

## Preventing suicide in community and custodial settings : local plans and audit for suicide prevention

[Evidence review for– local suicide plans]

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by Public Health Internal Guideline  
Development team*



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# 1 Local suicide plans

## 2 Introduction

3 This review provides evidence from studies of suicide prevention on the topic of local  
4 suicide plans. The aim of this review is to determine whether these plans are  
5 effective and cost effective at preventing suicide, and to examine what components  
6 are present in effective plans. The practice of 'suicide audit' in the review refers to the  
7 systematic collection of local data on suicides in order to learn lessons and inform  
8 local suicide prevention plans.

## 9 Review question

- 10 Are local plans for suicide prevention effective and cost effective at preventing  
11 suicide?
- 12 • What components are needed in effective plans?
  - 13 • Are local audits needed to support local suicide prevention plans? What  
14 information is needed?
  - 15 • Which agencies need to be involved?

## 16 PICO table

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

19 **Table 1: PICO inclusion criteria for the review question of local suicide plans.**

<b>Population</b>	Whole population or subgroups
<b>Interventions</b>	<ul style="list-style-type: none"><li>• Multi-component suicide prevention plans (including suicide audits)</li></ul>
<b>Comparator</b>	<ul style="list-style-type: none"><li>• Other intervention</li><li>• Status quo</li><li>• Time (before and after) or area (i.e. matched city a vs b) comparisons</li></ul>
<b>Outcomes</b>	<ul style="list-style-type: none"><li>• Suicide rates</li><li>• Suicide attempts</li><li>• Reporting of suicide ideation</li></ul> <p>The outcomes that will be considered when assessing help-seeking behaviour:</p> <ul style="list-style-type: none"><li>• Service uptake (such as mental health services, helplines, GPs)</li></ul> <p>Other outcomes:</p> <ul style="list-style-type: none"><li>• Improved surveillance-data and local intelligence</li><li>• Changes in knowledge, attitude and behaviour of practitioners and partners</li><li>• Views and experiences of professionals and the public</li></ul>

## 20 Public Health evidence

21 In total, 19,228 references were identified through the systematic search. References  
22 were screened on their titles and abstracts. 13 references reporting on 12 studies

1 that were potentially relevant to this question were requested. Of these 5 studies  
2 (with 6 references) were included: two quantitative studies and three qualitative  
3 studies (see Appendix E: for the evidence tables) and 7 studies were excluded. For  
4 the list of excluded studies with reasons for exclusion see Appendix D:

## 5 Findings

### 6 Summary of quantitative studies included in the evidence review of local 7 suicide plan

8 2 quantitative studies provided evidence on the effectiveness of local suicide plans.  
9 Table 2 presents a summary of these two studies.

10

11 **Table 2: Included quantitative studies**

Study [country]	Design	Population	Intervention	Comparator	Outcome
Cwik et al 2016/2014 [USA]	Observational	White Mountain Apache of Arizona	Celebrating life surveillance system (introduced 2001)	Baseline (2001-2006) vs after the intervention period (2007-2012)	• Suicide rate
Shankar et al 2010 [UK]	Audit	Residents living in Cornwall	Suicide reporting/recording	Local data vs national data	• Number of suicides recorded

### 12 Summary of qualitative studies included in the evidence review of local suicide 13 plans

14 3 qualitative studies were included in this review. The quality of 2 UK studies was  
15 rated as [-] and one USA study was rated as [+]. Table 3 presents a summary of the  
16 these studies with themes as reported by study authors.

17 **Table 3: Included qualitative studies**

Study [country]	Study Design	Population	Intervention	Themes
McElroy and Chappel 2006 [UK]	Qualitative (semi-structured interviews)	Interviews (n = 12) with local health service lead in suicide prevention, a lead contributor to work relating to suicide prevention locally, persons who had knowledge of local policy or literature relating to suicide prevention	Suicide prevention	Information perceived to be useful in suicide prevention; Availability of information to support suicide prevention; Barriers and facilitators to using information

Study [country]	Study Design	Population	Intervention	Themes
Owens et al 2014 [UK]	Mixed method (email survey)	Directors of Public Health in all 153 Primary care trusts in England	Audit	Access to different data sources including GPs, mental health trust and acute trust; Frequency of audit; Suicide audit group to oversee data collection
Stein 2010 [USA]	Qualitative (semi-structured interviews)	Semi-structured interviews (n = 42) with school personnel from 11 high schools	Youth suicide prevention programme	School organisation and use of recourse; School leadership support and on-campus resources' District-level training and support

## 1 Economic evidence

2 No economic study met inclusion criteria of the review.

## 3 Evidence statements

### 4 Quantitative evidence

#### 5 Evidence statement 2.1-suicide rate

6 Evidence from one observational study showed a reduction in the suicide rate after  
7 the introduction of suicide surveillance and prevention programme. The suicide rate  
8 decreased from 45.5 per 100,000 to 30.3 per 100,000 among people who were part  
9 of the White Mountain Apache Tribe (relative risk=0.57, [95%CI 0.17 to 1.95];  
10 absolute difference=15.2 fewer per 100,000). This reduction was not statistically  
11 significant. The committee's confidence in the evidence was low.

#### 12 Evidence statement 2.2-suicide attempts

13 Evidence from one observational study showed a reduction in the suicide attempt  
14 rate of after the introduction of suicide surveillance and prevention programme. The  
15 rates decreased from 13.5 per 1,000 to 7.7 per 1,000 annually among people who  
16 were part of the White Mountain Apache Tribe (relative risk=0.57, [95%CI 0.46 to  
17 0.70]; absolute difference=5.8 fewer per 1,000). This reduction was statistically  
18 significant. The committee's confidence in the evidence was moderate

#### 19 Evidence statement 2.3-suicide data recording<sup>1</sup>

20 Evidence from an audit study showed differences in reported numbers of suicide and  
21 open verdicts by the Coroner and the Office of National Statistics (ONS). The number  
22 of suicides reported for each year between 2000 and 2002 by the Coroners in  
23 Cornwall were 44, 36 and 41 and 41, 35 and 41 by the ONS respectively. The  
24 number of open verdicts reported by the Coroners in Cornwall for the same years  
25 were 21, 33 and 43 in year and were 11, 24 and 26 by the ONS respectively. The  
26 committee's confidence in the evidence was very low.

<sup>1</sup> The outcome is not listed in GRADE, as this is a descriptive study reporting the number of suicides and open verdicts recorded by different sources.

## 1 **Qualitative evidence**

### 2 ***Evidence statement 2.4- suicide data collection and audit***

3 Evidence from one qualitative study and one mixed-method study reported that there  
4 were barriers to data collection, including problems when collecting data from  
5 coroners, general practitioners and local healthcare trusts. Coroners were identified  
6 as key sources of information and data but there were concerns about engagement  
7 and access allowed to local partners, the quality of the data and the lack of  
8 standardised approach to collection and reporting. Furthermore, protocols for  
9 information sharing were reported to be under-developed or absent by some  
10 participants. Participants in the studies highlighted the difficulty of making sense of  
11 local data and assessing trends, due to small numbers and lack of meaningful  
12 comparators.

13 Where data collection was undertaken to implement change it was considered to be  
14 of principal value to support the identification of groups who are high risk of suicide,  
15 to identify measures to restrict access to means and to clarify the need for local  
16 services and support. The committee's confidence in the evidence was low.

### 17 ***Evidence statement 2.5- suicide prevention plans***

18 Evidence from one qualitative study reported that having plans with explicit  
19 procedures and protocols could improve the implementation of school-based suicide  
20 prevention (Stein et al 2010). This study also reported that a lack of resources for  
21 audit and implementation could hinder the process of suicide prevention planning but  
22 over a third of audited PCTs could not identify any actions taken on the basis of audit  
23 findings (Owens et al 2014).

24 Evidence indicated that a combination of national, regional and local data was  
25 appropriate, and local data were seen as "information for action" as they allowed  
26 local agencies to be more responsive to specific local issues and neighbours  
27 (McElroy and Chappel 2006). The committee's confidence in the evidence was low.

## 28 **Recommendations**

29  
30 1.3.1 Multi-agency partnerships in the community or in a custodial or detention  
31 setting should develop a plan to implement the suicide prevention strategy.

32 Include processes to:

- 33 • Collect, analyse and interpret local data to determine local  
34 patterns of attempted suicide and suicide (see recommendations  
35 1.4.1 and 1.4.2).
- 36 • Compare local patterns against national trends.
- 37 • Share data between stakeholders so that they can identify local  
38 characteristics and needs.

39 1.3.2 Implement the plan based on interpretation of routinely collected data.



1 1.3.3 Multi-agency partnerships in the community should audit the data  
2 collected (see recommendations 1.4.1 and 1.4.2) and use the results to  
3 improve the local action plan.

4 1.3.4 Multi-agency partnerships in a custodial or detention settings should  
5 audit the data collected (see recommendations 1.4.1 and 1.4.3) and use the  
6 results to improve the local action plan.

7 See Public Health England's Local suicide prevention planning: a practice  
8 resource.

9  
10

## 11 **Research recommendations**

### 12 **1. What is effectiveness and cost-effectiveness of routine monitoring for** 13 **suicide prevention?**

<b>Criterion</b>	<b>Explanation</b>
Population	People in the community who are at risk of suicide
Intervention	Routine monitoring
Comparator	Usual care or no intervention
Outcomes	Primary outcomes to include suicide-related outcomes (Suicides, attempted suicides and suicidal ideation) Secondary outcomes, to include mental health (for example, self-rated depression), service use and costs
Study design	Study designs could include cluster RCTs or other types of evaluation with the purpose of ascertaining the effectiveness and cost-effectiveness of routine monitoring at reducing suicide rates (primary outcome). It will also be important to gain public and staff feedback as part of any study so a mixed methods approach to include qualitative elements may also be appropriate.
Timeframe	Studies would require sufficient follow up time to capture changes in suicide rates (ideally 12 months)

14

### 15 **2. What data should be collected as part of a suicide audit and what is the** 16 **optimal frequency of data collection?**

<b>Criterion</b>	<b>Explanation</b>
Population	People in the community who are at risk of suicide
Intervention	Multi-component suicide prevention plans (such as suicide audits)

Comparator	Local data vs national data
Outcomes	Number of suicides recorded Qualitative outcomes may include: information perceived to be useful in suicide prevention; availability of information to support suicide prevention; barriers and facilitators to using information
Study design	Audits. It will also be important to gain public and staff feedback as part of any studies so a mixed methods approach to included qualitative elements may also be appropriate.
Timeframe	Studies would require sufficient follow up time to capture changes in suicide rates (ideally 12 months)

1

## 2 Rationale and impact

### 3 Why the committee made the recommendations

4

### 5 Impact of the recommendations on practice

6

### 7 The committee's discussion of the evidence

#### 8 Interpreting the evidence

#### 9 *The outcomes that matter most*

10 The committee considered the relative importance of the outcomes and agreed that  
11 changes in the suicide rate and suicide attempt rate were the most important  
12 outcomes as any reduction in suicides and suicide attempts would make an  
13 important difference to the individual and wider community.

14 Outcomes that reported the views and experiences of stakeholders involved in  
15 developing and implementing local suicide plans or suicide audits were deemed to be  
16 relevant but less important for the review. In addition, suicide data recording was a  
17 post-hoc additional outcome considered by the committee. Data recording was  
18 considered useful to enable an understanding of the consistency in data depending  
19 on source. The committee acknowledged this was a useful parameter reflecting how  
20 well suicide information was captured local and nationally, and indicated that  
21 discrepancy in suicide data reporting has been recognised as a problem in current  
22 practice.

23 Other outcomes such as suicidal ideation, service uptake and change in knowledge  
24 of professionals and relevant stakeholders were not reported in the included studies.

#### 25 *The quality of the evidence*

26 The committee noted that all studies were observational studies with only one UK  
27 study. The certainty of evidence was considered as 'moderate' to 'low', with concerns  
28 around the accuracy of data recording/reporting on suicide and suicide attempts and  
29 the indirectness of populations targeted in the studies (such as Native American  
30 population) which had limited generalisability to the UK general population.

1 There were 3 qualitative studies (2 from the UK) exploring the views and experiences  
2 of Directors of Public Health in England and from people involved in using local  
3 suicide data to inform suicide prevention plans. Overall, the confidence of evidence  
4 for themes reported in these studies was low. Moderate concerns regarding study  
5 methodology including poor sampling strategies, poor reporting of the method and  
6 finally of the methods used for data analysis. Nevertheless, the committee noted that  
7 evidence from these qualitative studies was applicable to the context of the review  
8 and provided an overview of current suicide prevention plans in the UK.

## 9 ***Benefits and harms***

10 The committee highlighted that the included studies focused on the use of data  
11 collected by surveillance system or audit, but there was limited evidence on the  
12 effectiveness of local suicide plans. Therefore, based on personal experience  
13 members of the committee discussed the use of local data in suicide prevention. The  
14 committee noted two main benefits of using local data: firstly local data collection was  
15 considered to contextualise suicide (i.e. demographics of population groups, common  
16 suicide methods, and high frequent suicide sites which in turn would support the  
17 collection of important information such as high risk groups that may not routinely  
18 recorded in national databases). The committee acknowledged that a range of  
19 routinely collected national data relating to suicide were available, such as Public  
20 Health England Fingertips and that these datasets were valuable resources. It was  
21 noted that they could be used as a reference to provide an overview of suicide  
22 incidence and vital information about risk factors nationally. But also to benchmark  
23 against regions across England in order to identify any improvements that were  
24 needed for developing suicide prevention plans that work better for local populations.

25 Secondly, the committee noted that information obtained from different sources  
26 within the local area provided a breadth of information which would facilitate timely  
27 responses to any emerging situations. In practice, different data sources were often  
28 used in parallel when planning suicide prevention strategies, but how data are  
29 collected and stored may vary with implications for optimal use of the data. For  
30 example, data collected through a local audit may be limited but the key aim of  
31 collecting it is to develop an understanding of local suicide patterns and to identify  
32 local sites with a high frequency of suicides to help the development of local suicide  
33 plans.

34 In regard to custodial and detention settings, the committee noted a potential benefit  
35 of using data from different sources (different prisons/ detention centres) as a bench-  
36 making exercise to evaluate suicide prevention strategies or plans amongst prisons  
37 with similar profiles to identify any area that needs improvement. Therefore, the  
38 committee agreed that having access to data from different local data sources was  
39 considered important to identify suspected suicides and to engage proactively with  
40 people who may need support.

41 The committee acknowledged that periodic audit (over a period of 3 years) was a  
42 reasonable time period in order to inform local suicide prevention plans.

43 Local data was considered to have an important role but such data may have  
44 limitations in terms of accuracy. Currently local data is largely collected by coroners  
45 who record a range of information however some useful information such as  
46 demographics (i.e. ethnicity) are not included. The committee recommended that  
47 information from other sources such as the police and health services need to be  
48 collected to supplement coroners' information.

1 **Cost effectiveness and resource use**

2 No health economic evidence was found and this review question was not prioritised  
3 for health economic modelling. However, the committee noted that the key  
4 uncertainty in this question was around the resource for local data collection on  
5 routine basis, as this would be likely to impact on the development and  
6 implementation of suicide prevention.

7 **Other factors the committee took into account**

8 The committee agreed that data related to suicides ought to be collected in each  
9 local area and that this data could be used to develop local suicide prevention  
10 plans/strategies. In addition, the committee highlighted the importance of using  
11 trained and appropriate staff to analyse and make best use of information available,  
12 as in practice. The committee noted that the analysis of local data could be difficult  
13 therefore those who were engaged in this would need a great deal of support.

14  
15

# 1 Appendices

## 2 Appendix A: Review protocols

Topic 1	Local approaches to preventing suicide in community and custodial settings
Component of protocol	Description
<b>Review question 2</b>	<p>Are local plans for suicide prevention effective and cost effective at preventing suicide?</p> <ul style="list-style-type: none"> <li>a. What components are needed in effective plans?</li> <li>a. Are local audits needed to support local suicide prevention plans? What information is needed?</li> <li>b. Which agencies need to be involved?</li> </ul>
Context and objectives	<p>Most local authorities do not have suicide action plan in place.</p> <p>This review will determine whether action plans are effective and cost effective at preventing suicide. It will consider what components are present in effective plans.</p>
Participants/population	Whole population or subgroups.
Intervention(s)	<ul style="list-style-type: none"> <li>• Multi-component suicide prevention plans (including suicide audits)</li> </ul>
Comparator(s)/control	<p>Comparators that will be considered are:</p> <ul style="list-style-type: none"> <li>• Other intervention</li> <li>• Status quo</li> <li>• Time (before and after) or area (i.e. matched city a vs b) comparisons</li> </ul>
Outcome(s)	<p>The outcomes that will be considered when assessing the impact on health are:</p> <ul style="list-style-type: none"> <li>• Suicide rates</li> <li>• Suicide attempts</li> <li>• Reporting of suicide ideation</li> </ul> <p>The outcomes that will be considered when assessing help-seeking behaviour:</p>

Topic 1	Local approaches to preventing suicide in community and custodial settings
Component of protocol	Description
	<ul style="list-style-type: none"> <li>• Service uptake (such as mental health services, helplines, GPs)</li> </ul> <p>Other outcomes:</p> <ul style="list-style-type: none"> <li>• Improved surveillance - data and local intelligence</li> <li>• Changes in knowledge, attitude and behaviour of practitioners and partners</li> <li>• Views and experiences of professionals and the public.</li> </ul>
Types of studies to be included	<p>Comparative studies including:</p> <ul style="list-style-type: none"> <li>• Randomised or non-randomised controlled trials</li> <li>• Before and after studies</li> <li>• Cohort studies</li> <li>• Process evaluation</li> </ul> <p>Qualitative studies:</p> <ul style="list-style-type: none"> <li>• Interviews</li> <li>• Focus groups</li> </ul> <p>Economic studies:</p> <ul style="list-style-type: none"> <li>• Economic evaluations</li> <li>• Cost-utility (cost per QALY)</li> <li>• Cost benefit (i.e. Net benefit)</li> <li>• Cost-effectiveness (Cost per unit of effect)</li> <li>• Cost minimization</li> <li>• Cost-consequence</li> </ul> <p>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.</p> <p>Only full economic analyses will be included – papers reporting costs only will be excluded.</p>

Topic 1	Local approaches to preventing suicide in community and custodial settings
Component of protocol	Description
	<p>Qualitative studies which are linked to included comparative studies will be prioritised, if the volume of studies is high.</p> <p>Note: if there is limited evidence to answer the question 'Are local plans for suicide prevention effective and cost effective at preventing suicide?' a thematic analysis of recent local authority plans will be undertaken to identify key components and approaches.</p>

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

## 2 **Appendix B: Literature search** 3 **strategies**

4 See separate document attached on the guideline consultation page

## 5 **Appendix C: References**

6 Cwik Mary F, Tingey Lauren, Maschino Alexandra, Goklish Novalene, Larzelere-  
7 Hinton Francene, Walkup John, and Barlow Allison (2016) Decreases in Suicide  
8 Deaths and Attempts Linked to the White Mountain Apache Suicide Surveillance and  
9 Prevention System, 2001-2012. American journal of public health 106(12), 2183-  
10 2189

11 Cwik Mary F, Barlow Allison, Goklish Novalene, Larzelere-Hinton Francene, Tingey  
12 Lauren, Craig Mariddie, Lupe Ronnie, and Walkup John (2014) Community-based  
13 surveillance and case management for suicide prevention: an American Indian  
14 tribal initiated system. American journal of public health 104 Suppl 3, e18-23

15 Mc Elroy Helen, and David Chappel (2006) Preventing suicide and self-harm: how  
16 useful are the data currently available to those planning and providing interventions?.  
17 Journal of Public Mental Health 5(2), 20-26

18 Owens C, Roberts S, and Taylor J (2014) Utility of local suicide data for informing  
19 local and national suicide prevention strategies. Public health 128(5), 424-9

20 Shankar Rohit, Mascas Alin, Laugharne Richard, Wilkinson Ellen, and O'Muirthe  
21 Barry (2010) A comparison of suicide and undetermined deaths in Cornwall across  
22 national and local agencies. Medicine, science, and and the law 50(1), 19-21

23 Stein Bradley D, Kataoka Sheryl H, Hamilton Alison B, Schultz Dana, Ryan Gery,  
24 Vona Pamela, and Wong Marleen (2010) School personnel perspectives on their  
25 school's implementation of a school-based suicide prevention program. The journal  
26 of behavioral health services & research 37(3), 338-49

27

28

## 1 Appendix D: Excluded studies

No.	Study	Reason for exclusion
1.	Ahmedani Brian K, Coffey Justin, and Coffey C Edward (2013) Collecting mortality data to drive real-time improvement in suicide prevention. The American journal of managed care 19(11), e386-90	No outcome of interest
2.	Cwik Mary PhD (2016) 1.3 DECREASE IN SUICIDE DEATHS AND ATTEMPTS LINKED TO THE WHITE MOUNTAIN APACHE SUICIDE SURVEILLANCE SYSTEM. Journal of the American Academy of Child and Adolescent Psychiatry 55(10),	Conference abstract
3.	Jacki Gordon, and Cameron Stark (2007) Choose Life: early experiences of implementing Scotland's suicide prevention strategy. Journal of Public Mental Health 6(1), 20-24	No outcome of interest
4.	Jones Sharon, Walker Coralanne, Miles Alison C. J, De Silva , Eve , and Zimitat Craig (2015) A rural, community-based suicide awareness and intervention program. Rural and remote health 15(1), 2972	The study intervention is not local suicide plan.
5.	Lung F W, Liao S C, Wu C Y, and Lee M B (2017) The effectiveness of suicide prevention programmes: urban and gender disparity in age-specific suicide rates in a Taiwanese population. Public health 147, 136-143	Study was conducted in a non-OECD country
6.	Kar Nilamadhab (2016) Factors associated with suicides in Wolverhampton: Relevance of local audits exploring preventability. Medicine, science, and the law ,	No outcome of interest
7.	Yip Paul S. F, Cheng Qijin, Chang Shu-Sen, Lee Esther Sze Tsai, Lai Chui-Shan Carmen, Chen Feng, Law Yik-Wa Frances, Cheng T M. Eric, Chiu Sau Mee, Tse Y L. Jeff, Cheung Ka-Wai Raymond, Tse Man-Li, Morgan Peter R, and Beh Philip (2017) A Public Health Approach in Responding to the Spread of Helium Suicide in Hong Kong. Crisis 38(4), 269-277	Study was conducted in a non -OECD

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# Appendix E: Evidence tables

## E.1 Quantitative studies

### E.1.1 Cwik et al 2016/2014

<p>Cwik Mary F, Tingey Lauren, Maschino Alexandra, Goklish Novalene, Larzelere-Hinton Francene, Walkup John, and Barlow Allison (2016) Decreases in Suicide Deaths and Attempts Linked to the White Mountain Apache Suicide Surveillance and Prevention System, 2001-2012. American journal of public health 106(12), 2183-2189</p> <p>Cwik Mary F, Barlow Allison, Goklish Novalene, Larzelere-Hinton Francene, Tingey Lauren, Craig Mariddie, Lupe Ronnie, and Walkup John. 2014. "Community-based surveillance and case management for suicide prevention: an American Indian tribally initiated system". American journal of public health 104 Suppl 3:e18-23.</p>																			
Study details	Research Parameters	Population / Intervention	Results																
<p><b>Author/year</b></p> <p>Cwik et al 2016 Cwik et al 2014</p> <p><b>Quality score</b></p> <p>+</p> <p><b>Study type</b></p> <p>Observational study (Before-after)</p> <p><b>Aim of the study</b></p> <p>To estimate changes in suicide death rates and attempts over time using surveillance system data to evaluate the impact of the Apache suicide prevention program.</p>	<p><b>Number of participants</b></p> <p>Numbers for the total and age-specific tribal population sizes (the denominators) came from 2007 to 2012 HIS estimates for the Whiteriver Service Unit which serves the Fort Apache Indian Reservation. The Whiteriver Service Unit user population is limited to those who have used its services at least once in the past 3 years.</p> <p>The rural Fort Apache Indian Reservation (approximately 17 100 enrolled members) encompasses 1.7 million acres in north eastern Arizona and is governed by an elected WMAT Council.</p> <p>The Apaches experience substantial behavioural and mental health disparities, including high rates of school dropout, single</p>	<p><b>Intervention / Comparison</b></p> <p><b>Intervention:</b></p> <p>To address their high rates of suicide, the White Mountain Apache Tribe created a unique community surveillance system to track and triage suicide deaths, attempts, and ideation that has been used to illustrate differences between their tribe's suicide rates and those reported by the Indian Health Service (IHS) and the Centers for Disease Control and Prevention (CDC).</p> <p>To build on the foundation of their surveillance system, the tribe was awarded several Substance Abuse and Mental Health Services Administration (SAMHSA) Garret Lee Smith grants to deliver a comprehensive youth suicide prevention program spanning universal,</p>	<p><b>Primary outcomes</b></p> <p>Suicide rate (Cwik et al 2016)</p> <p>Apache suicide death rates dropped from 40.0 to 24.7 per 100 000, a 38.3% decrease. These rates represent the loss of 41 and 29 Apache tribal members from 2001 to 2006 and from 2007 to 2012, respectively.</p> <p>Suicide Death Rates Among the White Mountain Apache: Arizona, 2001–2012</p> <table border="1"> <thead> <tr> <th></th> <th>2001-2006</th> <th>2007-2011</th> <th>% change</th> </tr> </thead> <tbody> <tr> <td>Age group</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-14</td> <td>17.1 (2.1-61.6)</td> <td>23.6 (2.9, 85.3)</td> <td>38.0</td> </tr> <tr> <td>15-19</td> <td>107.8</td> <td>101.9</td> <td>-5.3</td> </tr> </tbody> </table>		2001-2006	2007-2011	% change	Age group				10-14	17.1 (2.1-61.6)	23.6 (2.9, 85.3)	38.0	15-19	107.8	101.9	-5.3
	2001-2006	2007-2011	% change																
Age group																			
10-14	17.1 (2.1-61.6)	23.6 (2.9, 85.3)	38.0																
15-19	107.8	101.9	-5.3																

<p><b>Location and setting</b></p> <p>White Mountain Apache of Arizona</p> <p><b>Length of study</b></p> <p>Prior to intervention: 2001-2006</p> <p>Intervention period: 2007-2011</p> <p><b>Funding source</b></p> <p>The Native American Research Centres in Health (NARCH) initiative and the Substance Abuse and Mental Health Services administration youth suicide prevention initiative provided grant support for the study.</p>	<p>parent households, poverty, substandard housing conditions, adolescent pregnancy, and substance use</p> <p><b>Inclusion criteria</b></p> <p>Residence in White Mountain Apache of Arizona</p> <p><b>Exclusion criteria</b></p> <p>Not reported</p> <p><b>Method of analysis</b></p> <p>Intake, follow-up, and death by suicide forms are entered into a secure, online database and stored in a locked file cabinet in the local program office. The database is password protected and only accessible to team members.</p> <p>A double data entry system is used for validation and quality assurance. Senior members of the Celebrating Life and Technical Assistance teams perform monthly reviews to check for and address missing data. Trends pertaining to behaviours and sociodemographic characteristics are analysed on a quarterly, semi-annual, and annual basis, and reported to the WMAT Council and the clinical director and preventive medicine epidemiologist of the local IHS hospital. Year-to-year trends are monitored to advise tribal leadership and key stakeholders on pattern changes that may aid in early identification and intervention with those at risk. Data are interpreted iteratively between the Celebrating Life team, the JHU Technical Assistance team, and tribal leaders. Related presentations and</p>	<p>selected, and indicated tiers of intervention beginning in 2006.</p> <p>The focus of universal activities has been to coordinate planning among local agencies and to raise community awareness.</p> <p>The Apache Surveillance System was established by tribal resolution in 2001, after a spike of 11 suicide deaths, a number of which were in youths younger than 20 years of age.</p> <p>Overview. The surveillance system functions as follows:</p> <p>(1) When an initial report (intake) is made to the surveillance system, a Celebrating Life team member seeks out the reported individual to complete an in-person interview (follow-up). Follow-ups take place at the person's home or another private setting. In the case of a suicide death, police records are the primary source of information.</p> <p>(2) The Celebrating Life team, with support from the JHU Technical Assistance team, reviews the information and reaches consensus on final coding (confirmation).</p> <p>(3) The Celebrating Life team refers the individual to appropriate services (referral).</p> <p><b>Comparison:</b></p> <p>Suicide rate for the period prior to the invention (2001–2006) and intervention period (2007–2012)</p>	<table border="1"> <tr> <td></td> <td>(53.8-192.8)</td> <td>(48.9, 187.4)</td> <td></td> </tr> <tr> <td>20-24</td> <td>151.9 (78.5,265.2)</td> <td>96.0 (43.9, 182.2)</td> <td>-36.8</td> </tr> <tr> <td>25-34</td> <td>95.0 (47.4, 169.9)</td> <td>37.9 (12.3, 88.4)</td> <td>-60.1</td> </tr> <tr> <td>35-44</td> <td>23.3 (4.8, 68.2)</td> <td>9.1 (0.2, 50.5)</td> <td>-60.9</td> </tr> <tr> <td>45-64</td> <td>15.5 (1.9, 56.2)</td> <td>11.7 (1.4, 42.3)</td> <td>-24.5</td> </tr> <tr> <td>&gt;=65</td> <td>0</td> <td>0</td> <td>-</td> </tr> <tr> <td colspan="4"><b>Total (all ages)</b></td> </tr> <tr> <td>Crude</td> <td>45.5 (32.7, 61.7)</td> <td>30.3 (19.3, 41.3)</td> <td>-33.4</td> </tr> <tr> <td>Age adjusted</td> <td>40.0 (27.8, 52.1)</td> <td>24.7 (16.3, 36.2)</td> <td>-38.3</td> </tr> </table> <p>From 2001 to 2012, the rate ratio of suicide deaths among Apache persons compared with the United States (all races) decreased from 3.7 to 2.1; compared with all AI/AN persons, it decreased from 3.9 to 2.4.</p> <p>Number of suicide attempts 2001-2011</p> <table border="1"> <tr> <td></td> <td>Male</td> <td>Female</td> </tr> <tr> <td>2001</td> <td>40</td> <td>35</td> </tr> </table>		(53.8-192.8)	(48.9, 187.4)		20-24	151.9 (78.5,265.2)	96.0 (43.9, 182.2)	-36.8	25-34	95.0 (47.4, 169.9)	37.9 (12.3, 88.4)	-60.1	35-44	23.3 (4.8, 68.2)	9.1 (0.2, 50.5)	-60.9	45-64	15.5 (1.9, 56.2)	11.7 (1.4, 42.3)	-24.5	>=65	0	0	-	<b>Total (all ages)</b>				Crude	45.5 (32.7, 61.7)	30.3 (19.3, 41.3)	-33.4	Age adjusted	40.0 (27.8, 52.1)	24.7 (16.3, 36.2)	-38.3		Male	Female	2001	40	35
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	<p>articles are reviewed and approved by the WMAT Council and Health Advisory Board.</p>		<table border="1"> <tr> <td>2003</td> <td>210</td> <td>160</td> </tr> <tr> <td>2005</td> <td>140</td> <td>110</td> </tr> <tr> <td><b>Total</b></td> <td><b>390</b></td> <td><b>305</b></td> </tr> <tr> <td>2007</td> <td>82</td> <td>75</td> </tr> <tr> <td>2009</td> <td>55</td> <td>45</td> </tr> <tr> <td>2011</td> <td>75</td> <td>65</td> </tr> <tr> <td><b>Total</b></td> <td><b>212</b></td> <td><b>185</b></td> </tr> </table>	2003	210	160	2005	140	110	<b>Total</b>	<b>390</b>	<b>305</b>	2007	82	75	2009	55	45	2011	75	65	<b>Total</b>	<b>212</b>	<b>185</b>	<p>From 2007 to 2012, there were 433 attempts (366 individuals) reported to the surveillance system. Approximately 69% of attempts (299/433) were by youths younger than 25 years. Despite some fluctuations, the pattern appears to represent a general overall downward trend, with a similar number of attempts and relative decreases for males and females from 2001 to 2014. The annual number of attempts also decreased from 75 individuals in 2007 to 35 in 2012.</p> <p>Number of intake, follow-up and treatment (population of the Apaches tribute). (Cwik et al 2014)</p> <table border="1"> <tr> <td></td> <td>2007</td> <td>2011</td> </tr> <tr> <td>No. intake</td> <td>519</td> <td>627</td> </tr> <tr> <td>Follow-up</td> <td>380</td> <td>400</td> </tr> <tr> <td>Treatment</td> <td>50</td> <td>190</td> </tr> </table> <p>From 2007 to 2011, the total volume of intake forms received by the Apache Surveillance System for a community of approximately 17 100 members was 2640, including 976 for suicide ideation, 758 for NSSI, and 906 for suicide attempt. In the 5 most recent years, reports increased from 519 in 2007 to 627 in 2011, which, after taking population growth into account, suggests an overall increase in reporting rates.</p>		2007	2011	No. intake	519	627	Follow-up	380	400	Treatment	50	190
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			<p>Successful follow-ups (i.e., staff were able to find and interview the individual) have also increased from 19% in 2006 to an average of 80% of all intake reports during this time frame (2007---2011). Related to continuity of care and help-seeking, the proportion of individuals referred who subsequently reported seeking treatment has nearly doubled in 5 years from 39% in 2007 to 71% in 2011.</p> <p><b>Author's conclusion</b></p> <p>The current analysis makes a unique and innovative contribution to the suicide prevention field because of the accuracy, quality, and depth of local data that has been gathered since 2001, blended with the longevity of the comprehensive program driven by community needs and public health principles. The community surveillance system served a critical role in providing a foundation for prevention programming and evaluation.</p> <p>The WMAT has demonstrated the feasibility and utility of an innovative, mandated community-based surveillance system for suicidal and self-injurious behaviour—the first of its kind in the United States and internationally. Overall, reporting has increased over time, suggesting greater awareness and implementation by the community at large. The local Celebrating Life team is successfully conducting in-person follow-up on reports and facilitated connections to care for the majority of individuals who evidence self-injurious behaviour.</p>
<p><b>Limitations identified by author</b>          It is not a randomized controlled trial, we cannot definitively conclude that the decrease in deaths and attempts is attributable to the Apache's suicide prevention activities. The Apache program has multiple parts and the individual effects of each cannot be dismantled; therefore, it is difficult to know what components are the most impactful. Study sample size was small and vulnerable to fluctuations especially when broken down by age, making it difficult to demonstrate significant differences between the 2 periods. The Whiteriver Service Unit user population is limited to those who have used its services at least once in the past 3 years, so the denominators in our rate calculations may be underestimates of the true total population.</p> <p><b>Limitations identified by review team</b>          Generalisation to other population.</p>			

**E.1.2 Shankar et al 2010**

Shankar Rohit, Mascas Alin, Laugharne Richard, Wilkinson Ellen, and O'Muirthe Barry (2010) A comparison of suicide and undetermined deaths in Cornwall across national and local agencies. <i>Medicine, science, and the law</i> 50(1), 19-21																																			
Study details	Research Parameters	Population / Intervention	Results																																
<p><b>Author/year</b> Shankar et al 2010</p> <p><b>Quality score</b> -</p> <p><b>Study type</b> Audit</p> <p><b>Aim of the study</b> To evaluate the pathways between relevant stakeholders for reporting suicides and undetermined deaths in Cornwall. To examine the correlation of the numbers given by different agencies: Cornwall Partnership NHS Trust, The National Confidential Enquiry (NCI), ONS and HM Coroner.</p> <p><b>Location and setting</b> Cornwall, UK</p> <p><b>Length of study</b> The data cover the period from 2000 to 2002</p> <p><b>Funding source</b></p>	<p><b>Number of participants</b> No figures were reported in the study.</p> <p><b>Inclusion criteria</b> Not reported</p> <p><b>Exclusion criteria</b> Not reported</p> <p><b>Method of analysis</b> The study examined documents related to suicide and open verdicts as reported by the Coroner in Cornwall.  Data on the numbers of suicides and open verdicts were collected from the Coroner's office (Cornwall), CPT (as fed back from the Coroner), NCI and ONS.  The data cover the period from 2000 to 2002. This gave a six-year time gap to account for year-to-year fluctuations in data capture. For example, some complex Coroner's cases have their inquest prolonged. Thus verdicts from the Coroner are not available in the short duration. The reporting from the NCI would also have a time gap. The six-year period allowed us to be confident of a closure on the final numbers as reported by each agency. The collected data have been cross-reviewed</p>	<p><b>Intervention / Comparison</b></p> <p><b>Intervention:</b> Suicide reporting</p> <p><b>Comparison:</b> Different data sources: including Cornwall Partnership Trust; National Confidential Inquiry, Office of National Statistics, Coroner</p>	<p><b>Primary outcomes</b> Suicide rate</p> <p>Number of suicide and open verdicts of Cornwall Partnership Trust clients who had contact with mental health services, reported by Coroner in Cornwall, reported by the office of national statistics, and National Confidential Enquiry data</p> <table border="1"> <thead> <tr> <th></th> <th>2000</th> <th>2001</th> <th>2002</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>Suicide</b></td> </tr> <tr> <td>Cornwall partnership Trust</td> <td>0</td> <td>06</td> <td></td> </tr> <tr> <td>Coroner</td> <td>44</td> <td>36</td> <td>41</td> </tr> <tr> <td>Office of National Statistics</td> <td>41</td> <td>35</td> <td>41</td> </tr> <tr> <td colspan="4"><b>Open verdicts</b></td> </tr> <tr> <td>Cornwall partnership Trust</td> <td>1</td> <td>0</td> <td>3</td> </tr> <tr> <td>Coroner</td> <td>21</td> <td>33</td> <td>43</td> </tr> </tbody> </table>		2000	2001	2002	<b>Suicide</b>				Cornwall partnership Trust	0	06		Coroner	44	36	41	Office of National Statistics	41	35	41	<b>Open verdicts</b>				Cornwall partnership Trust	1	0	3	Coroner	21	33	43
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<p>Not reported</p>	<p>against the recognized pathway of suicide and open verdict reporting for the UK as applied to Cornwall</p>		<p>Office of National Statistics</p>	<p>11</p>	<p>24</p>	<p>26</p>
			<p>Suicide + open verdicts</p>			
			<p>Cornwall partners hip Trust</p>	<p>1</p>	<p>0</p>	<p>9</p>
			<p>Coroner</p>	<p>65</p>	<p>69</p>	<p>84</p>
			<p>Office of National Statistics</p>	<p>52</p>	<p>59</p>	<p>67</p>
			<p>National Confidential inquiry</p>	<p>14</p>	<p>18</p>	<p>16</p>
			<p><b>Author's conclusion</b></p>			
			<p>The study shows that the data transfer between the relevant agencies (local Coroner, ONS, CPT and NCI) can be inaccurate. These inaccuracies not only prevent establishment of clear records but could also impact on policy decisions. It is also important to recognize that NHS trusts involved in mental health are being evaluated on their record on suicide prevention which in some senses is the most important outcome measure, thus making it important for inspecting bodies to look out for and take account of different figures from different agencies.</p>			
<p><b>Limitations identified by author</b> The observation period of the study (2000-2002), but an inquest could take an average of 3 years to report back. <b>Limitations identified by review team</b> In one region of UK, limited generalisation to other regions of the UK.</p>						

## E.2 Qualitative studies

### E.2.1 McElroy and Chappel 2006

Mc Elroy Helen, and David Chappel. 2006. "Preventing suicide and self-harm: how useful are the data currently available to those planning and providing interventions?". <i>Journal of Public Mental Health</i> 5(2):20-26.			
Study details	Research Parameters	Population / Intervention	Results
<p><b>Author/year</b> McElroy &amp; Chappel, 2006.</p> <p><b>Quality score</b> -</p> <p><b>Study type</b> Qualitative: semi-structured interviews.</p> <p><b>Aim of the study</b> This study aimed to assess how local and national data could be used more effectively in local suicide and self-harm prevention strategies. To assess whether information is perceived as useful and barriers and facilitators to using information.</p> <p><b>Location and setting</b> Northumberland, Tyne &amp; Wear – Strategic Health Authority area.</p>	<p><b>Inclusion criteria</b> Local health service leads in suicide prevention. Local experts.</p> <p><b>Exclusion criteria</b> None reported</p> <p><b>Method of analysis</b> Participants were purposefully recruited. The study used semi-structured interviews based on a topic guide. The first 2 interviews were used to pilot the guide.  All interviews were recorded and transcribed and the thematic framework was constructed by more than one researcher, to help improve the reliability of the coding index, using a technique called inter-coder reliability. Analysis was based on a</p>	<p><b>Participant numbers</b> 12 participants</p> <p><b>Participant characteristics</b> A purposive sample with suicide prevention leads from acute trusts, mental health trusts, primary care and both clinical and non-clinical positions.</p> <p><b>Intervention</b> Application of local and national data to suicide prevention plans and strategy.</p>	<p><b>Key outcomes</b></p> <p><b>Data sources perceived as useful</b> Aggregate data: suicide numbers/rates from ONS and other sources. The data were used to identify high-risk groups, locations and methods. Data could support strategy, target interventions and offer local/national comparisons.</p> <p><b>Availability and quality of information</b> Coroner's information:</p> <ul style="list-style-type: none"> <li>• Availability of data affected by relationship between coroners and suicide prevention agencies.</li> <li>• Concerns over quality of coroner data (lack of standardised approach, lack of epidemiological/demographic details and absence of electronic data (paper only)).</li> </ul> <p><b>Barriers and facilitators to using information</b> Even where data were available and accurate, participants felt that suicide was too complex to tackle using data; that research on what interventions work to reduce suicide was not available: "the causality is so complex that you can't infer a lot.... Because there's so many inter-related causes to people who harm or kill themselves" (PCT). Making sense of data seemed to be a challenge. One of the key facilitators was good information sharing. In addition, multi-agency approaches to serious untoward incident review processes.</p> <p>Barriers to information sharing included confusion over the roles of different agencies in suicide prevention; clarity over which agency should lead; and difficulty getting agencies to engage.</p>

<p><b>Length of study</b> Jan – July 2004.</p> <p><b>Source of funding</b> The research was done as part of and MSc in Health Sciences at the University of Newcastle. Funding was not reported.</p>	<p>framework – based on the aims and objectives for the study already set out.</p> <p>Ethical consent was sought from the local research ethics committee.</p>		<p>Planned improvements to information included: improved electronic systems for data collection; co-ordinated approaches to reviewing data; collaboration to fill gaps in information (primary care and coroners); regional level projects to identify high-frequency locations.</p> <p>Interpretation of the Data Protection Act, information sharing and protecting patient confidentiality was a challenge in this area – with confidentiality placed above the interests of the individual.</p> <p>There was also the practical difficulty of getting people together from different agencies and widespread geographical locations in order to share information.</p> <p><b>Geographical level of data</b> Participants felt that national and regional bodies may be in a better position to consider suicide cases with no previous contact with mental health services, whether through research or a more co-ordinated approach to local data collection, allowing a better understanding of these cases and potential roles for primary care in suicide prevention.</p> <p><b>Author's conclusions</b> The main issues can be divided into two broad areas: problems with current processes, and problems with data and information availability.</p>
<p><b>Limitations identified by author</b> Small number of participants may impact on generalisability of the findings. The focus on NHS suicide prevention leads and the absence of voluntary or local authority leads.</p> <p><b>Limitations identified by review team</b> Poor reporting and little clarity of the barriers and facilitators to address the aims of the study. The authors did not identify any gaps in recruitment or the implications for the findings, although they did acknowledge the shortcomings of the small sample.</p>			

**E.2.2 Owens et al 2009**

<p>Owens Christabel, Lloyd-Tomlins Sally, Emmens Tobit, and Aitken Peter. 2009. "Suicides in public places: findings from one English county". <i>European journal of public health</i> 19(6):580-2</p>			
<p><b>Study details</b></p>	<p><b>Research Parameters</b></p>	<p><b>Population / Intervention</b></p>	<p><b>Results</b></p>



<p><b>Author/year</b> Owens et al 2014</p> <p><b>Quality score</b> -</p> <p><b>Study type</b> Survey</p> <p><b>Aim of the study</b> The aim was to ascertain from Directors of Public Health: a) how they were conducting suicide audit and what resources they were investing in it; b) how the findings were being used; and c) how the process might be improved.</p> <p><b>Location and setting</b> Primary Care Trusts (PCTs) in England prior to their dissolution in 2013.</p> <p><b>Length of study</b> Not reported. The study was conducted in 2011.</p> <p><b>Source of funding</b> The research was supported by The National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for the South West Peninsula (PenCLAHRC).</p>	<p><b>Inclusion criteria</b> All 153 English PCTs.</p> <p><b>Exclusion criteria</b> None reported.</p> <p><b>Method of analysis</b> A questionnaire was sent by email to Directors of Public Health in all 153 Primary Care Trusts in England in late 2011. The questionnaire consisted mainly of closed questions with predefined response categories, accompanied by a free-text box for additional comment. Three open questions at the end invited respondents to comment on parts of the process that were working well or not well, and on actions taken as a result of auditing. Non-responders were sent a reminder after two weeks. Pre-coded responses were entered directly into an Excel database. Free-text comments were used to generate new response categories, and were then coded accordingly and entered into the database in numerical form, allowing descriptive statistics to be performed. Qualitative data from the open questions were subjected to simple thematic analysis, classifying material according to the stages of the audit process, but also looking for new cross-cutting themes.</p>	<p><b>Participant numbers</b> Responses were received from 75 PCTs (49%).</p> <p><b>Participant characteristics</b> Of the 75 PCTs represented, 62 (83%) were conducting a regular audit of deaths by suicide. Of the 13 that were not, nine had previously done so but had discontinued, mainly due to lack of resources and a difficulty of obtaining data.</p> <p><b>Intervention</b> Participant PCTs were asked whether they were using the National Suicide Audit Tool (developed by NIMHE 2006. NOTE: details of the tool could not be accessed by NICE team). They were also asked about the use of locally</p>	<p><b>Key outcomes</b></p> <p><b>Access to data</b> Collection of data from the coroner, general practitioner (GP), Mental Health Trust and Acute Trust emerged as one of the principal areas of difficulty. Only 16 of the auditing PCTs were able to access information from all the sources recommended by NIMHE.</p> <p><i>Coroners:</i> The majority reported collecting information from coroners' files. Most had an arrangement whereby a member of the public health team visited the coroner's office periodically and extracted information from the relevant files. Others had been unable, despite strenuous and concerted efforts, to agree a process for doing so.</p> <p><i>GPs:</i> Only 60% (37/62) of the auditing PCTs described an established process for collecting data from GP records. Of these, several reported frustration that GPs were only willing to provide the bare facts of a case, without commenting on whether any lessons could be learnt from it.</p> <p>All 62 auditing PCTs reported collecting data at least annually. Ten reviewed coroner's files on a monthly basis, whilst others conducted bi-monthly, quarterly, half-yearly or annual cycles of data collection. Timeliness of data collection and analysis emerged as an important issue. Several respondents commented that delays in the inquest process could jeopardise the whole enterprise.</p> <p><b>Review and implementing findings</b> Of the 62 auditing PCTs:</p> <ul style="list-style-type: none"> <li>• 52 produced an annual report, with others reporting less frequently.</li> <li>• only two-thirds (n = 41) reported that they had a Suicide Audit Group, whilst others had incorporated audit-related activity into the work of another group, such as a Mental Health Partnership. Non-attendance and lack of sustained representation from key partner agencies was a recurring problem.</li> <li>• more than a third (n = 22) were unable to describe clear processes for developing an action plan, implementing actions and reporting back.</li> <li>• more than a third (n = 23) of auditing PCTs could not report any specific actions that had been taken on the basis of their audit findings.</li> </ul> <p><b>Author's conclusions</b> Many PCTs had worked hard to overcome procedural obstacles and were investing huge amounts of time and effort in collecting data, but it is not clear that the findings were being translated effectively into action. With few exceptions, PCTs were unable to demonstrate</p>
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		designed instruments and data sources.	that the findings of local audits had influenced their suicide prevention plans. The study suggests that there is a pressing need for practical guidance on how the findings of local suicide audits can be put to use, and proposes a framework within which such guidance could be developed.
<p><b>Limitations identified by author</b>                  Responses were obtained from just under half (49%) of all PCTs in England. This is low. It is impossible to ascertain the reasons for non-response, but it is entirely possible that it is associated with lack of interest in suicide audit, and therefore that non-responders are non-auditors. If so, this would more than halve the percentage of PCTs conducting audit in 2011, from 83% (62/75) to only 40% (62/153).</p> <p><b>Limitations identified by review team</b>                  The authors did not report the question set, report on all questions or indicate which results were derived from open questions, nor how they were themed. Some data were unreported. The study only reported summary statistics about current practices. PCTs reporting of practices was not verified or triangulated.</p>			

**E.2.3 Stein et al 2010**

<p><b>Stein Bradley D, Kataoka Sheryl H, Hamilton Alison B, Schultz Dana, Ryan Gery, Vona Pamela, and Wong Marleen. 2010. "School personnel perspectives on their school's implementation of a school-based suicide prevention program". The journal of behavioral health services &amp; research 37(3):338-49.</b></p>			
Study details	Research Parameters	Population / Intervention	Results
<p><b>Author/year</b> Stein Bradley et al 2010</p> <p><b>Quality score +</b></p> <p><b>Study type</b> Qualitative study.</p> <p>The research team interviewed 42 school personnel from 11 high schools about their school's suicide prevention activities</p> <p><b>Aim of the study</b></p>	<p><b>Inclusion criteria</b> School personnel</p> <p><b>Exclusion criteria</b> Not applicable</p> <p><b>Method of analysis</b> All interviews were recorded, transcribed, and reviewed by members of the research team to explore general topics that arose in the interviews.</p>	<p><b>Participant numbers</b> School personnel from high schools</p> <p><b>Participant characteristics</b> Not reported</p> <p><b>Intervention</b> The LAUSD Youth Suicide Prevention Program (YSPP) was first implemented in 1986 and</p>	<p><b>Primary outcomes</b> Three key themes that consistently emerged from the interviews, contrasting how high and low implementation schools typically respond to students at-risk for suicide: 1) school-level organization and use of resources in response to a student at-risk for suicide (e.g., procedures, policies, structures);</p> <p><i>Having plans with clear lines of communication, a team-based approach, and explicit procedures and protocols distinguished most high from low implementation schools. Generally, participants from high implementation schools described how communication about at-risk students occurred at their school and who participated in the communication chain. In addition to a communication plan, the</i></p>

<p>A qualitative study of school-based suicide prevention activities examining characteristics of schools that had higher rates of implementing a school-based suicide prevention program and comparing them to schools that had lower rates of implementing a school-based suicide prevention program in the Los Angeles Unified School District (LAUSD), one of the nation's largest school districts.</p> <p><b>Location and setting</b></p> <p>Los Angeles Unified School District (LAUSD) USA</p> <p><b>Length of study</b></p> <p>From March through July 2005, the research team interviewed 42 school personnel from 11 high schools about their school's suicide prevention activities</p> <p><b>Source of funding</b></p> <p>Support for this study was provided by the NIMH.</p>	<p>The research team met periodically to review the interview process and to suggest minor modifications to the interview protocol based on team consensus. Transcripts for major domains of inquiry based on common themes in the implementation literature (e.g., available resources, level of training) 34 were preliminarily coded using qualitative data analysis software (ATLAS.ti ).</p> <p>Subsequently, the research team discussed the content of each domain and refined the coding scheme by expanding, collapsing, or eliminating codes until there was a refined list of mutually agreed upon codes. Additional coding was done based on the range of responses within each domain. Using the software's filtering and grouping tools, schools in the "high implementation" category (n=6) were compared to schools in the "low implementation" category (n=5) with regard to detection, intervention, training, level of school priority, and suggested improvements. Because the school was the unit of analysis, individual types of respondents were not compared to one another.</p>	<p>is consistent with the School Gatekeeper Training Model.<sup>25</sup> The YSPP, which is coordinated by the LAUSD's YSPP psychologist, has two primary components:</p> <p>1) annual trainings of school personnel (e.g., gatekeepers) by the LAUSD YSPP psychologist to increase knowledge, change attitudes, and develop skills in detecting students potentially at risk for suicide and referring them for crisis intervention, and</p> <p>2) "crisis intervention," in which the trained school staff members use their increased knowledge and skills to engage suicidal students' support networks and successfully refer them for counseling or treatment.</p> <p>The training and education about youth suicide are offered to all school staff annually. Any school staff, other students, parents, or at-risk students themselves can make the referral for crisis intervention. Once a student is referred, a trained school staff person determines if a crisis intervention is warranted, and if so completes the mandatory risk assessment form (which includes information about the referral source, reason for referral, and actions taken during the crisis intervention) that</p>	<p><i>procedures at high implementation schools usually involved clearly delineated and documented protocols and procedures for responding to at-risk students. In contrast, most low implementation schools appeared to lack such communication plans and formalized procedures. Instead of communication plans or teams, participants from these schools typically described one person at their school who was solely responsible for all aspects of responding to an at-risk student</i></p> <p>2) school leadership and priorities;</p> <p><i>At most high implementation schools, school leadership was interested and involved in the activities of the suicide prevention team. Administrators at these schools also ensured sufficient time for training of school staff in crisis response activities. Participants from these schools commonly mentioned the importance of attentive school administrators. Participants from most high implementation schools commonly discussed available on campus resources, such as a multidisciplinary crisis intervention teams and other student support programs available to address the needs of students who are at risk for suicide. In contrast, participants from most low implementation schools frequently mentioned the low priority of youth suicide on their administrators' agendas. Participants from most of the low implementation schools also frequently discussed the absence of on-campus resources.</i></p> <p>3) district-level training and support.</p> <p><i>Approximately equal numbers of staff from high implementation and low implementation schools receive YSPP training each year. However, participants at high implementation schools were likely to be aware of and have participated in YSPP training sessions and discussed completion of the YSPP assessment form as one of the steps in the crisis response protocol. Similar to participants in high implementation schools, staff from low implementation schools were variably familiar with the YSPP assessment form but had little understanding of its use or purpose.</i></p> <p><b>Author's conclusions</b></p>
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		<p>is sent to the YSPSP psychologist at the district's central office.</p> <p>The crisis intervention consists of:</p> <ol style="list-style-type: none"> <li>1) providing immediate support to the suicidal student,</li> <li>2) engaging the student's social support network (most commonly the family), and</li> <li>3) facilitating an appropriate referral and engagement with treatment (i.e. hospital, counselling services in the community and/or on campus).</li> </ol> <p>At least one staff member from each school is required to be trained in the YSPSP crisis intervention protocol.</p>	<p>Attention to organizational factors leading to successful implementation of school-based suicide prevention programs may enhance schools' role in national adolescent suicide prevention efforts</p>
<p><b>Limitations identified by author</b>                  Participants were high school personnel from one of the largest urban school districts in the United States, which serves a racially and ethnically diverse and socioeconomically disadvantaged student body, and whose suicide prevention activities are built around the gatekeeper school based suicide prevention model. These findings may not generalize to schools and school districts with other characteristics, nor to other types of school-based suicide prevention programs.                  Participants were recruited from high schools in the highest and lowest utilizing quartiles, and it is unknown how participants' responses from schools in the middle quartiles might have differed. In addition, although telephone interviews are more economical to conduct and can facilitate communication of sensitive topics, interviewers miss valuable non-verbal communication. Finally, given the focus of this study on the implementation of a suicide prevention program by school staff, these interviews did not gather information from other key stakeholders such as students and family members, which would have broadened the understanding of the quality and acceptability of this program.</p> <p><b>Limitations identified by review team</b>                  No data on suicide rates reported to compare the effectiveness of intervention between high and low implementation schools.</p>			

## Appendix F: GRADE tables

### F.1 Suicide rate

Quality assessment							Suicide rate per 100,000		Effect		Committee confidence
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	After <sup>b</sup>	Before	Relative risk ratio (RR) (95% CI)	Absolute difference in rate	
<b>Surveillance</b>											
1 (Cwik et al 2016)	Observational	Serious <sup>1</sup>	Not applicable (NA)	No serious <sup>2</sup>	Serious <sup>3</sup>	Study population was tribe population (the White Mountain Apache)	30.3 (5.2/17100)	45.5 (7.8/17100)	0.63 (0.20, 1.91)	15.2 fewer	LOW
1. Concern over accuracy of surveillance data reporting/recording 2. Interventions, population and outcomes are in line with review protocol 3. 95% CI of RR around point estimate crosses line of no effect which the committee agreed should be the minimal important difference											

### F.2 Suicide attempts

Quality assessment							Rate per year (per 1,000)		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 in rate	

<sup>b</sup> Cwik et al 2016: 2001-2006 (baseline period); 2007-2012 (after period)

1 (Cwik et al 2016)	Observational	Serious <sup>1</sup>	NA	No serious <sup>2</sup>	No serious <sup>3</sup>	Study population was tribe population (the White Mountain Apache)	7.74 (132/17100)	13.55 (232/17100)	0.57 (0.46, 0.70)	5.81 fewer	MODERATE
<ol style="list-style-type: none"> <li>1. Accuracy of surveillance data reporting/recording</li> <li>2. Interventions, population and outcomes are in line with review protocol</li> <li>3. 95% CI of RR around point estimate crosses line of no effect which the committee agreed should be the minimal important difference</li> </ol>											

## Appendix G: CERQual table

Review finding	Contributing studies	Overall confidence in the evidence	Explanation of confidence in the evidence assessment
<b>Suicide data collection and audit</b>			
There were barriers to data collection: problems were reported when collecting data from coroners, general practitioners and local healthcare Trusts. Coroners were identified as key sources of information and data but there were concerns about engagement and access allowed to local partners, the quality of the data and a lack of standardised approach to collection and reporting. Furthermore, protocols for information sharing were reported to be under-developed or absent by some participants	McElroy and Chappel 2006; Owens et al 2014	Low confidence	This review finding is rated as low, because there are moderate concerns methodological limitation due to sampling strategy, and poor reporting of data analysis, minor concerns regarding with coherence and adequacy of data reported. There were no serious problems with relevance (both are UK studies).
<b>Suicide prevention action plans</b>			
Suicide plans with explicit procedures and protocols were perceived to improve the implementation of suicide prevention. But a lack of resources for audit and implementation could hinder the process of suicide prevention planning, and there was no process in place when developing an action plan, plus more than a third of auditing PCTs reported that a lack of actions being taken on the basis of audit findings. Participants suggested that a combination of national, regional and local data was appropriate, and local data were seen as “information for action” which allowed local agencies to be more responsive to specific local issues and neighbours.	McElroy and Chappel 2006; Owens et al 2014; Stein et al 2010	Low confidence	This review finding is rated as low, because there are moderate concerns methodological limitation due to sampling strategy <sup>1</sup> , and poor reporting of data analysis, minor concerns regarding with coherence (different types of suicide prevention programmes) and adequacy of data reported. There were little serious problems with relevance (2 studies are UK studies).

