National Institute for Health and Care Excellence

Final

Preventing suicide in community and custodial settings

NICE guideline: methods

NICE guideline NG105

Methods

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Final

Evidence reviews were developed by Public Health Internal Guideline Development team

Disclaimer

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or service users. The recommendations in this guideline are not mandatory and the guideline does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Local commissioners and/or providers have a responsibility to enable the guideline to be applied when individual health professionals and their patients or service users wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with compliance with those duties.

NICE guidelines cover health and care in England. Decisions on how they apply in other UK countries are made by ministers in the Welsh Government, Scottish Government, and Northern Ireland Executive. All NICE guidance is subject to regular review and may be updated or withdrawn.

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Contents

Development of the guideline

What this guideline covers

This guideline covers ways to reduce the suicide rate in England and to help people bereaved or affected by death by suicide. It looks at preventive interventions that can be used in places where suicide is more likely and at ways to identify and help people at risk. It also covers how local services can best work together and what plans and training they need to put in place.

What this guideline does not cover

This guideline does not cover national strategies, general mental wellbeing, or areas covered by other NICE guidance such as self-harm or mental health conditions.

Methods

This guideline was developed in accordance with the process set out in 'Developing NICE guidelines: the manual (2014)'. A booklet, 'How NICE guidelines are developed: an overview for stakeholders, the public and the NHS' is available. In instances where the guidelines manual does not provide advice, additional methods are described below.

Developing the review questions and outcomes

Nine review questions used as the evidence base when developing this guideline were based on the key areas identified in the guideline scope. They were drafted by the NICE Public Health Internal Guideline Development team and refined and validated by the Public Health Advisory Committee.

The review questions were based on the following frameworks:

- population, intervention, comparator and outcome (PICO) for reviews of interventions

Full literature searches, evidence tables and critical appraisal for all included studies, excluded studies and reasons for exclusion and evidence reviews were completed for all review questions.

Reviewing research evidence

The identification of evidence for evidence review in the guideline was conformed to the methods set out in chapter 5 of the "Developing NICE Guidelines Manual" (October 2014). The purpose of the search was to identify the best available evidence to address review questions without producing an unmanageable volume of results.

Relevant databases and websites, listed in Suicide prevention – Search strategies, were searched systematically to identify effectiveness, cost effectiveness and qualitative research evidence. The principal database search strategy is listed in Suicide prevention – Search strategies. The principal strategy have been developed in MEDLINE (Ovid interface) and will be adapted, as appropriate, for use in the other sources listed in Suicide prevention – Search strategies taking into account their size, search functionality and subject coverage.

Randomised or non-randomised controlled trials, before-after studies, and cohort studies were included if they evaluated interventions related to each specific review questions. Systematic reviews of intervention studies were used as a source for primary studies but, following a committee discussion were not included in the evidence reviews "as published" as the committee were minded to judge the quality of each included study on their own with a view to determine applicability and usefulness of each systematic review this guideline. Qualitative studies were included wherever exploring views and/or experience of scope populations regarding to effectiveness and/or the impact of interventions.

Papers were excluded if they:

- were not published in the English language or were not carried out in EU or OECD countries
- were only available as abstracts, conference proceedings, guideline/health technology assessment reports

- were published before the year 2000[1].

Methods of combining evidence

Data synthesis for qualitative studies

Meta-analyses of interventional data were conducted with reference to the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al. 2011).

Continuous data

Where different studies presented continuous data measuring the same outcome but using different numerical scales (e.g. a 0-10 and a 0-100 visual analogue scale), these outcomes were all converted to the same scale before meta-analysis was conducted on the mean differences. Where outcomes measured the same underlying construct but used different instruments/metrics, data were analysed using standardised mean differences (Hedges' g).

A pooled relative risk was calculated for dichotomous outcomes (using the Mantel–Haenszel method). Absolute risks were calculated by applying the relative risk to the pooled risk in the comparator arm of the meta-analysis (all pooled trials).

Fixed- and random-effects models (der Simonian and Laird) were fitted for all syntheses, with the presented analysis dependent on the degree of heterogeneity in the assembled evidence. Fixed-effects models were the preferred choice to report, but in situations where the assumption of a shared mean for fixed-effects model were clearly not met, even after appropriate pre-specified subgroup analyses were conducted, random-effects results are presented.

Fixed-effects models were deemed to be inappropriate if statistical heterogeneity was present in the meta-analysis, defined as I2≥50%.

Meta-analyses were performed in Cochrane Review Manager v5.3.

Dichotomous data

Meta-analysis of quantitative data was conducted with reference to the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al. 2011).

Dichotomous outcomes were pooled on the relative risk scale (using the Mantel–Haenszel method). Fixed- and random-effects models (der Simonian and Laird) were fitted for all syntheses, with the presented analysis dependent on the degree of heterogeneity in the assembled evidence. Fixed-effects models were the preferred choice to report, but in situations where the assumption of a shared mean for fixed-effects model were clearly not met (defined as I^2≥50%, and thus the presence of significant heterogeneity), random-effects results are presented.

Meta-analyses were performed in Cochrane Review Manager v5.3.

Minimal important differences (MIDs)

The Core Outcome Measures in Effectiveness Trials (COMET) database was searched to identify published minimal important difference thresholds relevant to this

[1] The year 2000 was identified as a suitable start date as it would gather relevant, current evidence. It also pre-dates the first national suicide prevention strategy of 2002.

guideline, which were considered along with any other published MIDs found during the searches for the guideline. Identified MIDs were assessed to ensure they had been developed and validated in a methodologically rigorous way, and were applicable to the populations, interventions and outcomes specified in this guideline. No published MIDs were identified, so given the topic of this guideline and the fact that death by suicide is a critical outcome, the committee agreed that any change in the number of suicides was considered to be a minimal important difference.

Data synthesis for qualitative reviews

Methods for combining qualitative evidence

Where multiple qualitative studies were identified for a review question, information from these studies was combined using a thematic synthesis. By examining the findings of each included study, descriptive themes were independently identified and coded. Once all of the included studies had been examined and coded, the resulting themes and sub-themes were evaluated to examine their relevance to the review questions, the importance given to each theme, and the extent to which each theme recurred across the different studies. The qualitative synthesis then proceeded by using these 'descriptive themes' to develop 'analytical themes', which were interpreted by the reviewer in light of the overarching review questions.

Appraising the quality of evidence

Critical appraisal of individual studies

Quality assessment for all included studies was conducted using the tools in Developing NICE guidelines: the manual. The quality of individual studies were assessed using the appropriate NICE quality assessment checklist for each particular study.

The quality was interpreted as follows;

++ Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias

+ Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design

- Should be reserved for those aspects of the study design in which significant sources of bias may persist

Certainty of the evidence for each outcome

Adoption of the GRADE approach for this guideline was confirmed after the date of PHAC 0 (13 July 2016). The information extracted for the critical appraisal was used in two ways

- to rate the study quality for use when summarising the quality of the studies included in each review and
- as part of the GRADE assessment of the committee's confidence in the evidence base for each outcome

GRADE methodology for pairwise meta-analyses of interventional evidence

Standard methodology

Outcomes of the included studies were rated individually to indicate the certainty around the findings, based on assessment using GRADE methodology as outlined in Table 1.

Table 1: GRADE

Criterion	Reason for downgrading or not downgrading confidence
Risk of bias	Randomised controlled studies The certainty of the evidence was downgraded if there were concerns about the design or execution of the study, including concealment of allocation, blinding, loss to follow up using intervention checklists in the NICE guidelines manual (2012); For example, limitations in the study design and implementation may bias the estimates of the treatment effect. Major limitations in studies decrease the confidence in the estimate of the effect. Examples of such limitations are selection bias (often due to poor allocation concealment), performance and detection bias (often due to a lack of blinding of the patient, healthcare professional or assessor) and attrition bias (due to missing data causing systematic bias in the analysis). Non-randomised controlled studies The certainty of the evidence was downgraded if • there were concerns about baseline confounding and selection bias in study populations; • bias in classification of intervention • there were difference between experimental and control groups in the care provided, which represent a deviation from the intended interventions • Bias due to missing data (i.e. due to loss to follow-up) • Errors in measurement of outcome data • Bias in selection of reported result
Indirectness	Indirectness refers to differences in study population, intervention, comparator and outcomes between the available evidence and the review question. The certainty of the evidence was downgraded if there were concerns about the population, intervention and outcome in the included studies and how directly these variables could address the specific review question.
Inconsistency	Inconsistency refers to an unexplained heterogeneity of effect estimates between studies in the same meta-analysis. The certainty of the evidence was downgraded if there were concerns about inconsistency of effects across studies: occurring when there is variability in the treatment effect demonstrated across studies (heterogeneity). This was assessed using visual inspection
Imprecision	If an MID was defined for the outcome, the outcome was downgraded once if the 95% confidence interval for the effect size crossed one line of the MID. If an MID was not defined for the outcomes, it was downgraded once if the 95% confidence interval for the effect size crossed the line of no effect (i.e. the outcome was not statistically significant).
Other issues	None

Deviations from standard methodology

Outcomes of the included individual studies were rated to indicate the committee's confidence in the findings. Where data for an outcome are available from RCTs, the certainty of evidence were initially rated as high and the certainty of the evidence for each outcome was downgraded or not from this initial point. If evidence from non-RCT studies was included for review questions, then the certainty of evidence was initially rated a low and the certainty of the evidence for each outcome was downgraded or not from this point.

As suicide is a critical outcome and a RCT to detect such rare events would be impractical (would need to be very large in population and/or duration), the committee considered and agreed that evidence from non-RCT studies on suicide rate should be initially rated as high for this particular outcome in the evidence review of this guideline.

CERQual methodology for synthesised qualitative studies

Where multiple qualitative studies were identified, CERQual was used to assess the confidence we have in each of the identified themes from these studies. Evidence from all qualitative study designs (interviews, focus groups etc.) was initially rated as high confidence and the confidence in the evidence for each theme was then downgraded from this initial point as detailed in Table 2.

Table 2: CERQual

Criterion	Reason for downgrading or not downgrading
Methodological limitations	Not serious: If the theme was identified in studies at low risk of bias, the outcome was not downgraded Serious: If the theme was identified only in studies at moderate or high risk of bias, the outcome was downgraded one level. Very serious: If the theme was identified only in studies at high risk of bias, the outcome was downgraded two levels.
Relevance	High: If the theme was identified in highly relevant studies, the outcome was not downgraded Moderate: If the theme was identified only in relevant and partially relevant studies, the outcome was downgraded one level. Low: If the theme was identified only in partially relevant studies, the outcome was downgraded two levels.
Coherence	Coherence was addressed based on two factors: Between study – does the theme consistently emerge from all relevant studies Theoretical – does the theme provide a convincing theoretical explanation for the patterns found in the data The outcome was downgraded once if there were concerns about one of these elements of coherence, and twice if there were concerns about both elements.
Adequacy of data	The outcome was downgraded if there was insufficient data to develop an understanding of the phenomenon of interest, either due to insufficient studies, participants or observations.

Reviewing economic evidence

The public health advisory committee is required to make decisions based on the best available evidence of both general effectiveness and cost-effectiveness. Guideline recommendations should be based on the expected costs of the different

options in relation to their expected health benefits (that is, their 'cost-effectiveness') rather than the total implementation cost. Thus, if the evidence suggests that a strategy provides significant health benefits at an acceptable cost per patient treated, it should be recommended.

In order to assess the cost effectiveness of the key issues addressed in this guideline, the following actions were carried out:

- A systematic review of economic evidence in the literature was conducted, alongside the review of evidence on general effectiveness
- A *de novo* economic model was developed, in order to provide cost effectiveness evidence for a number of review questions

Literature review

The systematic reviewer:

- Identified potentially relevant studies for each review question from the economic search results by reviewing titles and abstracts. Full papers were then obtained.
- Reviewed full papers against pre-specified inclusion and exclusion criteria to identify relevant studies (see below for details).
- Extracted key information about the studies' methods and results into evidence tables (included in the relevant chapter for each review question)
- Generated summaries of the evidence in NICE economic evidence profiles (included in the relevant chapter for each review question)

Inclusion and exclusion of economic studies

Full economic evaluations (studies comparing costs and health consequences of alternative courses of action: cost-utility, cost-effectiveness, cost-benefit and cost-consequence analyses) and comparative costing studies that addressed the review question in the relevant population were considered potentially includable as economic evidence.

As per 'Developing NICE Guidelines: The Manual', UK-based cost-utility studies reporting health outcomes in quality adjusted life years (QALYs) were preferred. However, due to the relatively sparse evidence for most review questions, non-UK-based cost effectiveness studies (i.e. those reporting outcomes in natural units, such as number of suicides prevented) were also included. It was determined that such evidence may still be useful in informing the committee of the potential trade-off between costs and benefit of interventions. Similarly, cost-consequence analyses (i.e. those in which costs and benefits are reported separately) were included, as they were also determined to be potentially useful, for instance in cases where an intervention is associated with lower costs and higher benefits than the alternative.

Studies which only reported costs (without any consideration of health benefits) were excluded. Literature reviews, abstracts, posters, letters, editorials, comment articles, unpublished studies and studies not in English were excluded.

Appraising the quality of economic evidence

Due to the generally low quality of economic evidence in this guideline, economic studies were not given a formal applicability and limitations rating. Instead, a narrative summary of the limitations of each study was provided in the economic evidence tables for each chapter of the guideline. These limitations were made

explicit to the committee when presenting the findings of the economic literature review.

Health economic modelling

As well as reviewing the published economic literature for each review question, as described above, de novo economic analysis was undertaken in selected areas. Priority areas for new health economic analysis were agreed by the committee.

The following general principles were adhered to in developing the analysis:

- Methods were consistent with the NICE reference case.
- The committee was involved in the design of the model, selection of inputs and interpretation of the results.
- Where possible, model inputs were based on the systematic review of the clinical literature, supplemented with other published data sources identified by the committee as required.
- When published data were not available committee expert opinion was used to populate the model.
- Model inputs and assumptions were reported fully and transparently.
- The results were subject to sensitivity analysis and limitations were discussed.

Full methods for the cost-effectiveness analysis are described in the Suicide prevention HE report.

Resource impact assessment

The resource impact team used the methods outlined in the in Assessing resource impact process manual: guidelines

The resource impact team worked with the guideline committee from an early stage to identify recommendations that either individually or cumulatively have a substantial impact on resources. The aim was to ensure that a recommendation does not introduce a cost pressure into the health and social care system unless the committee is convinced of the benefits and cost effectiveness of the recommendation. The team gave advice to the committee on issues related to the workforce, capacity and demand, training, facilities and educational implications of the recommendations.