National Institute for Health and Care Excellence

Guideline version (Draft)

Preventing suicide in community and custodial settings: local approaches to suicide clusters

Evidence report for local approaches to suicide clusters

NICE guideline <number>

Evidence reviews

[February 2018]

Draft for Consultation

These evidence reviews were developed by Public Health – Internal Guideline Development team

Disclaimer

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Local approaches to suicide clusters for suicide prevention.

Introduction

The term suicide cluster refers to a series of 3 or more closely grouped suicides which are linked by locality or social relationships (PHE 2015). When a cluster of suicides occurs, it has an impact on not only families and friends but also whole communities. This review provides evidence from recent studies of local approaches that respond to “suicide clusters” and to determine whether approaches to proactively respond to suicide clusters are effective and cost effective at preventing suicide.

Review questions

What approaches that respond to 'suicide clusters' are effective and cost effective at preventing suicide?

- What components are needed in effective approaches (this will link to reporting of suicide, see reviews of media reporting of suicides)?
- Which agencies need to be involved?
- What skills, mix and experience of staff is needed?
- Which stakeholders need to be involved?
- At what points do key actors need to be involved?
- Is the timing of key actions important?

PICO table

The review focused on identifying studies that fulfilled the conditions specified in PICO table (see **Table 1**). For full details of the review protocol see Appendix A.

Table 1: PICO inclusion criteria for the review question of suicide clusters.

Population	Whole population or subgroups. The following local settings/populations will be of particular interest: School/colleges Workplaces Prisons Virtual communities
Interventions	Interventions to respond to suicide clusters (in time or place)
Comparator	• Other intervention • Status quo • Time (before and after) or area (i.e. matched city a vs b) comparisons

Outcomes	• Suicide rates • Suicide attempts • Reporting of suicide ideation The outcomes that will be considered when assessing help-seeking behaviour: • Service uptake (such as mental health services, helplines, GPs) Other outcomes: • Changes in knowledge, attitude and behaviour of practitioners and partners • Improved surveillance-data and local intelligence

Public Health evidence

Evidence review

In total, 19,228 references were identified through the systematic searches. References were screened on their titles and abstracts and full text and 5 references that were potentially relevant to this question were requested. Another study was provided during expert testimony and was subsequently excluded. 3 studies were included: 3 were quantitative studies; (see Appendix D: for the evidence tables) and 3 studies were excluded. For the list of excluded studies with reasons for exclusion, see Appendix C.

Findings

3 studies were identified that provide evidence in relation to local approaches to suicide clusters. A summary of the included studies are reported in Table 2. No qualitative studies were identified by the search strategies.

Summary of included studies in the review

Included studies reported interventions including a community health response, a suicide surveillance and a crisis intervention in the school to respond to suicide clusters.

Table 2: Summary of included studies

Study details [countries]	Design	Population/target	Interventions/approaches	Outcome
Askland et al 2003 [USA]	Experimental (before-after)	Suicide cluster	The Public Health Response, components of the response included: Phase 1, education debriefings led by trained clinician de-briefers to	The number of suicide and suicide attempts

Study details [countries]	Design	Population/target	Interventions/approaches	Outcome
			identify individuals at high-risk of self-harm; Phase 2, individual screening for referrals, which were conducted by a licensed clinician using a standardised screening tool to assess students' needs for further intervention; Phase3, crisis evaluation was provided for those students felt to be at immediate, high risk of self-harm. All parents and students taking part in this phase were given crisis hotline number and instructions to seek assistance at the local emergency department should there be a recurrence of thoughts or behaviours that were of concern.	
Hacker et al 2008 [USA]	Observational	Suicide contagion	Surveillance system aimed to prevent youth suicide and promote emotional well-being, with a focus on areas: -Support services, the involvement of community members such as parents, mental health professionals and teachers investigated traumatic events and responded to youth experienced the impact of these events; other community-based activities underwent to increase awareness and drive prevention efforts; -Youth development, a Youth Worker Network recreation programmes and after-school activities were launched ore expanded across different organisations; -Media and education approaches, guidelines for reporting on suicide were	The number of overdose and suicide attempts

Study details [countries]	Design	Population/target	Interventions/approaches	Outcome
			discussed with the editor of the local newspaper, and a newspaper section was included for youth and families, publishing prevention articles at holiday and anniversaries of youth deaths; plus broader community education efforts held workshops focusing on enhancing adults' abilities to recognise suicide and substance abuse risk-factors and offering information on referral resources;	
Poijula S et al 2001 [Finland]	Quasi-experimental (before-after)	Suicide cluster in a school	Crisis intervention consisted of -a first talk-through (FTT) was held during the first day after the suicide; -a psychological debriefing conducted by a trained mental health professional (clinical psychologist) during the following day of FTT;	The number of suicides

Evidence statements

Evidence statement 3.1-suicide

Evidence from an experimental study showed that, following 5 reports of suicide attempts amongst 12-15 year-old students in a school during a 2-month period, a community-based intervention including educational debriefings, individual screening for referral and crisis evaluation developed and implemented in the school (Askland et al 2003) identified no further suicides and suicide attempts coming to the attention of school personnel. Also in a school setting, early crisis intervention and using of first talk-thoughts and psychological debriefing within 2 days following suicide could prevent suicide contagion (Poijula et al 2001). In line with these results, Hacker et al (2008) reported fewer cases of suicide attempts amongst young people aged 10-24 after the development a surveillance system. The committee's confidence in the evidence was low.

Evidence statement 3.2-suicide attempts

Evidence from an observational study (Hacker et al 2008] indicated that timely community or school-based interventions resulted in a reduction in cases of further suicidal behaviour including suicides and suicide attempts although estimated effects were not statistically significant. The committee's confidence in the evidence was very low.

Expert testimony

ET 1: responding to suicide cluster

The expert witness presented the epidemiology of suicide clusters in the UK and provided a background to the Public Health England report “Suicide prevention: identifying and responding to suicide clusters”. The expert noted that suicide clusters historically occurred within a defined geographical area however there has been an increase in the number of clusters developing through social media platforms. The expert outlined the importance of community suicide action plan which included suicide surveillance measure to monitor and review the occurrence of suicides together with responding measures to prevent the contagion. In addition, support should be provided to people who were affected by suicide clusters including first responders.

Recommendations

Preventing suicide clusters

1.8.5 Use information from the action plan and rapid intelligence gathering to identify potential suicide clusters (see recommendations 1.3.1, 1.4.2 and 1.4.3). Ensure the plan is flexible and can be adapted according to which local agencies are likely to spot emerging clusters.

1.8.6 Develop a coordinated approach to mitigate risk of additional suicides. Use Public Health England's Identifying and responding to suicide and contagion.

1.8.7 Develop a standard procedure for reducing or stopping – 'stepping down' – responses to any suspected suicide cluster.

1.8.8 Provide ongoing support for those involved, including people directly bereaved or affected and those who are responding to the situation (see recommendations 1.8.1 to 1.8.4).

Research recommendation

Rationale and impact

Why the committee made the recommendations

Suicide clusters can emerge quickly and unexpectedly. But an expert told the committee that if the right systems are in place then it is possible to reduce the likelihood of further deaths. This was supported by the committee's own experience. The expert also explained to the committee that police and the coroner's office need to notify agencies as soon as possible that a suspected

suicide is being investigated because an inquest to confirm cause of death is usually only held 6 to 12 months after the event. This is too late to prevent new suicides if a cluster is developing.

Based on this information and their own experience, the committee agreed that rapid intelligence sharing was important for the identification and prevention of suicide clusters.. See the recommendations on 'local suicide prevention strategies plans and processes' for more information on using multi-agency partnerships and rapid intelligence gathering in suicide prevention..

Impact of the recommendations on practice

The committee recognised that providing support for people affected by suicide may be cost - effective from a societal perspective, when the costs of productivity loss are taken into account. However, because of the lack of evidence this supposition should be treated with caution.

Improved communication and information sharing between statutory agencies and community organisations may have resource implications such as the costs of staff time, communication, interventions, and meetings associated with multi-agency teams.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The committee noted that suicides or attempted suicides were the most important outcomes for this review question. The committee agreed that these outcomes could be measured at separate time-points depending on the aim of the intervention, to reduce contagion in the short-term and to reduce rate of suicide and attempted suicides in the longer-term. Both of these were regarded as equally important. The committee agreed that any reduction in suicides or suicides attempts would make an important difference in practice.

Other outcomes, suicidal ideation, service uptake and change in knowledge and experience of professionals and partners were not reported in the included studies.

The quality of the evidence

The committee noted the paucity of evidence in this area and the poor quality of the evidence that was available. Only 3 studies met the inclusion criteria for this review. The committee agreed that evidence on interventions to prevent suicide clusters was limited as the occurrence of clusters tends to be circumstantial and sporadic, and as such it is hard to perform research in this area.

The evidence on the effectiveness of interventions responding to suicide clusters was considered to be very weak despite the findings being consistent across studies. All 3 studies found that suicidal events reduced after intervention, however the certainty in results was low as by their nature suicide clusters are spikes in suicide rates and as such there is uncertainty if any reduction in suicides or suicides attempts after the intervention is a demonstration of the effectiveness of the intervention rather than a return to the 'normal' rates of suicide or suicide attempts. The committee also suggested that there is a possibility of publication bias as authors may only submit studies for publication if the intervention demonstrated a positive effect.

With this in mind, the committee agreed to accept expert testimony on the recognition of clusters and best practice points in managing the response to clusters. The committee also made reference to the Public Health England report in 2015 "Identifying and responding to suicide clusters and contagion A practice resource". This report is based on evidence and expert advice on best practice from four countries.

Benefits and harms

Evidence indicated a reduction in the number of suicide and suicide attempts after the introduction of the interventions examined. The committee noted that there were 2 key considerations when evaluating a response to a suicide cluster: one was how to deal with the cluster at the time (prevent contagion), and the other was how to prevent subsequent clusters from occurring.

The evidence in the present review only reported on the shorter-term outcome of preventing immediate suicide contagion. However, the committee suggested that the effectiveness of these interventions in the long-term would be difficult to evaluate because such benefits would be associated with necessary cultural changes to reduce stigma and to increase help-seeking amongst those at risk.

Cost effectiveness and resource use

No health economic evidence was found and this review question was not prioritised for health economic modelling. Possible resource use impacts were:

- Resource impact on health service use – potential for increase in help-seeking behaviours with associated health /social care costs.
- Immediate costs of setting up responses teams (tie in with multi-agency teams)
- Cost of 'real-time' monitoring / surveillance – setting up and maintaining this process

Other factors the committee took into account

In this review, the definition of a suicide cluster was derived from a PHE 2015 report, as defined by 'a series of 3 or more closely grouped deaths which are linked by space or social relationships. In the absence of transparent social connectedness, evidence of space and time linkages are required'. During expert testimony it was noted that although people often refer to 3 or more closely related deaths, 2 or more suicides may be classified as a cluster or contagion if they occur in a specific community or setting and are related through geographical, time or social factors. Furthermore, there may be a spread of related suicide events through social media, which may be connected geographically or internationally but could be difficult to identify.

The committee highlighted a number of suicide clusters in the UK that have been identified by the use of routine data to identify suicide clusters (Jones P et al 2013).

Once an emerging cluster has been identified, the committee emphasised the need for the lead to have a good understanding of the context of the cluster (for example, whether it is in a student population, or in a particular high risk group) as this would assist in response efforts. The committee provided anecdotal evidence that there may be different and conflicting attitudes towards identifying and intervening in an emerging cluster, some may welcome the recognition of the problem whereas others may prefer to refuse to recognise it as a suicide cluster.

The committee also agreed that NICE guideline on "Community engagement: improving health and wellbeing and reducing health inequalities" was a useful resource when responding to a cluster.

The committee commented on the potential negative influence of media reporting on suicide and suicide clusters. They encouraged the NICE technical team to ensure that when reviewing evidence for Research Question 9 (Media reporting of suicide) that any findings relevant to reporting of clusters was fed back to the committee for consideration.

The PHE 2015 report outlines steps that need to be taken at local level to prepare for a suicide cluster andincludes setting up specific multi-agency teams to recognise and intervention in emerging clusters.

The report highlights the need to balance a rapid response with a co-ordinated approach and careful thinking and provides checklists to aid in this. The report also uses evidence and best practice from different countries to put forward potential responses to possible suicide clusters, especially with regards to:

- preventing unhelpful media reporting,
- identifying individuals and groups who may be particularly vulnerable and
- practical interventions to reduce the risk of a spread of suicidal behaviour and
- help for those directly affected by suicide.

Particular attention is paid to addressing suicides and their potential spread in mental health services and schools.

Appendices

Appendix A: Review protocol

Topic 1	**Local approaches to preventing suicide in community and custodial settings**
Component of protocol	Description
Review question	What approaches that respond to 'suicide clusters' are effective and cost effective at preventing suicide? • What components are needed in effective approaches (this will link to reporting of suicide, see Q9)? • Which agencies need to be involved? • What skills, mix and experience of staff is needed? • Which stakeholders need to be involved? • At what points do key actors need to be involved? • Is the timing of key actions important? Definition 'suicide clusters': a series of 3 or more closely grouped deaths which are linked by space or social relationships. In the absence of transparent social connectedness, evidence of space and time linkages are required to define a cluster. In the presence of a strong demonstrated social connection, only temporal significance is required (PHE 2015).
Context and objectives	This review will determine whether approaches to proactively respond to suicide clusters are effective and cost effective at preventing suicide. It will consider what components are present in effective approaches.
Participants/population	Whole population or subgroups. The following local settings/populations will be of particular interest: • School/colleges • Workplaces • Prisons • Virtual communities
Intervention(s)	Interventions to respond to suicide clusters (in time or place)

Topic 1	**Local approaches to preventing suicide in community and custodial settings**
Component of protocol	Description
Comparator(s)/control	Comparators that will be considered are: • Other intervention • Status quo • Time (before and after) or area (i.e. matched city a vs b) comparisons
Outcome(s)	The outcomes that will be considered when assessing the impact on health are: • Suicide rates • Suicide attempts • Reporting of suicide ideation The outcomes that will be considered when assessing help-seeking behaviour: • Service uptake (such as mental health services, helplines, GPs) Other outcomes: • Changes in knowledge, attitude and behaviour of practitioners and partners
Types of studies to be included	Comparative studies including: • Randomised or non-randomised controlled trials • Before and after studies • Cohort studies • Process evaluations. Qualitative studies: • Interviews • Focus groups. Economic studies: • Economic evaluations

Topic 1	**Local approaches to preventing suicide in community and custodial settings**
Component of protocol	Description
	• Cost-utility (cost per QALY) • Cost benefit (i.e. Net benefit) • Cost-effectiveness (Cost per unit of effect) • Cost minimization • Cost-consequence Systematic reviews will only be included if they have a high level of external validity to our research questions. They will also be used as a source for primary evidence. Only full economic analyses will be included – papers reporting costs only will be excluded. Qualitative studies which are linked to included comparative studies will be prioritised, if the volume of studies is high.

For the full protocol see the attached version on the guideline consultation page

Appendix B: Literature search strategies

See separate document attached on the guideline consultation page.

Appendix C: References

1. Askland Kathleen Dawn, Sonnenfeld Nancy, and Crosby Alexander. 2003. "A public health response to a cluster of suicidal behaviors: clinical psychiatry, prevention, and community health". Journal of psychiatric practice 9(3):219-27.

2. Hacker Karen, Collins Jessica, Gross-Young Leni, Almeida Stephanie, and Burke Noreen. 2008. "Coping with youth suicide and overdose: one community's efforts to investigate, intervene, and prevent suicide contagion". Crisis 29(2):86-95.

3. Jones Phillip Gunnell David, Platt Stephen et al 2013. Identifying probable suicide clusters in Wales Using National Mortality Data. Plos One 8(8).

4. Poijula S, Wahlberg K E, and Dyregrov A. 2001. "Adolescent suicide and suicide contagion in three secondary schools". International journal of emergency mental health 3(3):163-8.

5. Public Health England. 2015 Identifying and responding to suicide clusters and contagion: a practice resource.

Appendix D: Excluded studies

No.	Study	Reason for exclusion
1.	Cox Georgina R, Robinson Jo, Williamson Michelle, Lockley Anne, Cheung Yee Tak Derek, and Pirkis Jane. 2012. "Suicide clusters in young people: evidence for the effectiveness of postvention strategies". Crisis 33(4):208-14.	Not a systematic review
2.	Johansson Lars, et al. 2006. "Teenage suicide cluster formation and contagion: implications for primary care". BMC family practice 7:32.	Not an intervention study
3.	Jones P, Gunnell D, Platt S, Scourfield J, Lloyd K, Huxley P, John A, Kamran B, Wells C, and Dennis M. 2013. "Identifying probable suicide clusters in wales using national mortality data.". PloS one 8(8):e71713	Not an intervention study

Appendix E: Evidence tables

E.1 Askland et al 2013

Askland Kathleen Dawn, Sonnenfeld Nancy, and Crosby Alexander. 2003. "A public health response to a cluster of suicidal behaviors: clinical psychiatry, prevention, and community health". Journal of psychiatric practice 9(3):219-27.

Study details

Author/year

Askland et al 2003

Quality score

-

Study type

Experimental

Aim of the study

To develop and implement a community public health response to a suicidal behaviour cluster, including collection of risk factor data in order to prevent further behaviours.

Location and setting

2001 - superintendent's office of a junior- senior high school serving a rural community requested assistance to an apparent increase in suicidal behaviour

Research Parameters

Inclusion criteria

Not reported

Exclusion criteria

Unknown

Method of analysis

Clinicians were recruited by the response coordinator. Psychiatrists and non-psychiatric physicians, licensed clinical psychologists, and licensed social workers from public agencies—federal (1), state (4), county (17)—and the private sector (10) volunteered their time to take part in the training exercises and the response. All licensed clinicians were chosen based on their experience in adolescent mental health services and underwent a 2-hour training session prior to participating. Clinicians, who were blind to the identifying referral source, interviewed all identified students.

The primary outcome was measured using ISR data. Students were

Population / Intervention

Participant numbers

	N students	
Phase I	307	
Phase II	104	
Phase II	39	8 crisis intervention 4 high priority psychiatric services 27 outpatient psychiatric services

Participant characteristics

Phase II screened subjects - 77% knew at least one of the students who had completed suicide in 2000; 48% knew at least one student who had recently attempted suicide; and 53% had been told by a friend that he or she was thinking of committing suicide.

Results

Primary outcomes

Demographic, social, and psychological characteristics of screened students and the relationship between each characteristic and suicidal behaviour outcomes:

		Suicide Ideation*		
Characteristic	**N (% screened)**	**UOR (95% CI)**	**MAOR (95% CI)**	**Suicide Attempt**
Depression	32 (31%)	5.7 (2.2-14.4)	3.4 (1.2-9.5)	3.6 (0.6-22.8)
Poor social behaviour/functioning	49 (47%)	5.6 (2.1–14.7)	3.5 (1.2-10.0)	13.7 (0.7-256.4)
Past suicide attempt	17 (19%)	5.1 (1.7-15.2)		1.3 (0.1-12.4)
Poor social adjustment	38 (37%)	3.6 (1.5-8.9)		2.2 (1.2-400.0)
Substance abuse	18 (17%)	3.3 (1.2-9.4)		1.2 (0.1-11.5)
Past psychiatric treatment	43 (41%)	2.7 (1.1-6.4)		2.2 (0.4-13.8)
Senior high school	59 (57%)	1.3 (0.4-2.4)		3.1 (0.3-29.0)

Length of study

Within three weeks following the suicides in the area, the Coordinating Committee developed a 3 phrase approach

Source of funding

Not reported

asked about recent suicidal ideation and attempts (i.e. "thoughts of killing self" and "tried to kill self" in last 4 weeks.)

Descriptive analyses were conducted first. Next, analyses of association between student characteristics and suicidal behaviour were completed using univariate and multivariate logistic regression to calculate odds ratios and 95% confidence intervals. Each variable found to be predictive of the outcome on univariate analysis was then entered into multivariate analysis. Model testing proceeded by systematic backward elimination, followed by stepwise components for variables with odds ratios of 2.0 or more on univariate analyses, using likelihood ratio chi-squares to measure goodness of fit

Furthermore, 29 (28%) reported current or recent suicidal ideation (i.e., suicidal ideation within the prior 4 weeks), 11 (38%) of these were junior high school students and 18 (62%) were senior high school students. Of the 29 students reporting current or recent suicidal ideation, 5 (17%) reported a suicide attempt during the prior 4 weeks. Senior high school students made four of these attempts

Intervention

The PH response required the collaboration of state and local health-service agencies, school staff, community members, and a cadre of local clinician volunteer.

A three-phase response, including schoolwide educational debriefings, individual screening for referrals, and on-site crisis management, was implemented.

Phase I: Educational debriefings

Voluntary 1.5-hour small group educational debriefing session for students, derived from the Mitchell model of critical incident stress management and led by trained clinicians. Info provided about suicide, suicide prevention, and coping strategies. Students, faculty, staff, and administrators also encouraged to identify students whom they suspected were at high-risk of self-harm judged by certain criteria. Students who met one or more criteria were asked to proceed to Phase II. Parents who had attended an earlier Community Forum were also invited to recommend their children whom they perceived to be at risk.

Phase II: Individual screening for referral

ISRs were conducted by a licensed clinician and consisted of face-to-face interviews using a standardized screening tool developed by combining several psychological instruments,

Friend of suicide completer	50 (48%)	1.0 (0.4-2.4)		1.7 (0.3-10.4
Female	68 (65%)	0.8 (0.3-2.0)		1.3 (0.2-8.0)

*Since only two independent variables predicted suicide attempt and since no student without both of those characteristics made a suicide attempt, multivariable analysis yielded no further information about students making recent suicide attempts

Suicide numbers or attempts (highlighted in conclusion):

As of the submission of this paper (2 years post intervention), no further suicides have occurred in the community and no further suicide attempts have come to the attention of school personnel.

Author's conclusions

Development and implementation of a timely public health response, including elucidation of critical risk factors, might prevent further suicidal behaviours. Another important outcome of this intervention was the successful integration of a large number of practicing clinicians into a public health response. This collaboration benefited the clinicians as well as the intervention.

		including the Diagnostic Interview Schedule for Children (DISC) and 3 domain subsets of the Drug Use Screening Inventory (DUSI) that have been validated in adolescent populations and used in responses to other suicide clusters. A positive screen for depression was defined as a score of 0.45 or above on the DISC. Positive screens for poor school adjustment, poor social adjustment, and problematic substance use patterns were defined as scores above the 90th percentile score for normal subjects on the respective DUSI subset domains. Based upon the screening results, the clinician inter- viewers made a recommendation for each student. The three possibilities were no referral, referral for out-patient mental health services, or referral for immediate crisis evaluation. ***Phase III: Crisis evaluation.*** Phase III consisted of on-site crisis evaluation students felt to be at immediate, high-risk of self- harm. Possible actions included referral for further outpatient services, crisis stabilization services through the mental health services agency, or psychiatric hospitalization. All parents and students were given crisis hotline numbers and instructions to seek assistance at the local emergency department should there be a recurrence of thoughts or behaviours that were of concern.	
Limitations identified by author First, because all critical elements of the response had to be enumerated and developed in a brief crisis period, not all relevant resources were identified nor were all stakeholders able to become involved. PH response was resource intensive—requiring the availability of multiple clinical and administrative staff on short notice. This could limit the capacity of other communities to implement similar response (although was developed within a community of limited resources) True cluster analyses are difficult to conduct. No systematic surveillance system exists for suicidal behaviours and risk factors All findings regarding risk factors pertained only to the subpopulation that was suspected to be at high risk and was screened; therefore, generalizability to this or other school populations might be limited. **Limitations identified by review team** Outcome pertaining to number of suicides reported in the community post intervention was briefly reported in the conclusion section The school had reported 5 suicide 'attempts' previous to the response (reported in background) as opposed to fatal incidents of suicide- may be out of protocol Four additional suicides (2 students, 2 adults) had been reported in the in the community 18 months prior to intervention but limited information available about how they were related			

E.2 Hacker et al 2008

Hacker Karen, Collins Jessica, Gross-Young Leni, Almeida Stephanie, and Burke Noreen. 2008. "Coping with youth suicide and overdose: one community's efforts to investigate, intervene, and prevent suicide contagion". Crisis 29(2):86-95.

Study details	Research Parameters	Population / Intervention	Results
Author/year Hacker et al 2008 **Quality score** - **Study type** Observational **Aim of the study** To describe the process that the community employed to investigate, intervene and prevent suicide contagion. To assess the impact of the above process on suicide and overdose rates. (NB only suicide related, and fatal overdose data are presented here). **Location and setting** Somerville MA ,USA **Length of study** 2002 – 2005 **Source of funding**	**Inclusion criteria** **N/A** **Exclusion criteria** **N/A** **Method of analysis** No statistical analyses conducted Basic descriptive pre-post intervention data (Ns and %) presented on suicide thoughts and behaviours from two sources: 1.High–school teen health surveys based on Centre for Disease Control Youth Risk Behaviour Survey. 2. 911 dispatch calls for overdoses and suicide attempts from Somerville Fire Department. 3.Death Certificate Data	**Participant numbers** Residents of Somerville MA, USA (N= 77,487) a town with long-standing substance abuse problems (especially oxycodone abuse). **Participant characteristics** Residents aged 10-24 years (N not reported). **Intervention** Background: Recognition of a possible cluster of suicide and overdose related deaths in 2001. 2002 Institute of Community Health (ICH –a local research organisation) high-school mental health and substance abuse needs assessment concludes existing services do not meet demonstrated needs of school pupils. Somerville Cares About Prevention (SCAP (existing coalition of diverse stakeholders – comm. Leaders, agencies, activists) lead community response to suicides and overdoses (ODs). Following election of a new mayor SCAP receive support to convince city a public health crisis is occurring. Following CDC (1988) recommendations citywide response is a community coalition co-ordinated by SCAP and ICH. Two Taskforces convened: Mayors Suicide and Mental Health Taskforce, and Mayors Opiate Taskforce. They engage with citywide departmental leadership (schools, police, fire) and community mental health partners. Their aim was to investigate	**Primary outcomes** Number of suicides (Death certificate data) Year / N suicides / Lethal overdoses 2000 / 2 / 0 2001 / 1 / 1 2002 / 3 / 0 2003 / 0 / 3 2004 / 4 / 1 2005* / 1 / 1 2006 / 0 / 0 2007 / 1 / 0 Yearly suicide attempts among youth aged 10-24 years.(Data from 911 Fire calls). Year (January – December) / N suicide attempts 2004 / 20 2005 / 9 2006 / 5 2007 / 4

<table>
<tr>
<td>No funding was reported as being obtained.</td>
<td></td>
<td>crisis and plan solutions using a multi-component strategy:

Develop surveillance system (confirm suicides/OD are up and links/contagion). No existing surveillance system inplace – so use following:

a. City Death Certs: Certs from Jan 2000-Dec 2005:

b. State Mortality Data: Somerville more than twice statewide suicide rates on 2000-2005 – 9.7/100,000 v 4.27 /100,000. Also an increase from 1994-1999 6.04/100,000. Not statistical proof of cluster but suggests elevated activity.

c. Hospital Discharge Data: 1994-2006 for 16-24 year olds. In 2004 shows hospital discharges exceeded state rates (130.5/100,000 v 76.4 per 100,000) for 1st time since 1999.

d. Teen survey data (2002 – 2006

e. 911 Fire call data:)

Determine contagion and identify at risk groups

Need to establish relationships between known victims. Member of coalition need to talk to family members and friends. Family did not want to talk to MH professionals. Several SCAP members with relationships with impacted families gather information. Leadership team of coalition members (MH professionals, schools, police, parents) meet weekly to review and map the relationships Contagion confirmed.</td>
<td>High-school student suicidal thoughts and behaviours in previous 12 months (data from Somerville High School health surveys).
<table>
<tr><th></th><th>2002
%</th><th>2004
%</th><th>2006
%</th></tr>
<tr><td>Seriously considered suicide

(n=1466 responses)</td><td>21</td><td>14</td><td>14</td></tr>
<tr><td>Planned suicide

(n=1382 responses)</td><td>20</td><td>12</td><td>9</td></tr>
<tr><td>Attempted suicide

(n=1003 responded)</td><td>14</td><td>7</td><td>6</td></tr>
</table>
Author’s conclusions

Youth overdose and suicide activity subsided in May 2005.

‘According to death certificate data, Somerville has experienced only one suicide and no fatal overdoses in 10-24 year olds since May 2005)’.*

911 data continued to demonstrate a consistent annual pattern of in nonlethal suicide attempts and overdoses.

The High School Health Survey shows decreasing rates of responses on suicide related questions.

Key’ ingredients’ reported by authors:
1. Level of community readiness and coordination as evidenced by an existing strong coalition. SCAP provided and infrastructure for action, a community forum and activists with extensive ties to the community.
2. Political leadership was present. New mayor embraced issues and brought resources to bear for suicide and overdose prevention.</td>
</tr>
</table>

		Leadership group defined circles of influence and able to ID those most vulnerable. Reach out to those youth at risk and help link to care. *Intervention steps (ongoing 2003-2005)* Mayors Suicide and MH TF strategically plan and implement series of interventions to prevent youth suicide and promote emotional wellbeing: Support services: a. In early stages of crisis a Trauma Response Network established. Community member include parents, MH professionals and teachers closest to YP impacted trained in post-traumatic stress management. They investigated incidents, attended wakes, funerals, and responded to youth suffering. (now 100 plus members who have done 20 interventions). b. Community wide awareness and prevention activities: eg candle-light vigils (most related to substance abuse) c. Schools. MH agencies and TRN provide crisis counselling to students and parents. School MH services expanded. d. Coalition recognise need for postvention for friends and family members. e. State funding obtained by local community MH agency to provide. Youth Development and Teen leadership Media and Education Responses	3. Relationship with a community-based research organisation (ICH) provided needed access to data. 4. Willingness of range of community agencies and individuals to provide voluntary resources to solve a community problem. 5. Identifying the contagious nature of the crisis, fuelled a heightened community response and mobilised the various partners. *Data in Fig 1 report 1 suicide in 2007.
Limitations identified by author Data suggest that the interventions had a favourable impact – however it is impossible to know if there were other factors responsible for the decline in suicide and overdose activity. It is impossible to determine the impact of any one individual activity on alleviating the crisis			

Limitations identified by review team
Review team agree with limitations identified by the authors. Data on participants limited – no information on numbers of participants

E.3 Poijula et al 2001

Poijula S, Wahlberg K E, and Dyregrov A. 2001. "Adolescent suicide and suicide contagion in three secondary schools". International journal of emergency mental health 3(3):163-8.

Study details	**Research Parameters**	**Population / Intervention**	**Results**
Author/year Poijula et al 2001 **Study type** Quasi-experimental **Aim of the study** To investigate crisis interventions based on first talk-through and psychological debriefing in three schools 'focusing on relation between crisis intervention and suicide contagion'. Hypotheses: 1) After a suicide of a student there will be an increased risk of other suicides at the school. 2) Appropriate intervention will reduce the risk of suicide contagion. **Location and setting** 3 secondary schools in Oulu area of Northern Finland. All three schools were located in rural areas. Geographically however they were not neighbouring communities	**Inclusion criteria** Classmates of students who had died by suicide. **Exclusion criteria** N/A **Method of analysis** Incidence of new suicides in the three schools followed for a 4 year period. Poisson distribution calculated for determining if the number of suicides was increased beyond chance.	**Participant numbers** N=89 School A: n=31 participants (of 270 school population). School B: n= 32 participants (of 346 school population). School C: n= 26 participants (of 585 school population). **Participant characteristics** Secondary school students who were homeroom classmates of those who died by suicide. Schools all located in small rural communities. Participants were aged 13-17 and had equal gender distribution. School / Female (n) / Male (n) A / 16 / 15 B / 17 / 15 C / 10 / 16 **Intervention** *Background:* During school year 1995-1996 six secondary school students died by suicide.	**Primary outcomes** *Suicide contagion* Hypothesis 1 confirmed. School A: Two suicides occurred after the first. Assuming a rate of 21.6 per 100,000 students aged 15-19 per year (Statistics Finland 1998). The observed rate was 62.6 times the expected rate for the school, and 617.3 times expected in the two homeroom classrooms. School B: Two suicides occurred in one month. Assuming a rate of 1.9 per 100,000 students aged 10-14 per year (Statistics Finland 1998). The observed rate was 307.8 times the expected rate for boys in the school, and 3508.8 times for homeroom class boys. For girls the observed rate is 317.5 times that for the whole school and 3268 for homeroom classes. Using Poisson distribution the number of suicides that occurred in the schools in one year were increased beyond chance ($p < 0.001$). *Intervention and Suicide Contagion* In cases III, V and VI the intervention of the school was adequate (FTT and PD).

Length of study 1995-1999 **Source of funding** No funding was reported as being obtained.		*School A:* August 1995 case I (male, aged 17). September 1995 case II (male 15, friend of first case). January 1996 case III (male 15, friend of case II). *School B:* August 1995 case IV (female, 14). October 1995 case V (male, 14 acquaintance of case IV). *School C:* January 1996 case VI (male 13). Methods: 1 self-immolation, 5 firearms **Note: Only school A fits our protocol for suicide clusters of '3 or more suicides'** This study examined the use and impact of existing crisis interventions in the three schools. The researchers were not responsible for creating or providing interventions for evaluation. In this study the schools' crisis interventions following suicide are described and compared. Crisis intervention methods analysed by the authors were: first talk-through (FTT), and psychological debriefings (DB). *First talk-through.* FTT or defusing consists of a meeting of those who were involved in or experienced a critical event. Conversational in tone, it takes place on the same day as the event or within first 8 hours. Usually focussed on classmates. Organised at school after informing all students of death. Provider can be a teacher, school-nurse and mental health professional. Adults lead conversation where facts are shared and mutual support activated. *Psychological debriefing (PD)* PD is a helpers' group discussion of a traumatic events designed to mitigate its' impact.. Conducted by trained mental health (MH) professional or teacher. At school PD is a group discussion in class, 1-2 lessons long. IF lead by teacher recommended that a MH professional co-leads. Phases of debriefing are introduction, facts, reactions, information, and disclosure.	In schools and classes where a FTT and PD were conducted by a MH professional no new suicides appeared during the 4 year follow-up period. In School B teachers conducted a classroom meeting in all but one 8th grade class. A second suicide occurred 2 months later by a student whose class had not had the classroom meeting **Author's conclusions** Both hypotheses were supported. ' FTT and PD by a trained MH professional seemed to be a factor in inhibiting new suicides.' 'Preliminary findings show that 'early crisis intervention and use of FTTs and PD do not cause suicide contagion, but lack of interventions may do so.'

	FTT	DB duration, providers	Timing of DB after suicide
School A			
Case I	None	None	None
Case II	None	None	None
Case III	First day	Debriefing, 2 hours, MH professional	2 days,
School B			
Case IV	None	Classroom meeting, exclusion of 1 class, 1 hour, teacher	4 days
Case V	First day	Debriefing, 1 hour, MH professional	1 week
School C			
Case IV	First day	Debriefing, 1 hour, MH professional	2 days

Limitations identified by author
Research is based on a small number of cases, not optimal for statistical analysis, lacking sufficient statistical power.
Although problematic the natural research design was a way of developing new knowledge and the findings serves as a hypothesis for further testing.
Conclusions are therefore tentative and should lead to more research on preventative measures in this area.
Limitations identified by review team
Review team agree with above limitations identified by the authors, and caution should be applied in interpreting these results.
The three schools were in the same area of Oulu, however it was mentioned in the text that they were not from neighbouring communities so questionable if they were classed as 'suicide clusters' together. To fit our protocol we may only consider School A where there were 3 suicides that took place over a short period of time
No details of the distance between each school location

Appendix F:GRADE tables

F.1 Suicides

Quality assessment							Sample size		Effect		Committee confidence
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	After	Before	Relative risk ratio (RR) (95% CI)	Absolute difference	
Number of suicide cases following intervention (debriefing after 2 days of a suicide case)											
1 (Poijula et al 2001)	Quasi-experimental	Serious[1]	Not applicable (NA)	No serious[2]	Serious[3]	270 students in a school	No new suicides following intervention (Aug95 to Aug1999)	3 suicide cases before intervention (Aug95 to Jan 96);	-	3 fewer	LOW
Number of suicide cases following a public health response											
1 (Askland et al 2003)	Quasi-experimental	Serious[4]	NA	No serious[2]	Serious[3]	311 students	No further suicide and suicide attempts occurred after the intervention	2 students suicides and 2 adult suicides had occurred during previous 18 months;	-	4 fewer	LOW

1. Characteristics of participants and their exposures to the interventions were not reported in the study
2. Interventions, population and outcomes are in line with review protocol
3. 95% CI of the effect around point estimate cannot be estimated due to a lack of data reported in the study
4. Concerning over accuracy data reporting/recording

F.2 Suicide attempts

Quality assessment							Number of suicide attempts		Effect		Committee confidence
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	After (year 2007)	Before (year 2004)	Relative risk ratio (RR) (95% CI)	Absolute difference	
Reduction in the number of suicide attempts amongst added 10-24 (year 2007 vs year 2004), surveillance system											
1 (Hacker et al 2008)	Observational	Serious[1]	NA	No serious[2]	Serious[3]	-	1	4	-	3 fewer	VERY LOW

1. Accuracy of surveillance data recorded
2. Interventions, population and outcomes are in line with review protocol
3. Total number of populations aged 10-24 years not reported in the study, the 95%CI of estimated effect cannot be calculated

Appendix G: Expert testimony

Section A:	
Name:	Keith Hawton
Role:	Director, Centre for suicide research Consultant psychiatrist
Institution/Organisation (where applicable): **Contact information:**	University of Oxford Oxford Health NHS Foundation Trust
Guideline title:	Preventing suicide in community and custodial settings
Guideline Committee:	PHAC A
Subject of expert testimony:	Responding to suicide clusters
Evidence gaps or uncertainties:	Lack of information on preparing for suicide clusters

Section B:
Summary testimony:
Public Health England has produced a report on suicide clusters for people with responsibility for suicide prevention in local authorities and their partner agencies. It is important that plans for such occurrences are prepared in advance, to ensure a measured and effective response. Authorities need to remain vigilant for the sorts of suicidal behaviour that might lead to contagion, and put strategies in place to forestall this. The steps that need to be taken at local level to prepare for a suicide cluster were described. These necessitate the development of a community action plan, including suicide surveillance group to review local occurrence of suicides and self-harm, together with a suicide response team to deliver the plan.

It is important to balance rapidity of response with careful thinking, so the PHE report includes a series of checklist to aid analysis.

Identifying possible suicide clusters can be difficult. Early indicators are described, together with the need to carefully establish the facts and avoid premature and possibly unhelpful responses. Suggested responses to possible suicide clusters, especially preventing unhelpful media reporting, identification of individuals and groups who may be particularly vulnerable and practical interventions to reduce the risk of a spread of suicidal behaviour. It also covers help for those directly affected by suicide.

In a group vulnerable to imitation it is crucial to take prevention measures after an initial suicide. Particular attention is paid to addressing suicides and their potential spread in mental health services and schools.

In this age of instant information sharing it is possible for a cluster to be geographically dispersed. Local groups will need to alert other neighbouring local authorities if this looks possible.

The issue of when and how to wind down a response to a suicide cluster, with an emphasis on the fact that localities which have had clusters may be at heightened risk of further clusters.

Finally, best practice is provided on evaluation of responses to a cluster and using the experience to improve further suicide prevention measures.

References to other work or publications to support your testimony' (if applicable):

Public Health England. Identifying and responding to suicide clusters and contagion. 2015 (https://www.gov.uk/government/publications/suicide-prevention-identifying-and-responding-to-suicide-clusters)