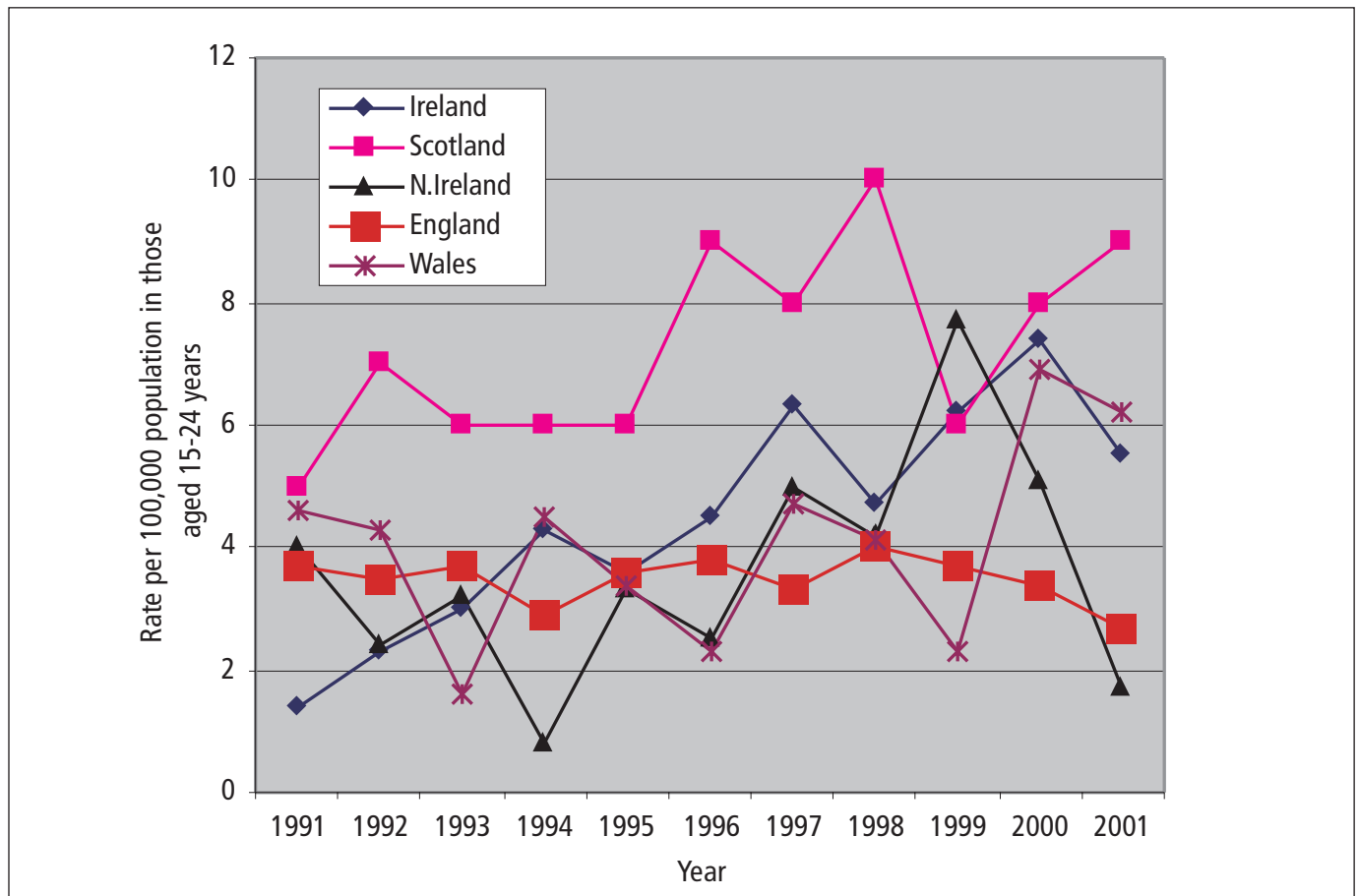
Figure 5: Ireland: total number of suicides occurring between 1996-2000
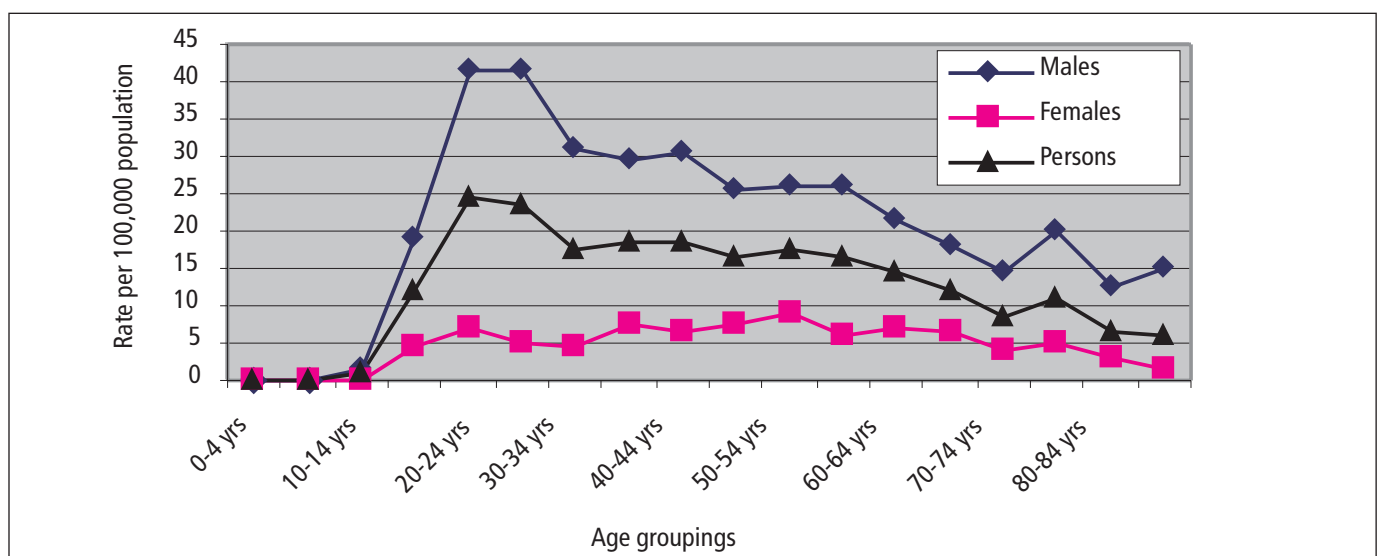
Source of data: NSRG, 2002

Parasuicide

Parasuicide is the greatest predictor of eventual suicide (Welch, 2001). Over 40% of completed suicides are preceded by a previous attempt (Walker and Townsend, 1998). Women and younger people have higher rates of parasuicide, and younger women have the highest rates (Welch, 2001; Carr, 2002; Gunnell, 1994).

Ireland
Figures compiled by the National Parasuicide Registry indicate that at a national level there were 8,304 hospital presentations due to parasuicide by 6,705 individuals (National Suicide Review Group (NSRG), 2002).

A study in Southwest Ireland (Corcoran et al., 2004) found the Irish rate of parasuicide to be higher than eight of 11 centres in a 1995 World Health Organization Europe study (Corcoran et al. compared the parasuicide rate in Southwest Ireland with 11 European centre results). The rate peaked in the 20-24 year range and rates were significantly higher in women, particularly among those under 20 years.

United Kingdom
Around 19,000 young people (15-24 years) attempt suicide every year and about 700 of these succeed. Within these statistics there is a marked gender division; young women aged between 15 and 19 years are the group most likely to attempt suicide, but young men are much more likely to succeed in their suicide attempt. However, the sharpest increase has been seen in young men in the 15-24 year age group, whose rate of attempted suicide has risen by 118% since 1986. One in five people who attempt suicide will try again, of whom 10% will succeed (MIND, 2004).

Methods

Methods of suicide vary by age and by gender. In Ireland hanging is the most common means of suicide among 15-24 year olds, followed by drowning (Smyth et al., 2003). A study in Cork found that all suicides in under-20 year olds used hanging, whereas in Northern Ireland methods including hanging, shooting, drugs, drowning and carbon monoxide poisoning were used in all ages (O'Shea, 2000).

The main methods of suicide in the general population in England are hanging and self-poisoning with psychotropic or analgesic drugs. Young people in the UK, especially females, tend to overdose on paracetamol (Anderson, 1999; Madge, 1999). Self-immolation (attempting to kill oneself by setting oneself on fire), a rare method of suicide among adolescents, has been described and is associated with holding fundamentalist religious views (Stoddard et al., 1985).

Availability of firearms is different in Ireland and Northern Ireland. In Ireland no females were recorded as using firearms in recent suicides. However, in Northern Ireland female as well as male youths have used firearms for suicide; children of police officers all live with firearms in the home. In looking at suicide in Ireland and Northern Ireland we need to be aware of significant differences in local context.

Protective and risk factors for suicide among young people

There is a shift away from viewing mental health in terms of illness alone and incorporating the concept of 'mental wellbeing' (Harden et al., 2001). Research from around the world has consistently indicated that suicide and suicide attempts in young people are complex behaviours with multiple causes (Beautrais, 1998).

Studies of youthful suicidal behaviour consistently report that the many young people who die by suicide or who make serious suicide attempts have a recognisable psychiatric disorder at the time of their attempt, such as depression, anxiety, conduct disorders, and substance misuse. Depressive disorders are consistently the most prevalent disorders among adolescent suicide victims, ranging from 49% to 64%. It is now widely recognised that there is a high level of psychological disturbance among adolescents, with an estimated prevalence rate of about 15% (Walker and Townsend, 1998; Carr, 2002). About one third of adolescent suicide victims appeared to satisfy clinical criteria for depression or other treatable mental illnesses (Shaffer et al., 2001; CDC, 1994). Mental health problems of clinical severity affect up to 20% of all children aged 5-15 years throughout the UK and it is the commonest cause of severe disability in childhood (O'Rawe, 2003).

The overall prevalence of diagnosable mental health problems among children and young people can be up to 25% at any one time (Harden et al., 2001). An Office for

National Statistics (ONS) survey in the UK in 2000 found a rate of 13% for any psychological disorder (eg conduct disorder, anxiety and depression) among 11-15 year old boys and 10% for girls of the same age (Melzer et al., 2000). The 1994 National Psychiatric Morbidity Survey revealed rates of 126 per 1,000 for any neurotic disorder for 16-19 year olds, 2 per 1,000 for psychoses and 167 per 1,000 for alcohol or drug dependence (Harden et al., 2001).

Psychological well-being in Health Survey for England: the Health of Young people '95-'97 (McMunn et al., 1998) found 10% of 13-15 year olds and 15% of 16-19 year olds scoring high on the General Health Questionnaire 12 point scale (GHQ12) (a high score means that these youths have an increased risk of the presence of psychiatric illness), with young women having double the prevalence compared to young men (Harden et al., 2001). The Health Survey for England classed 19% of young men and 12% of young women as having a severe lack of social support (Harden et al., 2001). Lack of social support is a potential risk factor for suicide.

The role of ethnicity

There is a distinct absence of studies of suicide and parasuicide among ethnic minorities. Prevalence rates of mental illness among Asian children were lower than average in the ONS survey, with 8% of Pakistani and Bangladeshi children and 4% of Indian children having a mental illness (Melzer et al., 2000). Women aged 16 and over from Bangladeshi, Pakistani, Indian and African Caribbean backgrounds were more likely than white women to have a high GHQ12 score (Harden et al., 2001).

The role of violent conflict in the lives of young people

Northern Ireland experiences higher levels of deprivation than anywhere else in the UK or Ireland (Hillyard et al., 2003). Combined with civil and political conflict, this has led some to suggest a higher prevalence of psychological morbidity than Scotland or England (Smyth et al., 2003). In contrast, the General Household Questionnaire scores (high scores indicating a higher probability of the presence of psychological illness) were similar to those found in UK surveys (Cairns et al., 2003).

Young people in Northern Ireland have, on average, experienced twice the number of negative life events and reported much higher stress scores than adolescents in other countries (Chief Medical Officer Northern Ireland,

1999). There is a direct relationship between the degree an area is perceived to be dangerous and threatening and reported levels of depressive symptoms, anxiety and conduct disorder (Aneshensel and Sucoff, 1996). A survey undertaken in Northern Ireland in 2001 showed that 12% of adults thought of themselves as victims of the troubles, especially in the 34-65 year old age group and those not in the professional classes (Cairns et al., 2003). Using objective criteria, however, 16% appeared to be direct victims and 30% indirect victims. Seeing oneself as a victim was associated with lower levels of psychological wellbeing and these levels have not changed since the ceasefires (Cairns et al., 2003).

Social class gradient in suicide

The HDA evidence briefings seek to highlight the impact of public health interventions on health inequalities. The relationship between socio-economic status and suicide and parasuicide has been a long-standing research interest (Durkheim, 1897/1952; Platt, 2000; Hawton et al., 2001a, 2001b). There is a clear social class gradient in suicide among men aged 20-64 in England with suicide rates in social class V twice as high as in social class IV and almost four times as high as in social class I (Department of Health, 2002; Platt and Hawton, 2000). This social class gradient is evident in Ireland and Northern Ireland for both men and women (Balanda and Wilde, 2001). There is a clear statistical association between unemployment and suicide, especially in young men (Platt and Hawton, 2000; Kienhorst et al., 1990), and rates of suicidal behaviour are higher among manual occupational groups (Hawton et al., 2001a, 2001b). This suggests the need for social policy measures to prevent suicide by addressing the broader socio-economic and environmental determinants of health, while specific communities may benefit from targeted interventions (Hawton et al., 2001a, 2001b).

Geographic variations in incidence of parasuicide and suicide have been shown to be associated with area-based measures of socio-economic deprivation and social fragmentation, particularly in parasuicide among young men and women and suicide among men (Hawton et al., 2001a, 2001b). More deliberate self-harm (DSH) patients of both genders living in areas of socio-economic deprivation were unemployed, living alone and having problems with housing compared to those from wealthy areas (Hawton et al., 2001a, 2001b). Studies from the US and Australia have shown strong inverse associations between suicide rates and socio-economic status in males but not females (Hawton et al., 2001a, 2001b). The UK

situation has been shown to be more complicated, with variations in findings and most applicable only to males (Hawton et al., 2001a, 2001b). UK studies have found a clear social class gradient in relation to DSH but a converse relationship between social class and psychiatric care; ie those in the higher social classes were more likely to be offered inpatient psychiatric care and aftercare, compared to those from lower socio-economic groups (Hawton et al., 2001a, 2001b; Platt and Hawton, 2000). This has also been found in Ireland (O'Keane et al., 2003).

Young people aged 5-15 years old from social class V were found to be three times more likely than those in social class I to have a mental health problem (Harden et al., 2001). Two thirds of a sample of 16-21 year old homeless young people was found to suffer from a psychiatric disorder and a third reported at least one suicide attempt (Harden et al., 2001).

Risk and protective framework

A risk and protective framework for youth suicide prevention has been outlined that places primary prevention for youth suicide into three categories:

- Universal, involving all members of a population group
- Selective, focusing on a sub-group at high risk
- Indicated, targeting those with clinical disturbances.
  (Patton and Burns, 1998)

Risk factors have been classified into six broad domains:

- Demographic and social factors
- Family characteristics and childhood experiences
- Personality factors and cognitive style (including sexual orientation)
- Genetic and biological factors
- Psychiatric morbidity
- Environmental factors.
  (Beautrais, 1998)

A model has been developed which implies that suicide is a complex interplay of these six domains and that any effective responses to prevent suicide must reduce the influence of these domains either separately or together (Hider, 1998).

These domains are set out with the risk and protective factors in Tables 1 and 2. The protective factors are predominantly the reverse or mirror of the risk factors.

Key risk areas needing attention when future prevention programmes are designed are:

- A previous history of suicide attempt
- A history of depression
- Substance misuse,
- Poor family circumstances
- Certain personality traits such as poor problem-solving ability, impulsiveness and aggression
- The availability of means.

Table 1: Risk factors

Risk factors	High-risk groups	References
Socio-demographic factors	Male sex (suicide)	Carr, 2002; Gunnell, 1994; Pfeffer, 2001; Shaffer et al., 2001; Williams, 1997
	Female sex (suicide attempts)	Williams, 1997
	Age – youth and the elderly	Range et al., 1997; Williams, 1997
	Low socio-economic status – as defined by social class, educational attainment, employment status etc	Beautrais, 1998, 2000; Carr, 2002; Guo and Harstall, 2002; Harden et al., 2001; Hawton et al., 2003; Hider, 1998; Melzer et al., 2001
	Same-sex orientation	Gould et al., 2003; Gunnell, 1994; Guo and Harstall, 2002; Pfeffer, 2001; Rosewater and Burr, 1998; Schneider et al., 1989; Shaffer et al., 2001
	Certain ethnic groups – young women from Indian subcontinent	Beautrais, 1998, 2000; Gunnell, 1994; Range et al., 1997
Family characteristics and childhood experiences	Parental psychopathology – affective disorders, substance use disorders, antisocial behaviours, and family history of suicidal behaviour	Beautrais, 1998, 2000; Brent and Perper, 1995; Carr, 2002; Gould et al., 2003; Guo and Harstall, 2002; Gunnell, 1994; Harden et al., 2001; Hider, 1998; Mercy et al., 2001; Patton and Burns, 1998; Schneider et al., 1989; Williams, 1997
	Parental divorce or separation	Beautrais, 1998, 2000; Hider, 1998
	Dysfunctional or difficult family circumstances	Anderson, 1999; Beautrais, 1998, 2000; Forman and Kalafat, 1998; Hider, 1998
	Social instability	Gunnell, 1994; Hawton et al., 2001a; Range et al., 1997
	Abusive family environments – physical and sexual abuse	Beautrais, 1998, 2000; Hider, 1998; Range et al., 1997
	Poor educational background	Beautrais, 1998, 2000; Hider, 1998; Melzer et al., 2001; Patton and Burns, 1998
	Bullying	Lawlor, 2003
	Poor parental care – impaired parent-child relationships, poor family communication styles and extremes of high and low parental expectations and control	Beautrais, 1998, 2000; Carr, 2002; Hider, 1998; Pfeffer, 2001; Shaffer et al., 2001; Webb, 2002

Table 1: Risk factors (cont.)

Risk factors	High-risk groups	References
Personality factors and cognitive style	Personality traits – impulsivity, angry or aggressive behaviour, and social withdrawal, panic disorder	Beautrais, 1998, 2000; Hider, 1998; Range et al., 1997; Webb, 2002
	Sexual risk behaviour	Patton and Burns, 1998
	Cognitive style – inflexible or rigid thinking, poor problem-solving ability; to be present, rather than future oriented; negative or hopeless outlook; high level of hopelessness, perfectionism, impulsivity, hostility and aggression; inflexible coping style	Beautrais, 1998, 2000; Carr, 2002; Forman and Kalafat; 1998; Gould et al., 2003; Pfeffer, 2001; Ploeg et al., 1996
Genetic and biological factors	Declining or low stable levels of the serotonin metabolite 5-HIAA	Beautrais, 1998, 2000; Carr, 2002, Gould et al., 2003; Hider, 1998; Rosewater and Burr, 1998
	Low serum cholesterol levels	Hider, 1998
Psychiatric morbidity/ mental health factors	Affective (depressive) mood disorders – depressive illness, bipolar disorders	Anderson, 1999; Aware, 1998; Beautrais, 1998, 2000; Blumenthal and Kupfer, 1988; Brent and Perper, 1995; Carr, 2002; CDC, 2001; Forman and Kalafat, 1998; Gould et al., 2003; Gunnell, 1994; Guo and Harstall, 2002; Mercy et al., 2001; Patton and Burns, 1998; Pfeffer, 1981, 2001; Ploeg et al., 1996; Putnins, 1995; Shaffer et al., 2001; Williams, 1997
	Substance use disorders – alcohol, cannabis and other drug misuse or dependency	Anderson, 1999; Aware, 1998; Beautrais, 1998, 2000; Brent and Perper, 1995; Carr, 2002; Forman and Kalafat, 1998; Gould et al., 2003; Gunnell, 1994; Hider, 1998; Mercy et al., 2001; Pfeffer, 2001; Ploeg et al., 1996; Putnins, 1995; Range et al., 1997; Rosewater and Burr, 1998; Williams, 1997
	Antisocial behaviours – adjustment disorders, conduct disorder and antisocial personality disorder	Anderson, 1999; Beautrais, 1998, 2000; Blumenthal and Kupfer, 1988; Brent and Perper, 1995; Carr, 2002; Forman and Kalafat, 1998; Gould et al., 2003; Patton and Burns, 1998; Rosewater and Burr, 1998; Williams, 1997
	Severe mental disorder – schizophrenia	Beautrais, 1998, 2000; Gould et al., 2003; Range et al., 1997
	Comorbidity	Pfeffer, 2001; Williams, 1997
	Current or recent (6-12 months) contact with psychiatric services	Gunnell, 1994
	Non-compliance with aftercare	Cantor, 1994
	Patients in the four weeks following discharge from psychiatric hospitals	Gunnell, 1994

Table 1: Risk factors (cont.)

Risk factors	High-risk groups	References
Environmental factors – life events and stresses	Acute life crisis, interpersonal conflict or loss, legal or disciplinary problems, marital separation or divorce, major exam failure, unwanted pregnancy	Aware, 1998; Beautrais, 1998, 2000; Blumenthal and Kupfer, 1988; Carr, 2002; CDC, 2001; Gould et al., 2003; Gunnell, 1994; Hider, 1998; Pfeffer, 1981; Range et al., 1997; Shaffer et al., 2001; Williams, 1997
	Economic stress in the family	Gunnell, 1994; Range et al., 1997
	Prisoners	Gunnell, 1994; Liebling, 1993
	Serious physical illness/handicap esp. epilepsy, Huntingdon's, cancer, tinnitus	Blumenthal and Kupfer, 1988; Carr, 2002; Gunnell, 1994; Harden et al., 2001
	HIV AIDS	Gould et al., 2003; Gunnell, 1994; Range et al., 1997
Suicidal behaviour	Verbalised-ideation	Schneider et al., 1989; Williams, 1997
	Suicidal intention	Carr, 2002
	History of parasuicide/deliberate self-harm	Brent and Perper, 1995; Carr, 2002; CDC, 2001; Gould et al., 2003; Gunnell, 1994; Hawton et al., 1998, 2003; Hider, 1998; Pfeffer, 1981; Rosewater and Burr, 1998; Shaffer et al., 2001; Williams, 1997;
	Imitation of other suicides	Carr, 2002; Guo and Harstall, 2002; Mercy et al., 2001; Range et al., 1997
	Reluctance to seek adult help	Forman and Kalafat, 1998
Availability of lethal methods	Availability of firearms and other means	Carr, 2002; Gould et al., 2003; Williams, 1997

Table 2: Protective factors

Protective factors	Protective groupings	References
Demographic and social factors	Female	Carr, 2002; Harden et al., 2001
	Social classes II, III or IV	Carr, 2002
	Strong religious commitment	Carr, 2002; Gould et al., 2003; Harden et al., 2001
Family characteristics and childhood experiences	No family history of: previous suicide attempts, depression, drug and alcohol misuse, aggressive behaviour	Beautrais, 1998, 2000; Carr, 2002; Gould et al., 2003; Harden et al., 2001; Webb, 2002
	Well-organised supportive family, low stress, high social cohesion	Beautrais, 1998, 2000; Carr, 2002; Gould et al., 2003; Harden et al., 2001; Webb, 2002
	Wide support networks, access to sport and leisure facilities, high standard of living, good academic schools and good housing	Blumenthal and Kupfer, 1988; Harden et al., 2001
Personality factors and cognitive style	Capacity to develop non-destructive coping styles	Beautrais, 2000; Forman and Kalafat, 1998
	Good communication skills	Harden et al., 2001
	Low level of hopelessness, perfectionism, impulsivity, hostility and aggression	Beautrais, 2000; Carr, 2002; Forman and Kalafat, 1998
	Hopefulness	Blumenthal and Kupfer, 1988
	Flexible coping style; self-esteem, self-efficacy, and problem-solving ability	Blumenthal and Kupfer, 1988
	No history of: previous suicide attempts, loss of a parent in early life, previous psychiatric treatment, involvement in the juvenile justice system	Carr, 2002
Genetic and biological factors	Normal levels of serotonin (5-HIAA)	Carr, 2002
Psychiatric morbidity/ mental health factors	Absence of psychological disorders	Carr, 2002, Pfeffer, 2001
	Absence of physical disorders	Carr, 2002
	Absence of multiple co-morbid chronic disorders	Carr, 2002
	Capacity to form therapeutic alliance and engage in treatment for psychological and physical disorders	Carr, 2002
Environmental factors – life events and stresses	Resolution of interpersonal conflict with parents or partner	Carr, 2002
	Education and employment opportunities	Beautrais, 1998, 2000
	Lack of precipitating life events	Blumenthal and Kupfer, 1988
	Acceptance and mourning of losses	Carr, 2002
Availability of lethal methods	Installation of safety netting and barriers and free phone 'hotlines'	Gunnell, 1994
	Restriction of the quantity of particular drugs	Gunnell, 1994
Media	Enforced and monitored reporting guidelines	Gunnell, 1994

Methodological issues

This evidence briefing comprises a review of reviews, a methodology not commonly used in research. For that reason we will discuss the implications of reviewing research at this level and the issues relating to the established hierarchy of evidence as applied to the area of mental health.

At present, the systematic review is generally perceived to be the most robust and reliable marker of effectiveness, closely followed by a well-designed meta-analysis. They are used heavily in clinical sciences to inform practice and are generally well regarded when used appropriately. This evidence-based briefing draws together evidence from systematic reviews of effectiveness, meta-analyses and literature reviews – a good spectrum of all the review-level evidence in the area. Yet relying on this type and level of evidence to inform our conclusions about the prevention of youth suicide has some limitations and it is important to consider them when making decisions about policy or practice.

Definitions of what constitutes good quality evidence in mainstream public health have been inherited from medical and scientific paradigms, where the experimental evaluation of clinical efficacy is commonplace and often appropriate. Although there is an increasing use of approaches that rely on traditional evidence hierarchies, they may not always be the most appropriate methods of assessing the impact of interventions to improve public health, nor for assessing the impact of interventions on health inequalities.

At review (rather than single study) level, meta-analyses and systematic reviews of effectiveness can be very powerful tools for demonstrating the impact (or lack of impact) of an intervention. However, they rely heavily on controlled evaluation studies and statistically measurable outcome variables. In contrast, the prevention of youth suicide is highly complex and difficult to capture in terms of quantitative outcomes alone. Public health priorities often do not 'fit' easily into these types of study designs.

Systematic reviews within mental health typically range far wider than the assessment of randomised controlled trials (RCTs: see Appendix B – Glossary). Many of the reviews cited in this briefing include non-randomised studies, quasi-experimental and observational studies (see Glossary). Within the fields of public health and mental health, RCTs are often difficult to design and may not be appropriate. This is particularly the case for upstream interventions that try to influence national/regional strategies or policies, or the wider environment. We acknowledge the contributions of evidence collected using a wide range of methods. As Brunner et al. (2001) comment: 'What is important is that the evidence is collated systematically, with transparent inclusion and exclusion criteria, with attention paid to the methodological quality of the work, and without prior assumptions about the findings being allowed to influence what evidence is considered.'

A second issue is that while meta-analyses and systematic reviews (and sometimes, to a lesser extent, literature reviews) are well placed to make judgements about the strength of impact of an intervention, and the quality of the evaluation design, they tend not to examine the appropriateness or quality of an intervention itself, and certainly not in any robust or systematic manner. This can be a source of bias – an inappropriate intervention might have a strong impact on one quantifiable outcome measure, and therefore influence review conclusions, even though that outcome measure might not be the most appropriate or useful. In other words, there is a risk that inappropriate or ill-designed interventions can be given more weight than more suitable (and often more complex or long-term) interventions because they may be

simpler and quicker to evaluate, or because they can prove some effect relatively easily.

A third issue is that reviews tend to rely on data from certain types of evaluation design – most often experimental and quasi-experimental trials – thus excluding a substantial amount of literature from their consideration. It is important to note that if this evidence briefing has uncovered no evidence to support a certain intervention or programme it does not mean there is absolutely no evidence out there, just that we have found no evidence included in reviews that meet our criteria. Also, when studies find an intervention has not been effective, this does not necessarily lead to a conclusion that the intervention, per se, is ineffective. For example, the study may not have had adequate power to detect a small positive difference, but ruling the intervention as ineffective is too judgemental, as future studies using the intervention, perhaps delivered by different individuals or adapted in some way, may turn out to be effective. Certainly, closing doors on interventions and labelling them as ineffective simply because of the small numbers of studies does not seem useful. In this briefing such interventions are said to have a 'current lack of evidence' rather than being classed as ineffective.

There is also a recognised methodological problem when undertaking a review of reviews – that different reviews frequently include some of the same primary evidence, which is the case in this evidence briefing. This biases findings in favour of study results that occur more often in the individual reviews.

Another issue to consider is the methodology of the systematic reviews on which this briefing is based. A number of authors have appraised systematic review methodology and have questioned many of its underlying assumptions (Hammersley, 2001). One common criticism is publication bias:

- Papers that demonstrate effective outcomes are more likely to be submitted to journals
- Negative impacts may be omitted from papers
- Positive papers are more likely to be published by journal editors
- Positive papers are more likely to appear in systematic reviews
- Such papers are, therefore, more likely to appear in reviews of reviews.

At present there are problems in trying to incorporate other types of evidence into our evidence briefings. In some areas, such as qualitative research, different researchers contest the thresholds as to what constitutes 'good' quality work. There is as yet no agreed method for systematically synthesising or reviewing such work, although there are a number of projects underway nationally and internationally to develop an appropriate methodology (Dixon-Woods et al., 2004). Nor is there any clear or agreed method for combining non-traditional forms of evidence – such as that from qualitative research, action research, expert opinion and so on – with evidence from more traditional types of study to provide a more comprehensive assessment of the effectiveness of different interventions. For the time being, the HDA has taken a first step to draw together evidence from systematic reviews and meta-analyses, with an acknowledgement that this limits our data pool and may provide only partial answers to our research questions.

A final issue is that of time lag. Inevitably, if one relies on review-level data to gather information about effectiveness, some time – usually one or more years – will elapse between the publication of single studies and the subsequent examination of these single studies by reviewers, and the publication of their reviews. Because of the processes involved in carrying out meaningful, high quality research, this is to some extent inevitable, and it can be argued that the procedures that cause this delay – the need for publications to be peer-reviewed, the need for a body of work to build up before it can be reviewed and examined – help avoid publication or positive bias in review findings. It means that the reviews incorporated in this briefing will take into account single studies with a cut-off date of at least one year before the most recent review. If one single study has been published in the meantime that alters common conceptions or consensus about the prevention of youth suicide, it will take some time for the findings of that single study to filter into this forum. It is expected that this briefing will be revised and updated every two to three years, which should ensure that new review data are included swiftly.

However, in spite of these limitations systematic reviews are still an effective methodology in certain circumstances, based as they are on principles of finding good and effective interventions, eliminating harmful interventions, and facilitating public accountability – principles that are important cornerstones for building the public health evidence base.

In summary, the data presented in this evidence briefing – data from reviews – are only a partial answer to what works with respect to the prevention of youth suicide. In using this briefing to inform practice or policy making, there are a number of other sources of information and evidence that could usefully be taken into account. These include:

- Information from practice studies (eg practice databases, 'promising practice' case studies)
- Research studies that are often or usually excluded from systematic reviews and meta-analyses (eg definitive studies, non-controlled case studies, action research)
- Local data and project evaluations (local to a context and an area)
- Expert and practitioner opinion
- Client opinion and experience.

Mapping, collating and making available data from these alternative sources will be a future priority for the HDA. In the meantime, the Public Health electronic Library (www.phel.org.uk) is a good starting point for the practitioner or policy maker seeking to take these other types of evidence into account.

Critique of the methodology

In limiting this review to an analysis of the evidence from review-level studies and by applying the traditional hierarchy of evidence that places primary importance on RCTs, we have had to exclude a considerable body of research based on non-randomised studies and on expert consensus. Based on the available evidence derived using the HDA's initial appraisal process for Evidence Briefings, we are unable to recommend any specific approaches to youth suicide prevention on the basis of overwhelming weight of evidence. The search strategy, the subsequent searching of references and the input from the reference group and referees has led to the identification of relevant reviews on youth suicide prevention. As a result of this search and the subsequent application of the critical appraisal tool, we have seven reviews conducted in the last 10 years to draw on. Only three cover the last five years since 1999, so it is possible that some relevant primary studies have been excluded that may affect the findings.

Given the rare nature of the outcome (youth suicide),

studies require very large samples to draw any robust conclusions. The relatively low rate of completed suicide in the population makes it difficult to establish a reduction in the suicide rate arising from prevention programmes. There are also ethical issues with randomised trials in this area if an outcome of death may be preventable. Hence the call for large-scale prospective cohort studies to improve our understanding of the risk and protective factors that may lead to better targeted interventions to prevent youth suicide. A further potential problem with the HDA methodology for Evidence Briefings, in limiting the study to review-level studies, is the potential to exclude significant recent research if no recent review is available. In the case of this study we were fortunate to identify a number of recent studies that have included primary research from the last couple of years.*

It is important to note that evidence in a number of the reviews included in this briefing has some overlap in the primary papers used, which may lend excessive strength to some findings. One of the reviews (Harden et al., 2001) draws on two others (Ploeg et al., 1999; Hider, 1998) and there is particular overlap between another review (Patton and Burns, 1998) and two other reviews (Gunnell, 1994; Ploeg et al., 1999).

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* The HDA is developing a new evidence-based product to complement Evidence Briefings that will be called Evidence Reviews. These will embrace a much broader range of study, data and evidence types beyond systematic reviews.

Methodology

This evidence briefing is a 'review of reviews', that is a synthesis of secondary data sources – systematic reviews, meta-analyses and other syntheses. These have collated original studies (primary data), and provided an interpretive analysis of these collated findings. The primary data were typically derived from RCTs.

This briefing is not a systematic review of primary data. Furthermore, we have not conducted a systematic search for practice data ('good' or 'best' practice studies) or grey literature. Again, this is not to discount the validity of such data – we believe they have an important place in the process of gathering evidence for making decisions about effective practice. However, tools enabling such data to be systematically searched and rated in an appropriate and sensitive way are yet to be fully developed.

Identification of the relevant literature

Search terms
Using a combination of the index and thesaurus terms for each of the databases detailed in Table 3, the following search terms were identified to produce as sensitive a search as possible.

Identification of literature by study design:

meta?analys*, meta analys*, meta-analys*, predetermined and criteri*, inclusion criteri*, exclusion criteri*, systematic and review*, systematically and review*, review* and literature, review* and guideline*, review* and publication*, review* and published, review* and unpublished, NOT case report, NOT editorial, NOT letter

Identification of literature by population (adolescents):

Adolescent*, child*, teenager*, young, youth

Identification of literature by intervention (prevention/promotion):

Community psychiatry, family support, health education, health promotion, promotion, patient education, preventive medicine, psychotherapy, suicide prevention, therapeutics, therapy, youth and community development work

Identification of literature by setting:

Community, employment, family, home, primary health care, school*, work*

Identification of literature by outcome (suicide/parasuicide):

Attempted suicide, deliberate self-harm, emotional health, emotional well-being, parasuicide, quality of life, self-cutting, self-injury, self-harm, suicide

After discussion with the HDA, the term mental health was excluded from the search terms as its inclusion resulted in an unmanageable number of references.

Databases
Electronic databases were searched from 1980 to April 2003 using the appropriate terms from the above list. Table 3 details the results for the search.

While the total number of hits from the search is 327, it should be noted that a significant number of journals are indexed in more than one database that would cause duplicate citations to be retrieved.

Table 3: Literature search

Database	Period searched	Hits
BIDS	1980 – 2003	5
Biological Abstracts	1980 – Apr 2003	51
British Nursing Index	1980 – Apr 2003	12
CCRCT	1980 – Issue 2 2003	13
CDSR	1980 – Issue 2 2003	15
CINAHL	1982 – Apr 2003	24
Current Contents	– Apr 2003	33
DARE	1980 – Issue 2 2003	5
Dissertation abstracts	1980 – 2003	12
DOH database	1980 – Apr 2003	32
EMBASE	1980 – Week 16 2003	29
ERIC	1980 – Apr 2003	14
ESRC	1980 – Apr 2003	5
Int. Pharmaceutical Abstrs	1980 – Apr 2003	6
MEDLINE	1980 – Apr week 2 2003	59
	(Medline) – April 22 2003	
	(Premedline)	
PsycINFO	1980 – Apr Wk 3 2003	6
SOCIOFILE	1980 – Apr 2003	6
TOTAL		327

Databases searched also included: Assia, British Humanities Index, Current Contents (Biological and Life Science), Current Contents (Social and Behavioral Sciences), Drug Information, Evidence Based Medicine Reviews, NISW, PreMedline, SIGLE, Social Work Abstracts Plus, Sociological Abstracts.

Other resources
In addition to the above mentioned databases, the following resources were also searched: National Research Register, Health Technology Assessment Database, SIGN Guidelines, National Guideline Clearinghouse, National Coordinating Centre for Health Technology Assessment, NICE web page, HSTAT, the DH Research Findings Electronic Register, TRIP Database, ScHARR Lock's Guide to the Evidence, Clinical Evidence, Health Evidence Bulletins Wales, Cochrane Library Controlled Clinical Trials Register, Best Evidence.

The literature search was carried out by Minervation UK.

Data handling process
Titles and abstracts of identified references were independently assessed for relevance by three reviewers (P. Crowley, J. Kilroe and S. Burke). The following inclusion criteria were used:

- English language only
- 1980 to April 2003
- Adolescent/youth studies
- Systematic reviews, syntheses and meta-analyses
- Evidence of effectiveness of primary prevention
- Studies that focused on clear outcomes.

The review does not assess:

- The effectiveness of inpatient treatments for youths with depression or other mental illnesses
- Non-English language reviews.

The effectiveness of pharmacological/psychiatric treatments for youths with depression or other mental illnesses was not a primary area for review in this briefing. However, as some reviews covered treatments their findings are included. It should be stressed that there may be bias in these findings as they are not the outcome of a systematic review of this topic area. The absence of data on treatments ensured that the data handling process remained focused on its stated aims and objectives.

Where no clear decision could be made on the basis of the title or abstract, studies were considered relevant. Reference lists of all retrieved papers were also searched to identify further papers. From both processes a total of 444 papers thought to be relevant were ordered from the British Library and other libraries and all papers were retrieved.

Each of the papers were assessed independently by two of the three reviewers (P. Crowley, J. Kilroe and S. Burke) and critically appraised in terms of transparency, systematicity and relevance according to HDA Evidence Base methodology. There was no blinding of authorship of retrieved papers. Any queries regarding the methodology of the review or meta-analysis were followed up with the authors of the original papers. Each reviewer used the critical appraisal tool (Appendix C) and a joint decision was made about whether a paper should be included in the HDA Evidence Base, used in the briefing to inform discussion, or discarded. Disagreements were resolved through discussion or, if necessary, by recourse to the third reviewer. In cases of uncertainty about inclusion we drew on HDA expertise.

Having applied the critical appraisal tool, reviews were included that met all or most of the criteria outlined in Table 4 (see page 32). Those that met all the criteria were

accorded a score of 1 and those that met most but not all received a score of 1-2 or 2. Those that did not meet most criteria were given a score of 3 and read for relevance to the background or a score of 4 and excluded as irrelevant. These scores were cross-checked by at least one other member of the research team.

Peer review
The reference group reviewed the initial draft of this briefing (see page iv) and changes were made. The briefing was then sent to three independent referees: Professor Stephen Platt, director of the Research Unit in Health, Behaviour and Change, University of Edinburgh; Dr Rosemary Kilpatrick, Institute of Child Care Research, Queen's University Belfast; and Dr Ella Arensen, research director with the National Suicide Research Foundation.

Papers included in the HDA Evidence Base

Introduction

The papers which passed the critical appraisal process and which are included in the HDA Evidence Base were compared and findings collated. Evidence was classified by type of intervention, population group or setting. Conflicting evidence was identified and gaps in the evidence were charted. Within each section, we make a number of summary statements about whether certain interventions were effective, based primarily on the evidence and author's assessment from the included papers.

Only seven reviews satisfied the quality inclusion criteria. Three were carried out in the UK, two in North America, one in New Zealand and one in Australia. Four were carried out prior to 2000 and three since then.

Evidence Base papers

Gunnell, D. J. (1994). *The potential for preventing suicide. A review of the literature on the effectiveness of interventions aimed at preventing suicide*. Bristol: Health Care Evaluation Unit, University of Bristol Department of Epidemiology and Public Health Medicine.

Gunnell reviewed the effectiveness of 24 studies on suicide prevention. This review did not use age as a criterion for the selection of studies and thus is not focused on youth. These studies evaluated the effect of specific suicide prevention initiatives and used reduction in suicide as one of the outcomes. The studies, across a variety of settings, covered potential points of access to those contemplating suicide. Interventions suggested include GP education programmes on the recognition and treatment of depressive illness; school-based suicide prevention programmes; the Samaritans; legislative restrictions on the availability of drugs or firearms; media reporting guidelines; and safety measures at suicide hotspots.

In general they found limited evidence of effectiveness and poor quality evidence where it does exist. Where there is evidence – the other outcomes the researchers looked at were attitudes to and knowledge of suicide – there was no evidence of a reduction in suicide as an outcome. Effectiveness of educational programmes for GPs was inconclusive and no specific medical interventions have been shown to affect suicide rates. Research evidence indicates that there is a need to improve recognition of depression – only 50% of cases of major depression that present in primary care are recognised by GPs. Attempts to reduce parasuicide repetition have proved largely unsuccessful when evaluated in well conducted prospective trials.

The effectiveness of school-based programmes has not been proven. This is not, however, evidence that they are ineffective. There may be benefits in the control of over-the-counter medicines as demonstrated in France and Australia. Methodological problems abound in the design and statistical techniques used to study the effect of media reporting of suicides. RCTs with large sample sizes would be needed before the effectiveness of any intervention is accepted. This review suggests that the best way forward is to pursue a number of strategies aimed at improving the quality of services generally.

Guo, B. and Harstell. C. (2002). *Efficacy of suicide prevention programs for children and youth*. Alberta: Alberta Heritage Foundation for Medical Research.

This review identified 12 studies on prevention programmes for at-risk groups: general suicide prevention awareness programmes; programmes promoting

behavioural change and coping strategies; and postvention programmes (See Appendix B – Glossary). It found that in two school studies there were unwanted effects of suicide awareness programmes and an increase in maladaptive coping responses in general populations, and it was suggested that some young people might be more likely to commit suicide after the programme. There was some encouraging evidence for indicated (targeting those with clinical disturbances) suicide prevention programmes targeting at-risk youth. Some improvement in knowledge and attitude was found in suicide prevention awareness programmes. There was some evidence that programmes stressing behaviour change and coping strategies lowered suicidal tendencies and in some cases improved coping skills. The evidence of effectiveness of the single postvention study was weak and no programme effects were noted. Guo and Harstell outline the debate between those that feel efforts should focus on high-risk youths because of the low rate of suicidal behaviour among the general population and those that point out that methods to identify high-risk youth are ineffective.

Harden, A., Rees, R., Shepherd, J., Brunton, G., Oliver, S. and Oakley, A. (2001). *Young people and mental health: a systematic review of research on barriers and facilitators*. London: Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre).

This review included many studies on young people up to the age of 21 years. It examined a wide range of interventions in a variety of settings although the educational setting was most common. There was limited evidence for prevention of suicide and self-harm. Education and general coping skills training did have beneficial effects on suicidal potential and depression. There was some evidence that discussing suicide may encourage some to consider it. Student workshops on inner experiences and life difficulties did decrease suicidal tendencies and improved coping but did not reduce hopelessness. Despite considerable primary research there is not sufficient evidence to make clear recommendations on programmes to prevent youth suicide. This review identified promising interventions that need further research and the authors propose that planning needs to involve young people. They suggest that the tendency to generalise about young people as a homogenous group should be avoided. The authors have identified a gap in research on the particular needs of socially excluded youths and young people from minority groups and communities, despite the UK health promotion policy commitment to tackle the structural and material factors that impact on people's health. Interventions to tackle the structural and material problems facing young people need implementation and evaluation.

* Hawton, K., Townsend, E., Arensman, E., Gunnell, D., Hazell, P., House, A. and van Heeringen, K. (2003). Psychosocial and pharmacological treatments for deliberate self harm (Cochrane Review). In: *The Cochrane Library*, Issue 1. Oxford: Update Software.

This is a review of psychosocial and pharmacological treatments for deliberate self-harm, reviewing studies looking at males and females of all ages who had deliberately self-harmed, excluding those with mental handicap and psychiatric inpatients in casualty and outpatient clinic settings. This study was included because of the primary importance of deliberate self-harm (DSH) as a risk factor and because DSH occurs commonly in young people.

Twenty-three studies were identified. A non-statistically significant trend towards reduced repetition of DSH with problem-solving therapy and for provision of an emergency contact card was described in two small studies. Depot flupenthixol and dialectical behaviour therapy were effective in single studies. No consistent effect was found for intensive interventions and outreach, and general hospital admissions did not show a beneficial effect. Long-term therapy was not shown to be more effective than short-term therapy and home-based family therapy did not demonstrate a beneficial effect. No indication of benefit was found for antidepressants mianserin or nomifensine, with mixed results for paroxetine.

While some interventions appeared promising, not all people studied will have fallen into the youth age group. The promising studies need replication with far greater numbers with a focus on youths. No recommendations for policy or practice can be made on the basis of this review.

Hider P. (1998). *Youth suicide prevention by primary healthcare professionals: a critical appraisal of the literature*. New Zealand Health Technology Assessment (NZHTA).

This review was commissioned to inform guidelines for primary care practitioners developed by the Royal College of General Practitioners in New Zealand. It reviews 123 studies to assess the epidemiology and risk factors for suicidal behaviour among young people and reviews 23 studies for the recognition, management and prevention of suicidal behaviour by primary care practitioners. While it finds strong evidence on risk factors, there is a lack of evidence on most preventive interventions and a lack of evidence on the recognition, management and prevention of suicidal behaviour by primary care practitioners. Where there is evidence it is weak. The review proposes the use of a 'biopsychosocial' model of suicide assessment, as a complex range of factors (psychiatric illness, disadvantaged backgrounds, psychosocial stresses) are the primary risk factors for youth suicide. Early diagnosis of mental illness is important to improve outcomes for young people. Assessment of suicide risk of the individual is best undertaken by direct questioning of the young person. Therefore there may be an important role to be played by primary care practitioners in the identification, management and treatment of psychiatric illness.

There is a lack of evidence of effectiveness of population-based interventions. Cognitive behavioural therapy and group support were identified as the most likely targeted interventions to prevent suicidal behaviour among young people. While this review was used to develop guidelines for primary care practitioners, these guidelines are based on expert opinion in the absence of strong evidence of effectiveness of interventions.

Patton, G. and Burns, J. (1998). *Preventive intervention for youth suicide: a risk factor based approach*. Canberra: National Health and Medical Research Council.

This review critically appraised literature to identify and examine the evidence of the effectiveness of preventive interventions for youth suicide to inform the Australian Youth Suicide Prevention Strategy research agenda. It reviewed 122 studies that cover interventions targeting individual risk factors, family risk factors, community risk factors, and interventions in school and peer settings. All

the studies are graded using the US 'Quality of Evidence Ratings'. Where there is evidence of effectiveness it is weak. Different school, family and community based strategies have been shown to modify suicide-related risk and protective factors, but none of these studies have looked at suicidal behaviour as an outcome. Adherence rates for follow-up for non-hospitalised adolescents presenting with parasuicide ranged between 20% and 30%.

There is a lack of evidence of effectiveness of school-based education programmes. However, where suicide is incorporated into a broader holistic life skills approach more consistent evidence of effect is shown, but the efficacy of the suicide-specific element is uncertain. No specific policy recommendations were made, but the findings informed Australia's national research agenda and LIFE (Living is for everyone) – a framework for prevention of suicide and self-harm policy. Recommendations were made for: evaluations of effectiveness, particularly those with an outcomes focus; universal and targeted interventions that can modify risk factors; interventions in place for which there is no current evidence of effectiveness, eg hotlines, interventions that focus on rural and indigenous youth, and economic evaluations and clinical responses to young males.

Ploeg, J., Ciliska, D., Brunton, G., MacDonnell, J. and O'Brien, M. (1999). *The effectiveness of school-based curriculum suicide prevention programs for adolescents*. Toronto: Ontario Public Health Research and Education Programme.

This is an update of a previous review (Ploeg et al., 1996) of curriculum-based suicide prevention programmes in schools. Overall the authors note significant limitations in the quality of the research reviewed. The review identified nine studies, of which one was methodologically strong, four moderate and four weak. Seven of the studies were conducted in the US and two in Israel. These schools programmes, based on suicide education, improved knowledge but had contradictory effects on attitudes, with two studies appearing to show increased suicidal ideation as a consequence of the intervention. The positive impact on knowledge was not felt to be important compared to changes in attitude and actual suicidal behaviour. There were contradictory findings in four studies looking at developing coping skills. The positive effect on suicide risk behaviours found in one study was not sustained at ten months. The review refers

to other reviews of suicide prevention programmes, suggesting that multi-year, multi-component strategies might be more effective. This is an important area for further research.

Supporting information

The following three reviews did not meet the criteria for inclusion in the HDA Evidence Base but have been included here as they are considered useful in terms of providing further information.

Hickey, D. and Carr A. (2002). Prevention of suicide in adolescence. In: Carr, A. (ed) *Prevention: what works with children and adolescents?* Hove: Brunner-Routledge.

This review sought to identify and assess the effectiveness of school-based psycho-educational programmes. Ten studies were selected. The review lacked information on the quality of included studies. The review concluded that child-focused multimodal programmes which include some combination of didactic instruction and discussion, bibliotherapy (educating young people through books), and behavioural skills training may be effective (particularly among males) in increasing suicide-related knowledge, willingness to seek help if suicidal, and willingness to encourage potentially suicidal peers to seek professional help.

Multisystemic multimodal suicide prevention programmes which include didactic instruction and discussion, coupled with behavioural coping skills training for adolescents and other members of their social network, are moderately effective (better for females) in increasing suicide-related knowledge and positive attitudes to suicidal peers, while decreasing hopelessness and potentially self-harming risky behaviour. Interventions assessed knowledge, attitudes, help seeking, adaptive coping and hopelessness rather than behaviour. Risk and protective factors specific to adolescence are outlined.

There was some evidence for the effectiveness of the following strategies: school-based psycho-educational programmes; screening programmes for students at risk; crisis services and hotlines for students at risk; postvention programmes for survivors in social networks where suicide has occurred; and programmes which aim to restrict access to potentially lethal self-harming

methods. Policy and practice recommendations were made with particular emphasis on classroom-based suicide prevention programmes.

Walker, Z. and Townsend, J. (1998). Promoting adolescent mental health in primary care: a review of the literature. *Journal of Adolescence* 21 (5): 612-34.

This paper reviewed published literature exploring the hypothesis that primary care is a suitable setting in which mental health problems in adolescents can be prevented by early detection and treatment. Interventions in schools included Comprehensive Stress Management for Children, the Yale-New Haven Social Problems Solving Project and the Life Skills Training programme. Screening tools included the GHQ12 and depression scales. Much of the evidence is based on an adult population; further research on youth is needed. Published studies indicate that, when offered, adolescent health checks and clinics have been well received, but anecdotal evidence suggests that many teen clinics have not shown a good response rate. No significant difference in levels of improvement comparing the efficacy of tricyclic antidepressants with a placebo in depressed subjects aged 6-18 years was found. Problem-solving interventions given by a psychiatrist, GP or nurse have been shown to be effective for treatment of emotional disorders. Use of the 'green card' did not significantly alter outcome but showed a promising trend (the green card is a token that guarantees those who have attempted suicide instant re-admission if suicidal or depressed). Recognition of mental health problems is low and screening has been suggested as a means to improve detection rates, but this has not been proven. Policy/practice recommendations suggest that mental health promotion may help to prevent a wide range of health-damaging behaviours in young people. No primary prevention programmes for adolescent mental health in primary care were identified by the literature search; further implementation and evaluation studies are needed.

Bower, P., Garralda, E., Kramer, T., Harrington, R. C. and Sibbald, B. (2003). The treatment of child and adolescent mental health problems in primary care: a systematic review. *Family Practice* 18 (4): 373-82.

The aim of this study was to review systematically the evidence concerning the effectiveness of interventions for child and adolescent mental health problems in primary

care and interventions designed to improve the skills of primary care staff. This paper set out to explore the actual clinical and cost effectiveness of service delivery given 'the significant potential to increase accessibility and effectiveness of child and adolescent mental health services through the involvement of primary care professionals... in a primary care setting' (p373). The findings included some initial evidence that treatments by specialist staff working in primary care, ie parent adviser, were effective although the quality of the included studies was variable and there was no data available on the cost effectiveness of interventions. The authors also found that some interventions showed potential for increasing the skills and confidence of primary care professionals and only a small number of studies reported definite changes in professional behaviour or patient outcomes. Varying definitions between countries create search and methodological difficulties. Evaluating effectiveness of work carried out across sectors also poses significant challenges. The authors suggest a significant research programme is required if the potential for child and adolescent mental health services is to be achieved in an efficient and effective manner.

Reviews of interventions to prevent or treat mental illness in young people

Three reviews that examined the prevention and treatment of mental illness (Hazell et al., 1995; Van der Sande et al., 1997; Nicholas and Broadstock, 1999) were uncovered in the course of the literature review and the checking of reference lists in selected papers. As the purpose of this briefing was to look at the prevention of suicide and the search was not specific to mental illness, this area is not covered and should be the subject of a subsequent review. A forthcoming HDA Evidence Briefing will cover mental health promotion for all ages. These reviews are relevant to suicide prevention given the importance of mental illness as a risk factor in youth suicide.

Hazell et al. (1995), a meta-analysis of the use of tricyclic anti-depressant drugs in treating child and adolescent depression, showed no significant benefit of treatment compared to a placebo. A review of studies on psychosocial interventions following a suicide attempt in all ages showed no significant effect for psychiatric management of poor compliance, psychosocial crisis

intervention and guaranteed inpatient shelter in emergencies. The apparent beneficial effect of the cognitive behavioural approach in repeated suicide attempts was questioned because of the methodological variability of the studies included.

Studies of psychosocial crisis intervention as well as guaranteed in-patient shelter in cases of emergency did not show a significant reduction in repeated suicide attempts (Van der Sande et al., 1997). Four studies on cognitive-behavioural therapies showed a significant preventive effect on repeated suicide attempts.

A review of interventions to prevent mental illness in young people (Nicholas and Broadstock, 1999) uncovered only three studies looking at the prevention of depression in young people. These did not demonstrate an effective approach to depression prevention and two of the studies were deemed to be of poor quality. This comprehensive review suggested a paucity of research in the area of primary prevention of depression.

Quality of evidence

The quality of evidence is laid out in Table 4. This summarises the result of the application of the appraisal tool to the studies that were included in the evidence base. Of primary importance is the fact that the authors have applied a clear mechanism for assessing the quality of the studies included in their review. Characteristics of the studies included in the HDA Evidence Base papers are also shown in Table 5.

Table 4: Quality of evidence

Article	Specific research question	Appropriate search	Specified search terms	Clear inclusion/ exclusion criteria	Assessment of quality of individual studies	Clarity of individual study findings	Analysis of study findings	Valid conclusions	Quality rating
*Gunnell, 1994	✓	✓	✓	✗	✓	✗	✓	✓	1-2
Guo and Harstall, 2002	✓	✓	✓	✓	✓	✓	✓	✓	1
Harden et al., 2001	✓	✓	✓	✓	✓	✓	✓	✓	1
Hawton et al., 2003	✓	✓	✓	✓	✓	✓	✓	✓	1
Hider, 1998	✓	✓	✓	✓	✓	✓	✓	✓	1
**Patton and Burns, 1998	✓	✓	✗	✗	✓	✓	✓	✓	1-2
Ploeg et al., 1999	✓	✓	✓	✓	✓	✓	✓	✓	1

*Gunnell was included despite the lack of clear inclusion/exclusion criteria because of the evidently comprehensive nature of the review and the clear assessment of quality of the included studies.

**Patton and Burns were contacted for evidence of their search terms and inclusion/exclusion criteria but were unable to produce them; however their review is clearly of high quality and therefore included.

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Gunnell, 1994	GP educational programmes on the recognition and treatment of depressive illness, the Samaritans, legislative restrictions on the availability of drugs or firearms, media reporting guidelines and safety measures at suicide hotspots	Variety – eg primary care, secondary care, prison, schools	General population-based perspective, not specific to youth	24	Potential points of access to those contemplating suicide	Screening of high-risk groups and secondary prevention of parasuicide have not, on the whole, been shown to reduce suicide rates. No intervention has been shown in a RCT to reduce suicide. Ecological studies reveal that fluctuations, both in overall and method-specific suicide rates, do occur as a result of alterations in the availability of commonly used methods of suicide. Higher rates of suicide are seen in those with ready access to firearms. There was some evidence for the restriction of the amount of paracetamol tablets per packet in the reduction of fatal paracetamol overdoses. Media reports or fictional dramatisation of suicide have been shown to influence suicidal behaviour	Lack of clear evidence of effectiveness	Pursue a number of strategies aimed at improving the quality of services generally and evaluate them in detail	RCTs with large sample sizes would be required to assess the effectiveness of interventions. Controlled research is needed before the effectiveness of any intervention is accepted. This review has highlighted several areas where insufficient evidence exists and further research is necessary

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions (cont.)

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Guo and Harstall, 2002	Suicide prevention programmes for at-risk groups, general suicide prevention awareness programmes, programmes promoting behavioural change and coping strategies and postvention programmes	School	5-19 years but mostly 12-19 years	Two reviews and ten primary studies	Directly relevant age group, setting and interventions	Two studies found unwanted effects of suicide awareness programmes in general school populations with an increase in maladaptive coping responses, and in at-risk groups who felt that some may be more likely to commit suicide after the programme. Two 'moderate' studies gave encouraging evidence for indicated suicide prevention programmes targeting at-risk youth. Some improvement in knowledge and attitude was found in suicide prevention awareness programmes but three of the four studies were assessed as weak and the fourth as moderate. Two studies, one strong and one moderate, found that programmes stressing behaviour change and coping strategies lowered suicidal tendencies and in some cases improved coping skills. The single postvention study was weak and no programme effects were noted	Methodologic ally weak studies and inconsistent conclusions. Large variation in programme content, frequency, duration and delivery between studies. Only one study measured actual suicide attempts as an outcome measure	It is suggested that universal approaches addressing the general population and targeted initiatives for at-risk groups should be combined. Arising from this review there is insufficient evidence to either support or not support curriculum-based suicide prevention in schools	As most studies were from the US, further UK and Ireland-based research is needed. Future research to focus on the process of programme delivery including the personality of the educator, their accessibility to and relationship with students. School-based suicide prevention programmes recognised as 'best' should be systematically evaluated. There is a need for standardised definitions for suicide attempts and suicidal ideation. The authors call for a prospective cohort study to assess the temporal relationship between risk factors and suicidal behaviour

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions (cont.)

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Harden et al., 2001	Varied approaches in schools including social skills, coping and drug and alcohol education. Others included parent training, and increased access to resources or services	72 % educational setting, 12% in community, others in healthcare, correctional institution, home and mass media	Young people 11-21 year olds. 33% of studies limited to 11-18 year olds. 32% of studies focused on socially excluded groups. 80% studies from the US, 5% UK	187 intervention studies were considered and seven reviews of effectiveness and five outcome evaluations were considered for inclusion	Relevant review. Extends the age group to 21 in a significant number of the studies	Mental health promotion interventions to promote self-esteem were limited in effectiveness. No evidence for prevention of suicide and self-harm through education, but general coping skills training did have beneficial effects on suicidal potential and depression. There was some evidence that discussing suicide may encourage some to consider it. Student workshops on inner experiences and life difficulties did decrease suicidal tendencies and improved coping but did not reduce hopelessness. Knowledge-based sessions were ineffective in preventing depression. Education on suicide prevention increased knowledge but did not improve stress, anxiety or hopelessness. An educational intervention followed by behavioural skills training focusing on increasing daily activities had no effect. Cognitive behavioural therapy was found to improve children at-risk from depression. There was a lack of UK research on outcome evaluations	Studies of varying methodological quality; 75% were RCTs	Insufficient evidence to support school-based suicide prevention. Promotion of mental health should include skills development and behavioural techniques. Although there is a lack of evidence, a whole-school approach involving a multi-faceted health promotional approach is likely to be most effective	Future research should involve young people and recognise diversity. Further evaluation needed of initiatives: to reduce school workload, to improve social relations between teachers and young people, to develop peer buddying, and to involve pupils in school operations. There is a lack of studies looking at depression and anxiety, and studies need to look at the impact of interventions on suicidal behaviour. Interventions to tackle the material and physical circumstances of people's lives need to be developed and evaluated. Future research needs to focus on the needs of socially excluded young people including those in care or homeless and those who do not attend school. Interventions to tackle bullying and assess its impact, efforts to foster supportive family relationships, social support initiatives and peer counselling should be further evaluated. Efforts to tackle wider structural barriers to mental wellbeing should be developed and evaluated

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions (cont.)

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Hawton et al., 2003	Psychosocial and pharmacological treatments for deliberate self-harm	Casualty/ out-patient clinic	Males and females of all ages who had deliberately self-harmed excluding those with mental handicap and psychiatric inpatients	23	Deliberate self-harm (DSH) is a key risk factor for suicide; DSH is most common in adolescence	A non-statistically significant trend towards reduced repetition of DSH with problem-solving therapy and provision of emergency contact card. Depot flupenthixol for multiple repeaters and dialectical behaviour therapy showed some evidence of effect. No indication of benefit was found for the antidepressants mianserin or nomifensine, with mixed results for paroxetine	Weak, small studies	Need to study promising interventions further before making recommend-ations	Need larger sample size trials to attempt to replicate promising findings for problem-solving therapy, emergency contact card, depot neuroleptics and dialectical behaviour therapy
Hider, 1998	Recognition management and prevention of adolescent suicidal behaviour by primary care practitioners	Population-based interventions and targeted interventions for the prevention of suicide. Mostly school-based and 'health service-based preventive' care	15-24 year olds but also looked at under 15s	123 studies on risk factors, may be some overlap between studies. 23 studies on evidence of effective-ness.	Relevant, due to use of 'biopsycho-social' model proposed and therefore possible effective interventions; focus on primary care useful due to importance of mental ill health as number one risk factor	Prevention of suicide depends on early recognition of young people who are most at risk. Primary care practitioners could have an important role in the prevention of suicide among young people. The assessment and management of psychiatric illness is important. Insufficient evidence to recommend universal programmes except where they have used multiple approaches, or when applied to high-risk groups and/or behaviours	Strong evidence on risk factors, weak evidence on recognition of and assessment of risk, and on interventions	Makes recommend-ations on best practice in relation to recognition and management of suicidal behaviour for primary care providers primarily based on expert opinion	Need for research in all areas outlined as weak evidence, in particular the impact of SSRIs on treating depression in young people (a large RCT). Need to review effectiveness of treatments for different psychiatric conditions among young people including substance misuse and physical and sexual abuse

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions (cont.)

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Patton and Burns, 1998	Population-based universal interventions and those aimed at high-risk groups; community risk factors, school and peer settings; interventions targeting individual risk factors including affective disorder and other psychopathology, suicidal behaviour, alcohol and substance misuse and anti-social behaviour, family risk factors	Individual, family, community, school and peer settings	Children and young people ranging in age from 9 to 25 years	122	Highly relevant	There is a lack of evidence: that cognitive behavioural therapy has medium to long-term benefit in adolescents with depression; of effectiveness for indicated intervention to prevent adolescent depression; of firm data on effectiveness of clinical interventions for suicide attempters. No evidence indicates that suicide prevention centres and hotlines have had an impact on suicide rates. There is a lack of evidence of effectiveness of school-based educational programmes focusing on high-risk students. Interventions where suicide is incorporated into a life skills approach show more consistent evidence of effect but the efficacy of suicide-specific element is uncertain. Outcomes from interventions focusing on attitudes to suicide are mixed but show little beneficial effect. Family focused interventions, targeting children of substance misusers, appear effective in the short-term – long-term impact is unknown. There is growing evidence that universal interventions to diminish conflict and enhance cohesion between parents and children have persisting benefits in terms of the behaviour and mental health of offspring. The evidence of effectiveness of firearms restriction on reducing overall rates remains controversial because of possible substitution of other methods and environmental/legal factors, ie the US is very different to Australia. Media guidelines require constant revisions and implementation, yet currently there is a lack of evidence of their effectiveness. No evidence of effectiveness of postvention	Weak evidence where it does exist	Uses key findings, as outlined, as the basis of recommend-ations which informed the research agenda and knowledge base to identify 'best buy' preventive interventions for youth suicide in the Australian Youth Suicide Prevention Strategy	Need for research on indicated, selective and universal risk factors; on evidence of effectiveness, particularly on interventions which are currently commonly used but where there is little evidence of efficacy, eg telephone 'hotlines' and suicide education programmes; on universal population-based approaches versus targeted approaches; on outcomes research such as interventions for depressive symptomatology, suicidal behaviour and approaches to modify established social and developmental risk factors. The impact of programmes on rural youth, economic evaluations and research on dissemination of suicide prevention require attention. Development and evaluation of population-based preventive interventions addressing established risk factors such as depression and non-fatal suicidal behaviour. Development and evaluation of clinical responses to young males

Table 5: Characteristics of the review-level evidence of youth suicide prevention interventions (cont.)

Article	Intervention studied	Setting	Individuals studied	Number of studies	Relevance to our study	Key findings	Strength of findings	Policy or practice recommend-ations	Recommended further research
Ploeg et al., 1999	Curriculum-based suicide prevention programmes – suicide education and general coping skills training	Schools	Adolescent high school students	Nine	Relevant interventions in schools and relevant age group. Seven of nine studies from the US and two from Israel. Only two studies looked at actual suicidal behaviours as an outcome	One moderate study found decreased suicide risk behaviours such as depression, hopelessness and stress in the intervention group and in the group who only received an assessment – this decrease was not sustained at 10 months. Attitudes about suicide improved in four studies, were unchanged in two and did not improve in two studies, especially among males. Four studies which looked at curriculum to develop coping skills found they improved in two studies and did not in two others. One moderate study found that a greater percentage of those offered small group discussions on coping with mental heath services would tell an adult about a suicidal peer, but the overall percentage was still low	Overall the authors note significant limitations in the quality of the research reviewed. The review identified nine studies, one of which was strong methodologic ally, four of which were moderate and four of which were weak	This review suggests that there is insufficient evidence to support curriculum-based suicide prevention programmes for adolescents	Multi-year, multi-component strategies to address high-risk behaviour need to be researched. The effect of interventions targeting male youth need to be evaluated. Valid reliable data collection instruments need to be developed and utilised across all studies

Evidence

School-based suicide prevention programmes

Five reviews (Ploeg et al., 1999; Harden et al., 2001; Guo and Harstall, 2002; Gunnell, 1994; Patton and Burns 1998) investigated the evidence for school-based interventions. Insufficient evidence was found to recommend universal (non-targeted) school-based programmes, or programmes applied to high-risk groups and/or behaviours. No evaluations of effectiveness of school-based clinics were found and there was no research on the effectiveness of web-based tools. Some studies suggested that educational interventions reduced depression, anxiety and emotionality as risks for suicide but these reductions did not seem, in the long term, to be sustained. In one review, attitudes about suicide improved in five studies, were unchanged in two and worsened, especially among males, in two studies. Some school-based programmes have shown an impact on knowledge and levels of self-esteem but it is unknown if this translates into impact on behaviour, particularly suicidal behaviour.

Mental health promotion interventions to promote self-esteem were limited in effectiveness, and were most effective if self-esteem was the main focus of the intervention. There was, in general, limited evidence for prevention of suicide and self-harm and there was contradictory evidence on the benefit of education and general coping skills training on suicidal potential and depression. Although there was a lack of evidence, one review concluded that a multi-faceted multi-year health promotional approach addressing high-risk behaviours in schools was likely to be most effective. A further review in the form of a book chapter, without the necessary supporting information on methodology to allow inclusion on the HDA Evidence Base, reinforces these findings and adds that the only approach that seems logical to the authors was to systematically screen young

people for mental disorders that predispose to suicide (Shaffer and Gould, 2000).

> There is a current lack of evidence to support universal school education programmes to prevent youth suicide. However, holistic, multi-dimensional self-esteem based programmes were found to have positive impacts on young people's mental wellbeing, but were not measured for impact on attitudes to suicide or suicide as an outcome. Evaluation of interventions currently in place is essential.

Recognition, management and prevention of youth suicidal behaviour by primary care practitioners

Two systematic reviews (Hider, 1998; Gunnell, 1994) examined the role of primary care. They suggest that young people at higher risk of suicide can now be predicted. Only one small evaluation of effectiveness of education of GPs on risk factors was found. There was a positive impact of GP education on general suicide rates. Hilder (1998) and Gunnell (1994) concluded, despite the lack of clear evidence, that the management of depression and other psychiatric illness in primary care should be part of any strategy to prevent and manage suicide risk among young people.

> The apparent potential for GPs to identify and manage at-risk youth remains unproven. There may be some potential for primary care professionals in the identification and management of depression.

Interventions targeting family risk factors

Two reviews (Hider, 1998; Patton and Burns, 1998) studied the evidence on family interventions to prevent youth suicide. Family focused interventions targeting children of substance misusers appeared to be effective in the short term, but the long-term impact was unknown. There was some evidence that universal interventions to diminish conflict and enhance cohesion between parents and children had persisting benefits in terms of the behaviour and mental health of offspring but no effect on suicide was studied.

> The impact of interventions to promote family cohesion on youth suicide prevention has yet to be studied adequately but may be a potential area for effective intervention.

Suicide prevention programmes for at-risk groups

Four systematic reviews (Guo and Harstall, 2002; Patton and Burns, 1998; Hawton et al., 2003; Gunnell, 1994) looked at interventions targeted at at-risk groups of youths. No strong studies were found on postvention programmes, intensive follow-up, or studies comparing general practice to outpatient care. Two methodologically moderate studies gave encouraging evidence for indicated suicide prevention programmes targeting at-risk youth. Programmes stressing behaviour change and coping strategies lowered suicidal tendencies and in some cases improved coping skills. School-based educational programmes focusing on high-risk students were not able to demonstrate evidence of effectiveness.

> There is some weak evidence (ie from poorly constructed studies or small studies that resulted in findings that did not achieve statistical significance) for programmes for at-risk youth focusing on behaviour change and coping skills. There is a lack of evidence from studies with suicide as an outcome.

Potential points of access to those contemplating suicide

Three systematic reviews (Patton and Burns, 1998; Hider, 1998; Gunnell, 1994) looked at interventions to promote access to support or advice for those at risk of suicide. There was no evidence found to demonstrate the effectiveness of crisis hotlines in preventing suicide in at-risk youths. This does not, however, demonstrate evidence of their lack of effect. There was some potential for suicide prevention found when providing a contact card to those who had deliberately self-harmed. Primary care practitioners were identified as a potential source of access, assessment and management of youths at risk of suicide, but there is a lack of evidence of effectiveness of this potential.

> There is no current evidence for effectiveness of crisis hotlines but there is some weak evidence for contact cards. Primary care practitioners were identified as a potential point of assessment and management for those at risk of suicide.

Prevention of access to means of suicide

Three systematic reviews (Gunnell, 1994; Hider, 1998; Patton and Burns, 1998) considered the evidence on limiting access to suicide means among youths. There was a lack of studies that have evaluated the effect of restrictions on access to means of self-harm on actual suicide rates. The evidence of effectiveness of firearms restriction on reducing overall rates remains controversial because of possible substitution of other methods. There is a need to recognise cultural and legal issues in relation to access to means. There was some evidence for the restriction of paracetamol packet size and a reduction in fatal paracetamol overdoses.

> There is some evidence for restricting the amount of paracetamol per packet. Evidence on firearms restriction is contested as substitution of other methods may occur.

Media restrictions

One systematic review (Gunnell, 1994) considered the potential for preventing youth suicide through influencing how the media reported incidents of youth suicide. The potentially contagious nature of youth suicide could be reduced through responsible reporting of incidents of suicide. There was some conflicting evidence on the effectiveness of guidelines to prevent the media sensationalising reporting of youth suicide to prevent further suicide among youths.

> The evidence for preventing youth suicide through influencing responsible media reporting is conflicting.

Psychosocial and pharmacological treatments for deliberate self-harm

One systematic review (Hawton et al., 2003) examined the treatment of deliberate self-harm. This is a key risk factor for subsequent suicide and is included for that reason. The evidence was weak due to the small size of the primary studies. Problem-solving therapy and the provision of a contact card showed some promise. There was some limited evidence of the effectiveness of depot flupenthixol and dialectical behaviour therapy. While there was very limited evidence of effectiveness of psychological or pharmacological treatments, there was some evidence for the use of cognitive behavioural therapy to prevent suicidal behaviour among high-risk young people. No indication of benefit was found for the antidepressants mianserin or nomifensine, with mixed results for paroxetine. There was a lack of evidence for outpatient-based crisis intervention. There was a potential effect of selective seretonin re-uptake inhibitors (SSRIs) seen in treating depression but not suicide. Little evidence was found to recommend inpatient over outpatient care. There is a lack of evidence for follow-up frequency or for discharge planning in improving compliance with outpatient treatment.

> There is insufficient current evidence to recommend pharmacological interventions with the possible exception of SSRIs for young people with mental illness. There is limited evidence for dialectical behavioural and cognitive behavioural therapy for their impacts on deliberate self-harm.

Analysis of the evidence

While we cannot say that any intervention has the backing of strong evidence utilising the criteria for strength of evidence defined by the HDA critical appraisal process, there are a number of approaches that have some backing in the evidence and these should be pursued and rigorously evaluated. In line with the findings of other evidence briefings most studies are from the US; further research in the UK and Ireland is needed.

There are considerable variations in programme intensity, dosage levels, duration and external context for programmes, which makes comparability between studies difficult. Future intervention studies should include some analysis of the detailed style of programme delivery, the personality of the key professional delivering the programme, the relationship development with young people and the particular social and cultural characteristics of the programme's target group. If we do not pay sufficient attention to these key programme characteristics we may fail to successfully transfer promising interventions. Without the use of controls and allowance for time trends in the rate of suicide any changes cannot be ascribed with certainty to the intervention studied.

Some of the review authors comment that the relatively low rate of completed suicide in the population makes it difficult to establish a reduction in the suicide rate arising from the different interventions.

Any comprehensive approach will operate on many levels and should involve some education of the media about the potential for their reporting of suicide to create further suicide risk by sensationalising youth suicide.

Much has been written on the restriction of access to means but there is conflicting evidence from the US on firearm restriction.

There is some support for active psychosocial and medical management of depression in young people as potentially preventing suicide (this was not a prime focus for this evidence briefing). This requires GPs to be more aware of, and on the lookout for, depression in youths. This is an area that needs an analysis of the evidence.

Promising approaches with youths that focus on developing their problem-solving skills and promoting

their general coping skills may gather further evidence in their support. Interventions designed to support families and promote cohesion between parents and children have shown promise and have some evidence to back them up.

Further research is needed to clarify the need for, or effectiveness of, targeted or universal interventions. Approaches used in some social contexts may not transfer effectively to high-risk groups living in socially deprived circumstances.

While we have found a number of good quality review papers, the primary research on which they are based does not give us a clear evidence base for recommendations on policy or practice. Promising interventions should be pursued and should not be implemented without rigorous evaluation so that in future we will have clearer guidance on what works or does not work in the area of youth suicide prevention.

Gaps in the evidence base and recommendations for research

In general there is a lack of controlled studies and RCTs on the effectiveness of interventions for preventing youth suicide. This review uncovered some work on youth psychiatric treatment but did not systematically search this area. A future search should focus on this. With such small numbers of studies where suicide is an outcome, assessing the effects of interventions at local level is problematic.

Gaps

- There is a lack of youth-specific studies looking at the impact of the socio-economic gradient and health inequality on suicide.
- There is a lack of research tackling wider structural barriers to mental wellbeing. With some interventions the study sizes were too small to yield strong evidence. There was a lack of larger trials that might have replicated promising findings for interventions such as problem-solving therapy, emergency contact card and dialectical behaviour therapy.
- There is a lack of research on the following: antisocial disorders, post-traumatic stress disorder, anorexia and bulimia, anxiety disorders and obsessive compulsive disorders, psychotic disorders, physical or sexual abuse, substance (including alcohol) misuse, gay and lesbian young people, youth with disabilities and young people from ethnic minorities.
- More systematic research is needed on those who attempt suicide in the prison setting before advances can be made. There is an absence of follow-up studies to evaluate the impact of educational interventions. The school-based research excludes those who do not attend school, leaving a gap in research among this group.

Recommendations

General

- There is a need to look 'upstream' at the effectiveness and possible negative impact of national and regional policy initiatives and programmes on levels of youth suicide to obtain evidence of effectiveness on preventing suicide at the earliest possible stage of intervention.
- There is a need for research tackling wider structural barriers to mental wellbeing. Interventions to improve the material and physical circumstances of people's lives need to be developed and evaluated.
- New research should not just focus on health service interventions for those at risk but should also prioritise the development and evaluation of interventions that tackle possible root causes of poor mental health and suicidal behaviour.
- Interventions targeting youth suicide among ethnic minorities, those with disabilities and other minority youth groups should be developed and evaluated.
- The long-term sustainability of interventions should be investigated.
- Process and qualitative information should be included in the evaluation of interventions in order to allow features of effective interventions to be identified.
- Future research on risk factors and suicide prevention interventions should involve young people, recognise diversity and take into account the needs of specific groups, eg gay and lesbian young people, young people who misuse substances, young people from ethnic minorities.
- There is a need for economic evaluations of proposed initiatives.
- The outcome measure for evaluations should be 'changes in suicidal behaviour' and where that is not feasible, outcomes measured should be those that are closely associated with actual suicidal behaviour.

Specific

- Multi-year, multi-component strategies to address high-risk behaviour in school including prevention, intervention and postvention need to be developed and evaluated systematically. Further evaluation is needed of promising initiatives such as those to reduce school workload and to improve social relations between teachers and young people. Future research on school interventions needs to have a focus on the process of programme delivery including the personality and accessibility of the educator as well as their relationship with students.
- Future research needs to focus on the needs of socially excluded young people including those in care or who are homeless.
- Interventions to foster supportive family relationships, use of activities to promote self-esteem and reduce depression, coping skills, social support initiatives and peer counselling should be further evaluated.
- There is a need to research the effectiveness of hotlines in suicide prevention due to a lack of evidence of effectiveness to date.
- There needs to be an emphasis on the development and evaluation of large-scale prevention programmes and the training of health workers and other relevant groups in the assessment and management of suicide risk. The effectiveness of heightened awareness among clinical practitioners of mental illness and suicidal risk factors among young people should be evaluated.
- The impact of reducing access to the means of suicide and the role of media should be further researched. The effects of limiting quantities of over-the-counter and prescribed medicines sold should be quantified, eg paracetamol and aspirin.
- There is a need for studies on young people who have deliberately harmed themselves who are not admitted to hospital.
- There is a need to review the effectiveness for various treatments for different mental illnesses and psychiatric conditions among young people.
- There is a need for prospective cohort studies to assess the temporal relationship between risk factors and suicidal behaviour.
- Interventions to improve youth mental health with a focus on suicide as an outcome should be reviewed and if there is a lack of evidence then initiatives should be developed and evaluated.

Conclusion

Suicide and suicidal behaviour in youths is a significant public health issue. While suicide rates are higher in young adults, many of the risk factors and associated behaviour patterns are established in adolescence. This makes the development of evidence-based suicide prevention strategies for youths a priority for our society. This will need to involve many agencies outside the health services.

This review of the review-level evidence demonstrates the weakness in the evidence base for preventive strategies in the area of youth suicide and suicidal behaviour. A table follows this section that summarises and grades the evidence this review has uncovered. While there are some areas that are either supported by weak evidence or strongly endorsed by expert review groups, we cannot recommend particular approaches to prevention. Rather, we must recommend that existing promising approaches be evaluated systematically and that new research is undertaken with large youth samples so that we can more reliably establish the factors that will, with some interventions, lead to a reduction in youth suicide.

Clearly, as is often the case with review-level evidence, there are more questions than answers. There are numerous areas that may prove to be effective and that require considerably more research now. In considering new research some key underlying weaknesses in the current body of evidence emerge. Future research must involve young people in design conduct and interpretation. Research is needed in the area of youth suicide prevention that focuses on disadvantaged communities and minority groups that may have some increased suicidal tendency. Research should also have some focus on interventions to improve social conditions and structural issues to see if interventions at this level can have a positive impact on young people's lives and on their rates of completed and attempted suicide.

Programmes such as those targeting pre-school children, educational attainment and others outside of the health service should be analysed for their potential impact. Interventions tackling the determinants of the mental wellbeing of young people need as much research attention as those focusing on those who already display evidence of poor mental health.

The reviews suggest that complex interventions in many areas of young people's lives may be most successful at preventing youth suicide. This represents a considerable challenge to design coherent interventions, and even more so to evaluate them rigorously enough to be able to attribute outcomes to specific interventions.

The lack of firm evidence for preventive interventions is to some degree a product both of the approach to evaluating evidence and the level of evidence needed in a review of reviews that is explicit in the HDA methodology adopted in this study. Having said that, there is strong support for basing recommendations for practice on this level of evidence and while practitioners need to pursue approaches that have been suggested as promising, there is an onus on those who fund and carry out research to remedy the gaps in this evidence base.

Table 6: Summary of the effectiveness of interventions to prevent youth suicide

	Evidence of effectiveness	Limited evidence of effectiveness	Conflicting or inconclusive evidence	Current lack of evidence of effectiveness	Evidence of non-effectiveness or of harm
School-based interventions		Programmes stressing behaviour change and coping strategies lowered suicidal tendencies and in some cases improved coping skills	Curriculum-based suicide prevention programmes and their impact on attitudes about suicide Training in coping skills in schools	School-based programmes to reduce suicide among young adults or adolescents	Some evidence that school-based education initiatives may increase suicidal behaviour among adolescents Knowledge-based sessions were ineffective in preventing depression
Clinical interventions		Depot flupenthixol and dialectical behaviour therapy showed some evidence of effect		Management of adolescent suicide in primary care. Education of GPs on risk factors. Programmes of post-hospital discharge contact	No indication of benefit was found for the antidepressants mianserin and nomifensine, with mixed results for paroxetine
Family interventions		There is some evidence that universal interventions to diminish conflict and enhance cohesion between parents and children have persisting benefits in terms of the behaviour and mental health of offspring			
Restriction of suicide means		Restricting access to paracetamol	The evidence of effectiveness of firearms' restriction on reducing overall rates remains controversial because of possible substitutions of other methods		

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Table 6: Summary of the effectiveness of interventions to prevent youth suicide (cont.)

	Evidence of effectiveness	Limited evidence of effectiveness	Conflicting or inconclusive evidence	Current lack of evidence of effectiveness	Evidence of non-effectiveness or of harm
Interventions for at-risk individuals		Education and general coping skills training did have beneficial effects on suicidal potential and depression 'Moderate' studies gave encouraging evidence for indicated suicide-prevention programmes targeting at-risk youths Problem-solving therapy and provision of emergency contact card showed some effectiveness in preventing deliberate self-harm. Weak evidence on recognition and assessment of risk		No firm data on effectiveness of clinical interventions for suicide attempters Educational intervention followed by behavioural skills training focusing on increasing daily activities No evidence for crisis hotlines in preventing suicide in at-risk youths	Mental health promotion interventions to promote self-esteem. Postvention studies were weak and no programme effects were noted School-based educational programmes focusing on high-risk students are not effective
Media interventions		Promoting responsible media reporting			

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* The Cochrane Reviews database is now published by John Wiley & Sons, Chichester. A full list of review titles is at: www.cochrane.org/cochrane/revabstr/mainindex.htm

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APPENDIX A

Information for practitioners

Strategy/publication/organisation	Source
American Academy for Child and Adolescent Psychiatry. *Practice parameter for the assessment and treatment of children and adolescents with suicidal behavior*	*Journal of American Academy for Child and Adolescent Psychiatry* Supplement, July 2001. Clinical guidelines not evidence. Long list of US websites. www.aacap.org/clinical/suicide.htm
Australia – *National Youth Suicide Prevention Strategy*	www.aifs.gov.au/ysp
Australia – Suicide Prevention Communications Project	www.aifs.gov.au/ysp
Aware	www.aware.ie
Best practice guidelines for suicide prevention in Irish schools	Irish Association of Suicidology and National Suicide Review Group 2002 – www.ias.ie
Choose Life: A National Strategy and Action Plan to Prevent Suicide in Scotland	www.scotland.gov.uk/library5/health/clss.pdf
Four nations child policy network	www.childpolicy.org.uk
Guidelines on suicide prevention for primary care practitioners	www.rnzcgp.org.nz/ys.php
Helping to prevent suicide through research, intervention and support	www.turningthetideofsuicide.com
In our hands – the New Zealand youth suicide prevention strategy	www.moh.govt.nz/youthsuicide.html
Irish Association of Suicidology	www.ias.ie
Managing youth suicidal behaviour. The 4R's. A guide for general practitioners and community health personnel	Edwards, S. and Pfaff, J. (1997). www.mja.com.au/public/bookroom/1999/dudley/dudley.html
Media guidelines	www.ias.ie/media_guidlines.asp
Mental Health Ireland Pro-teen Matters Web Magazine	www.mentalhealthireland.ie/webmag
National Suicide Review Group	www.nsrg.ie
National Strategy for Suicide Prevention: goals and objectives for action. US Department of Health and Human Services	www.surgeongeneral.gov/library http://media.shs.net/ken/pdf/SMA01-3517/SMA01-3517.pdf
National Suicide Bereavement Support Network	www.nsbsn.org
National Suicide Prevention Strategy for England	www.dh.gov.uk/assetRoot/04/01/95/48/04019548.pdf
National Suicide Research Foundation	www.nsrf.org
National Youth Suicide Prevention Strategy. Resource Guide on Education and Training. Australia	www.mentalhealth.gov.au

Strategy/publication/organisation	Source
Preventing Suicide: a resource for general physicians. Plus other resources for media professionals, teachers and other school staff, primary healthcare workers, prison officers	www.who.int/mental_health/resources/suicide/en
Public Health electronic Library	www.phel.gov.uk
Safety First: Preventing Suicide – 12 points to a safer service	Appleby, L. et al. Safety First: Preventing Suicide. *Mental Health Care* 2001 (4) 9 311-14.
Samaritans website – contains useful media guidelines among other material	www.samaritans.org.uk www.samaritans.org/know/pdf/media.pdf
School Health Recommendations	Centers for Disease Control and Prevention (2001). *School health guidelines to prevent unintentional injuries and violence.* www.cdc.gov/mmwr/preview/mmwrhtml/rr5022a1.htm
Standard 7, National Service Framework for Mental Health	www.publications.doh.gov.uk/nsf/mentalhealth.htm
Suicidal Ideation Questionnaire – William M. Reynolds, Adolescent Well-being Scale ,1987, Department of Health, UK	www.dh.gov.uk/assetRoot/04/07/94/91/04079491.pdf
Suicide: we can all make a difference. New South Wales suicide prevention strategy. NSW, Australia.	www.health.nsw.gov.au/health-public-affairs/publications/suicide/suicide.pdf
Suicide prevention information – American Association of Suicide Prevention	www.afsp.org
The Surgeon General's call to action to prevent suicide. Department of Health and Human Services, US Public Health Service	http://media.shs.net/ken/pdf/suicideprevention/calltoaction.pdf
Second report of the Working Group on Child and Adolescent Psychiatric Services, 2003	www.doh.ie/publications
Youth Suicide Prevention Programs: a resource guide	www.cdc.gov/ncipc/pub-res/youthsui.htm

APPENDIX B

Glossary

Adolescence – Defined as those people aged between 10 and 19 years of age.

CAT – critical appraisal tool, used by the HDA authors to critically appraise review papers (see Appendix C).

Effectiveness – The HDA uses the term to describe demonstrable, intended effects on (usually quantitative) outcomes. However, the term is not uncontested. First, while 'demonstrable' effects, in this context, usually imply those that are statistically significant, in some situations – particularly where interventions require careful, long-term evaluation – this may be an ambitious definition. Second, in the UK at least, there are some tensions between different kinds of outcome measures depending on the focus of the study.

Efficacy – The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions; the benefit or utility to the individual or the population of the service, treatment regimen or intervention. Ideally, the determination of efficacy is based on the results of a randomised controlled trial.

Evidence Briefing – An HDA review of reviews which provides detailed commentaries on the strengths and weaknesses of the evidence, identifies gaps in the evidence, analyses future primary and secondary research needs, and discusses the implications of the evidence for policy and practice.

Health inequalities – The gap in health status and in access to health services between different social classes and ethnic groups, and between populations in different geographical areas. See www.doh.gov.uk/healthinequalities/index.htm

Health promotion – The process of enabling people to increase control over and improve their health. As well as covering actions aimed at strengthening people's skills and capabilities, it also includes actions directed towards changing social and environmental conditions to prevent or to improve their impact on individual and public health.

Mental health – Mental health for adolescents can be influenced, positively or negatively, by the developmental tasks involved in this transitional period of life. It is a time when experimental behaviour is a core part of negotiating these tasks. Mental health disorders in adolescence are common and disabling. They affect young people's functioning in several areas of their lives – personal, social, behavioural, academic and vocational – and they interfere with their ability to undertake the developmental tasks of adolescence.

Meta-analysis – Reports on specific areas where research results from various sources have been collated, often systematically, and subjected to a form of statistical analysis to ascertain overall effects of impact of an intervention, policy or programme.

Morbidity rate – The number of cases of an illness, injury or condition within a given time, usually one year. It is also the ratio of sick persons to well persons in a defined population.

Mortality – The proportion of deaths in a defined population.

Natural experiment – Naturally occurring circumstances in which subsets of the population have different levels of exposure to a supposed causal factor, in a situation resembling an actual experiment where human subjects would be randomly allocated to groups.

Observational study – Epidemiologic study that does not involve any intervention, experimental or otherwise. Such a study would be one in which nature is allowed to take its course, with changes in one characteristic being studied in relation to changes in other characteristics. Analytic epidemiologic methods, such as case control and cohort study designs, are properly called observational epidemiology because the investigator is observing without intervention other than to record, classify, count, and statistically analyse results.

Parasuicide – The World Health Organization ICD-10 defines parasuicide as an act with a non-fatal outcome; in which an individual deliberately initiates a non-habitual

behaviour that, without intervention by others, will cause self-harm, or ingests a substance in excess of the generally recognised therapeutic dosage; and which is aimed at realising changes which he/she desires via the actual or expected physical consequences. Some of the included studies use the term deliberate self-harm for parasuicide.

Postvention – Activities undertaken to deal with the aftermath of a suicide aimed at diminishing the consequences of a suicide, including possible suicidal behaviours among individuals affected by the person's death.

Prevalence – The number of cases of a particular condition in a defined population.

Public health – The science and art of preventing disease, prolonging life and promoting health through organised efforts of society, inclusive of all interventions designed to improve the health of the public. Interventions to prevent disease include those which address specific health risk factors (such as diet, lifestyle and physical exercise), infectious disease control and interventions which address the wider economic and societal determinants of health such as the environment, education and housing.

Quasi-experiment – A situation in which the investigator lacks full control over the allocation and/or timing of an intervention but nonetheless conducts the study as if it were an experiment, allocating subjects to groups. Inability to allocate randomly is a common situation that may best be described as a quasi-experiment.

Randomised controlled trial (RCT) – An epidemiologic experiment in which subjects in a population are randomly allocated into groups, usually called study and control groups, to receive or not to receive an experimental prevention or therapeutic product or intervention. The results are assessed by rigorous comparison of rates of disease, death, recovery, or other appropriate outcomes in the study and control groups, respectively. RCTs are generally regarded as the most scientifically rigorous method of hypothesis testing available.

Screening – The presumptive identification of disease or defect by the application of tests, examinations or other procedures which can be applied rapidly. Screening tests

sort out apparently well people who probably have a disease from those who probably do not. A screening test is not intended to be diagnostic. Persons with positive or suspicious findings must be referred to their physicians for diagnosis and necessary treatment.

Self-immolation – Attempting to kill oneself by burning.

Socio-economic status – Description of a person's position in society which uses criteria such as income, level of education achieved, occupation, value of property owned, etc.

Suicide – A World Health Organization working group in 1986 defined suicide as an act with fatal outcome; that was deliberately initiated and performed by the deceased him/herself; in the knowledge or expectation of its fatal outcome; through which the deceased aimed at realising the changes he or she desired.

Suicide clusters – The occurrence in time and geographical space of an aggregation of suicide (usually three or more) which is greater than the number of suicides which would be expected on the basis of statistical prediction (Gibbons, 1990; Gould et al., 2003).

Suicide ideation – People's thoughts which can vary from fleeting thoughts that life is not worth living, via very concrete, well thought out plans for killing oneself, to an intense delusional preoccupation with self-destruction (Diekstra, 1996).

Youth – The World Health Organization defines youth as the period of life between 15 and 24 years of age.

APPENDIX C

HDA Evidence Base – critical appraisal tool

Authors: _____

Title: _____

Source: _____

Relevance to topic			
Does this paper address your topic area? Circle the type of paper: • Systematic review • Meta-analysis • Synthesis • Literature review • Other review (please specify) Does it address (circle as appropriate)? • Effectiveness (interventions and treatments) • Causation • Monitoring and surveillance trends • Cost • Other (please specify)	Yes	No	Unsure
Transparency			
Does the paper have a clearly focused aim or research question?	Yes	No	Unsure
Consider whether the following are discussed:			
• The population studied	Yes	No	Unsure
• The interventions given	Yes	No	Unsure
• The outcomes considered	Yes	No	Unsure
• Inequalities	Yes	No	Unsure
Systematicity			
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Consider whether details are given for:			
• Databases searched	Yes	No	Unsure
• Years searched	Yes	No	Unsure
• References followed up	Yes	No	Unsure
• Experts consulted	Yes	No	Unsure
• Grey literature searched	Yes	No	Unsure
• Search terms specified	Yes	No	Unsure
• Inclusion criteria described	Yes	No	Unsure
Is it worth continuing? **Why/why not?**	Yes	No	

Quality			
Do the authors address the quality (rigour) of the included studies? Consider whether the following are used:	Yes	No	Unsure
• A rating system	Yes	No	Unsure
• More than one assessor	Yes	No	Unsure
If study results have been combined, was it reasonable to do so? Consider whether the following are true:	Yes	No	Unsure
• Are the results of included studies clearly displayed?	Yes	No	Unsure
• Are the studies addressing similar research questions?	Yes	No	Unsure
• Are the studies sufficiently similar in design?	Yes	No	Unsure
• Are the results similar from study to study (test of heterogeneity)?	Yes	No	Unsure
• Are the reasons for any variation in the results discussed?	Yes	No	Unsure
What is the overall finding of the review? Consider: • How the results are expressed (numeric – relative risks, etc) • Whether the results could be due to chance (p-values and confidence intervals)			
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions?	Yes	No	Unsure
Does this paper cover all appropriate interventions and approaches for this field (within the aims of the study)? If no, what?	Yes	No	Unsure
Relevance to UK			
Can the results be applied/are generalisable to a UK population/population group?	Yes	No	Unsure
• Are there cultural differences from the UK?	Yes	No	Unsure
• Are there differences in healthcare provision with the UK?	Yes	No	Unsure
• Is the paper focused on a particular target group (age, sex, population sub-group etc)?	Yes	No	Unsure
Accept for inclusion onto HDA Evidence Base?	**Yes**	**No**	
Use to inform the review of effectiveness?	Yes	No	Refer
Use to inform the background discussion?	Yes	No	
Additional comments			

APPENDIX D

Reviews which qualified for the HDA Evidence Base

Gunnell, D. J. (1994). *The potential for preventing suicide. A review of the literature on the effectiveness of interventions aimed at preventing suicide*. Bristol: HCEU, University of Bristol.

Guo, B. and Harstell, C. (2002). *Efficacy of suicide prevention programs for children and youth*. Alberta: Alberta Heritage Foundation for Medical Research.

Harden, A., Rees, R., Shepherd, J., Brunton, G., Oliver, S. and Oakley, A. (2001). *Young people and mental health: a systematic review of research on barriers and facilitators*. London: Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre).

* Hawton, K., Townsend, E., Arensman, E., Gunnell, D., Hazell, P., House, A. and van Heeringen K. (2003). Psychosocial and pharmacological treatments for deliberate self harm (Cochrane Review). In: *The Cochrane Library*, Issue 1, 2003. Oxford: Update Software.

Hider, P. (1998). *Youth suicide prevention by primary healthcare professionals: a critical appraisal of the literature*. New Zealand Health Technology Assessment (NZHTA) 4.

Patton, G. and Burns, J. (1998). *Preventive intervention for youth suicide: a risk factor based approach*. Canberra: National Health and Medical Research Council.

Ploeg, J., Ciliska, D., Brunton, G., MacDonnell, J. and O'Brien. M. (1999). *The effectiveness of school-based curriculum suicide prevention programs for adolescents.* Toronto: Ontario Public Health Research and Education Programme.

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* The Cochrane Reviews database is now published by John Wiley & Sons, Chichester. A full list of review titles is at: www.cochrane.org/cochrane/revabstr/mainindex.htm