

Guidance on action to reduce suicides at locations of concern in Scotland

ChooseLife

Suicide prevention in Scotland

NHS
Health
Scotland

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Summary

What is a location of concern?

A location of concern has been defined as ‘a specific, usually public, site that is frequently used as a location for suicide and which provides either means or opportunity for suicide’¹. More than one incident at a particular location suggests that action should be considered at that particular site.

Types of sites likely to be locations of concern in Scotland

Locations of concern are often bridges, cliffs and other structures that provide an opportunity for jumping from a height. Rural or secluded locations such as car parks, roadside lay-bys and woodland have also become known locations of concern. Sections of railway lines and roads may also become locations of concern.

How will action at locations of concern help to reduce the suicide rate?

Actions at locations of concern aim to interrupt the suicidal process, primarily by restricting access to suicide means, or by enabling another party to intervene.

Guidance for actions to be taken at locations of concern

This resource proposes a 5-step process for establishing actions at a location of concern.

- 1 Establish inter-agency collaboration and management.
 - Effective intervention at a location of concern will require leadership from an individual, agency, or steering committee. Collaboration and communication is likely to be required between the owner of the site, the manager of the site and any infrastructure associated with it.

- 2 Collect and analyse data for identifying a location of concern and monitoring actions.
 - Data on suicidal acts at particular sites will strengthen the argument for actions at that location, and will establish a baseline against which the success of any action can be assessed.

- 3 Review options for action at locations of concern. Depending on the nature of the site and the resources available, there are a number of options to be considered, including:
 - **Construction of physical barriers:** Fences, screens and safety nets can delay or stop a suicidal act. This is the action for which there is most evidence of effectiveness, but it can be costly and can experience some community resistance.
 - **Signs and telephone helplines:** There is mixed evidence of the effectiveness of signs (which encourage help-seeking or provide a message of hope) and helplines (which link a suicidal person or concerned third party to support or emergency personnel). However, these can be linked to existing services and are therefore relatively low cost.
 - **Surveillance measures:** Use of CCTV and surveillance patrols show some evidence of effectiveness, but this action is not yet well evaluated. It can be expensive and there are a number of personnel, privacy and legal considerations.
 - **Restriction of pedestrian and vehicular access to the site:** Actions such as putting a gate across an access road or restricting pedestrian access to a bridge are not yet well evaluated but there is some evidence of effectiveness. This can be a relatively low cost option, but may not work unless all forms of access are restricted.
 - **Training for staff working at or near locations of concern:** Also known as gatekeeper training, this has not been specifically evaluated in relation to locations of concern, but shows some promise in general suicide prevention.

- **Improved response and rescue efforts:** This has not been evaluated, and is likely to be costly, but it may reduce the fatality of suicidal acts.
- **Suicide risk management in building codes:** This has not been evaluated but offers a possible cost-effective suicide prevention measure, particularly in new constructions.
- **Managing media reporting of suicides at locations of concern:** There is strong evidence that inappropriate media reporting of suicide can lead to copycat acts. The corollary of this is that sensitive, measured reporting may help to de-link the suicidal act and the site in the mind of a vulnerable person, and also reduce the risk of copycat acts.

(It is worth noting that some of these options have a stronger evidence base than others. This does not mean that the others should be discounted, but rather that sound evaluation is required.)

- 4 Develop and implement a plan of action, which will need to consider a number of factors.
 - **Consultation and information management** to overcome public resistance to actions, which is usually based on:
 - aesthetic concerns
 - the misconception that suicidal people will find a way to complete the suicidal act no matter what intervention is taken
 - inconvenience – such as having to walk further because of barriers
 - the cost and cost-effectiveness of the project.
 - **Proactive engagement with the media** to raise awareness of their role in suicide prevention, available helplines, and to reduce the risk of copycat suicides.
 - **How and where to access funding** for the intervention.

- **Suicide prevention measures that can be integrated into infrastructure development**, based on an understanding of effective strategies and designs.

5 Monitor and evaluate effectiveness.

- Evaluation should consider changes in the number of attempted and completed suicides across the location, the site and the local area.

This resource provides a summary of available evidence, and a more detailed indication of tasks for key steps in the process of establishing actions at locations of concern. However, all actions should be considered in the context of longer-term suicide prevention.

In addition, NHS Health Scotland has produced a case study about the Erskine Bridge and its previous identification as a location of concern for suicides. The case study follows the step process recommended by this guide. It is available on the Choose Life website at:

<https://www.chooselife.org.uk/what-we-do/infrastructure>

Part 1: Introduction

Purpose and brief overview of this resource

This resource has been developed to:

- support Community Planning Partnerships (CPPs) and/or local suicide prevention steering groups to develop strategies to prevent suicides at locations of concern
- assist these and other relevant agencies to prevent the emergence of further locations of concern by incorporating suicide prevention measures into infrastructure development
- support inter-agency collaboration, recognising that suicide prevention is a whole-community responsibility.

This section provides a definition of the term 'location of concern', a brief overview of the types of sites likely to be locations of concern, and a summary of the interventions which may be relevant at those sites. Part 2 describes five steps in a process for managing a location of concern. Part 3 provides a summary of available evidence and resources related to possible actions at locations of concern.

What is a location of concern?

A location of concern has been defined as 'a specific, usually public, site which is frequently used as a location for suicide and which provides either means or opportunity for suicide'.¹ There is no commonly agreed figure for the number of suicides at a particular site required before it is considered a location of concern. More than one incident at a particular location suggests that it has appeal for suicidal individuals and offers means or opportunity for suicide, providing sufficient cause for concern. Decisions on how and where to act to manage a location of concern will depend on the number and nature of suicidal acts, the frequency with which they occur, and the extent to which they result in death or serious injury. Site-specific factors will also be important.

Types of sites likely to be locations of concern in Scotland

The reasons why particular sites become locations of concern are unclear. They are often particularly scenic or iconic public structures or sites, around which a certain history, infamy or mythology has developed, which may have been stimulated by persistent and sensationalised media reporting.

Tall buildings, bridges, cliffs and other man-made and natural structures which provide an opportunity for jumping from a height have become locations of concern. Rural or secluded locations such as car parks, roadside lay-bys and woodland have also become known locations of concern. Methods of suicide at these locations commonly involve poisoning or hanging.

Sections of railway lines which allow for jumping or lying in front of a train can become locations of concern due to a number of factors. These include ease of access to the train lines, the proximity of mental health facilities, and imitation and contagion.²

In Australia, a high proportion of rail suicides have occurred close to mental health facilities.³ Anecdotal reports suggest that certain sections of road may also be locations of concern, indicated by a number of single vehicle accidents with no evidence of braking, or apparent deliberate collision with another vehicle or barrier. However, such deaths are difficult to officially categorise as suicide, and so this type of location of concern is largely unexplored in the literature. A particular stretch of railway track or road may be designated a location of concern, even though the suicidal incidents occurred at different points. Relevant authorities will need to draw on their knowledge of local geography, as well as available data, to decide the boundaries of each site.¹

How will action at locations of concern help to reduce the suicide rate?

Actions at locations of concern aim to interrupt the suicidal process, primarily by restricting access to suicide means, or by enabling another party to intervene (either in person or by telephone). Figure 1 summarises the range of the most common actions to reduce suicidal acts at locations of concern. There is general agreement that restricting access to means can reduce suicide in three ways. Firstly, increasing the difficulty of obtaining the means for suicide may give individuals greater opportunity to think through their options and reduce the likelihood that they will follow through with the suicidal act. Secondly, postponing the act by making it harder to obtain the necessary means may afford a greater opportunity for other preventive interventions, such as by mental health services, to take place. Finally, restricting the means available may result in individuals choosing less lethal means, and therefore result in fewer deaths.⁴

Actions at locations of concern that are designed to enable intervention by another party aim to offer a suicidal person time and assistance to reconsider their possible actions, and to link the suicidal person with support services and other preventative measures.

Figure 1: Summary of possible actions at different types of locations of concern

| | | | |
|-----------------|--|---|---|
| Location | <ul style="list-style-type: none"> • Tall buildings • Cliffs • Bridges (vehicle and pedestrian) • Viaducts • Multi-storey car parks | <ul style="list-style-type: none"> • Secluded and isolated locations: <ul style="list-style-type: none"> ○ public car parks ○ lay-bys ○ woodland or green space | <ul style="list-style-type: none"> • Railway lines |
| Method | <ul style="list-style-type: none"> • Jumping from a high place | <ul style="list-style-type: none"> • Carbon monoxide poisoning • Hanging | <ul style="list-style-type: none"> • Collision with a train by lying or jumping in front of it |
| Action | <ul style="list-style-type: none"> • Physical barriers • Safety nets • Signs and telephone helplines • Suicide prevention patrols • Training for local staff • Restriction of pedestrian or vehicular access | <ul style="list-style-type: none"> • Signs and telephone hotlines • Suicide prevention patrols • Installation of CCTV • Inclusion of safety regulation in building codes • Training for staff in the area (gatekeepers) • Modification to possible hanging structures (by removal of the structure or by fencing around it) | <ul style="list-style-type: none"> • Physical barriers along tracks and at stations • Signs and telephone hotlines • Surveillance by station staff • Installation of CCTV • Training for staff in the area |

Longer-term suicide prevention initiatives across all locations include public education, community-based programmes, and clinical services.

Part 2: Practical guidance for actions to be taken at locations of concern

Figure 2 below outlines a possible process for managing a location of concern. The following sections explore each of these steps in more detail.

Figure 2: Process for managing a location of concern



1. Inter-agency collaboration and management of actions at locations of concern

The agencies and individuals involved in managing a location of concern will vary depending on the nature of the site and the action required. As a general principle, action taken at a location of concern will require an inter-agency working group made up of change agents. That is, the working group should comprise individuals and agencies with the ability to influence and/or deliver change. These change agents could be a mixture of the following:

- The owner of the site – for example local councils.
- The manager of the site and any infrastructure associated with it – such as tourism authorities, roads and transport authorities, or railway service providers.
- Community and private interest groups who access or overlook the site, including residents in a particular area.
- Suicide prevention specialists to advise on the intervention.
- Community health agencies and services – such as general practitioners, counselling services and helpline providers.
- Emergency services such as police and ambulance.
- The media – to ensure reporting of activity at the site is carefully managed.

Authority and permissions to take action will vary from location to location and between Local Authorities. Experience suggests that effective action at a location of concern will require an agency or individual to take on leadership of an inter-agency group or steering committee. Leadership responsibilities may include ensuring that:

- the necessary stakeholders, both national and local, are identified and involved
- there is adequate communication between group members
- decision making is based on available evidence and advice from suicide prevention experts
- good practice protocols are adhered to
- actions align with relevant policies and guidelines, including those of individual participating agencies.

An early meeting of stakeholders drawn from the list at the beginning of this section can be used to map other parties that should be involved. It may also be useful to dedicate some time to the workings of the group, to agree goals, and to define responsibilities. Memorandums of Understanding may be required to document the expectations and responsibilities of each group member.

2. Data collection and analysis for identifying a location of concern and monitoring interventions

Data on suicidal acts at particular locations will strengthen the argument for actions at the site, and will establish a baseline against which the success of any action can be assessed. The first step is to establish what data is already being collected and by whom, in order to prevent duplication. In Scotland, national and local data on all deaths by suicide is collected by the National Records of Scotland (NRS) as part of its annual national statistics release. In addition, since 2008, more detailed information on deaths by suicide in Scotland has been collected via the Scottish Suicide Information Database (ScotSID). Scottish national data on locations of concern has not been collected and/or published as a matter of course.

Local knowledge of locations, as well as local sources of data, will be important when formulating a plan of action at a particular site. National data may be able to provide the information required to identify a site, but local data will be able to provide more in-depth information in that it should allow the working group to understand the reasons why a particular site is being used. Using this local knowledge should also ensure that a location of concern is not treated in isolation, but rather that action is taken in support of other local activity and/or interventions.

Assessing the risk at a location of concern

It has been suggested that more than one suicide at a particular site, in any period for which there are records, should give cause for concern. This is sufficient to demonstrate that the site has appeal for suicidal individuals and offers either means or opportunity for suicide. In practice, concerns can also arise when there have been a number of suicide attempts at the same location.

There are varying degrees of 'concern'. Decisions on what action to take will depend on the number and nature of suicidal acts, the frequency with which they occur and the fatality or serious injury rate, as well as site-specific factors. In addition, information about suicide attempts may be of relevance in determining the level of risk associated with a location. In practice, judgement is required around the assessment of risk and requires views to be obtained from:

- the agency or individual responsible for a particular site
- those that respond to attempted and completed suicides at the site.

Factors to take into account when assessing a location of concern:

- Number and frequency of suicides completed at the site.
- Number and frequency of suicide attempts at the site.
- Level of public and media concern.
- Level of stress in staff dealing with the aftermath.

High-risk locations may vary in size. A single car park at a location may have been the venue for more than one suicide, and would therefore be considered a location of concern. However, there may be a number of car parks at a location that have each had one suicide. In this case, it would be sensible to treat the area as a whole as a location of concern. Similarly, a short stretch of motorway or cliffs might be designated a location of concern if there has been a spate of jumping incidents, even though these may have occurred at different points.

A suicide pact, in which two or more individuals die together by arrangement, should be counted as a single incident. Local suicide prevention groups will need to exercise judgment and make their own decisions as to the size and boundaries of each site, based on interpretation of local data and knowledge of local geography.

3. Reviewing options for action at locations of concern

Depending on the nature of the site, a number of possible actions may be required at a location of concern. At the start of the process the inter-agency group should review actions that have been implemented at other similar locations of concern in Scotland. This should involve contacting the local Choose Life coordinator, or suicide prevention lead, in the area of the location of concern to discuss lessons from their process and identify any updated information on the efficacy of the response. A list of local Choose Life coordinators is available at

www.chooselife.net/Inyourarea/coordinatorslist.aspx

Table 1 below summarises factors for and against a number of possible actions based on previous experience. Of all options, there is the most documented evidence in support of constructing physical barriers which restrict access to the means of suicide at the site (see Table 2). However, a number of other actions show promise and should be considered. See Part 3 for more information on the available evidence for each option.

Any intervention strategy should always consider how the proposed actions align with broader community education and suicide prevention programmes. Information regarding national and local resources, activities and contacts can be found on the Choose Life website: www.chooselife.net

Table 1: Summary of pros and cons for possible actions at locations of concern

| Action | Positives | Challenges | Evidence of effectiveness |
|-------------------------------------|---|--|---|
| Physical barriers | <ul style="list-style-type: none"> • May delay or stop suicidal acts • Recommended by people who survived attempts at suicides by jumping • Reduces access for impulsive acts • Shows that someone cares • Reduces media reports of suicide by jumping | <ul style="list-style-type: none"> • Likely to be costly • May be considered aesthetically unappealing • Engineering challenges to add barriers to existing structures • Public opposition on the basis of cost, perceived futility and appearance • Interventions at railway stations served by open track may not be as effective as those in locations where the station offers the only access to the track | <ul style="list-style-type: none"> • Relatively well evaluated • Good evidence of effectiveness (see Table 2) • Less evaluation specific to barriers on railway tracks |
| Signs and telephone hotlines | <ul style="list-style-type: none"> • May delay or stop suicide act • Shows that someone cares • Relatively low cost • Low maintenance | <ul style="list-style-type: none"> • May alert others to idea of suicide or inadvertently advertise the site as a place for suicide • Relies on person | <ul style="list-style-type: none"> • Moderately well evaluated • Mixed evidence of effectiveness (see Table 3) |

| Action | Positives | Challenges | Evidence of effectiveness |
|---|---|---|--|
| | <ul style="list-style-type: none"> • Can be linked in with existing services | <p>contemplating suicide to make the call</p> <ul style="list-style-type: none"> • Relies on crisis line to respond appropriately | |
| Surveillance measures | <ul style="list-style-type: none"> • May delay or stop suicide attempt • Shows that someone cares • Human contact may be important in persuading not to attempt suicide • Can buy time and alert relevant services to intervene | <ul style="list-style-type: none"> • Can be expensive • Relies on patrol intervening efficiently and effectively • Unsuccessful interventions traumatic for surveillance personnel • Privacy and legal concerns with cameras • Maintenance requirements | <ul style="list-style-type: none"> • Not well evaluated • Some evidence of effectiveness (see Table 4) |
| Restriction of pedestrian and vehicular access | <ul style="list-style-type: none"> • May delay or stop suicidal act • Restricts access yet avoids all arguments associated with barriers • Reduces access for impulsive attempters • Relatively low cost or no cost • Improves capacity for surveillance – for example when no pedestrians are permitted on the site | <ul style="list-style-type: none"> • May not work unless all access is restricted – for example restricted pedestrian access may be thwarted if vehicles are still permitted on the site • Some inconvenience to public due to longer walks to train platforms, tourist sites and so on | <ul style="list-style-type: none"> • Not well evaluated • Some evidence of effectiveness (see Table 5) |

| Action | Positives | Challenges | Evidence of effectiveness |
|---|--|--|--|
| Training of staff or ‘gatekeepers’ working at or near locations of concern | <ul style="list-style-type: none"> • Relatively low cost • Increased chance of appropriately alerting emergency services • Human contact may be important in persuading not to attempt suicide | <ul style="list-style-type: none"> • Likely low cost effectiveness • Likelihood of encountering suicidal individual is low • Possible negative effects on gatekeeper depending on situation and outcome | <ul style="list-style-type: none"> • Not evaluated specifically in relation to locations of concern |
| Improved rescue and response efforts | <ul style="list-style-type: none"> • May prevent suicidal acts – such as enabling someone who is preparing to jump from a bridge to be talked down • May reduce fatality of suicidal acts – for example by saving someone who survives a fall from a bridge but would otherwise have drowned | <ul style="list-style-type: none"> • Expensive • Increased visibility of emergency call-outs can increase community stress | <ul style="list-style-type: none"> • Not evaluated |

| Action | Positives | Challenges | Evidence of effectiveness |
|---|--|--|---|
| Suicide risk management in building codes | <ul style="list-style-type: none"> • Easier and more cost effective to incorporate safety measures when planning buildings and structures | <ul style="list-style-type: none"> • Variation between state and territory requirements and gaining acceptance as industry standards can be problematic • Does not require retrofitting of standards to existing sites | <ul style="list-style-type: none"> • Not evaluated |
| Managing media reporting of suicides at locations of concern | <ul style="list-style-type: none"> • Low or no cost • Reduces media reports of suicide by jumping • May serve to de-link the site and the suicidal act in the mind of a vulnerable person • May increase awareness of support services, and of the impact of suicide on others | <ul style="list-style-type: none"> • Requires widespread compliance by journalists • Unable to control internet content • Public misconceptions that it is about media censorship | <ul style="list-style-type: none"> • Relatively well evaluated • Good evidence of effectiveness (see Table 6) |

4. Planning considerations

Consultation and information management

There may be organisational and/or public resistance to any proposed actions at locations of concern. Reason for this may include:

- visual or aesthetic disruption to an iconic natural or historical site
- lack of awareness about the effectiveness of the intervention – some people may hold the misconception that suicidal individuals will find a way to complete the suicidal act no matter what is done
- inconvenience to the public, in the case of restricted areas
- cost and cost-effectiveness.

Overcoming such resistance may require some community consultation in addition to the process of engaging key stakeholders at the beginning of the development. Public consultation may also emphasise the need to promote actions at locations of concern on the basis of a moral and ethical duty to prevent deaths, just as would happen at a dangerous road intersection. Costs associated with preventive measures need to be weighed against the costs of search and rescue, body retrieval, train service or bridge closures, as well as the public trauma of witnessing a suicidal act, and the personal costs for family and friends of those lost to suicide.

Local councils are often skilled at community consultation related to infrastructure and planning concerns. Their role may be to facilitate broad input into decisions on the type of response to be taken, promote ownership and acceptability of the response, and build the capacity of the community to engage in the actions taken. It is likely specialist suicide prevention expertise will need to be sourced to participate in local council-led consultations.

Media engagement

The inter-agency group managing action at a location of concern should proactively engage with the local media. Media have an important role to play in raising awareness of suicide risks and supports, helping to de-stigmatise mental health and suicide, and in de-linking the sites and the act of suicide in the public mind. Conversely, there is also considerable evidence to demonstrate that poorly managed media reporting of suicide and suicide locations can increase the risk and incidence of suicidal acts. Samaritans and the National Union of Journalists have developed resources to help journalists report on suicide in an appropriate and sensitive manner.^{5, 6}

Advertising or promoting actions to prevent suicide at a location of concern can inadvertently publicise the site as a location for suicide. Therefore, it is recommended that actions taken at locations of concern are not made public.

Media reporting and discussion of suicide methods

‘Most media guidelines state that the method and location of suicide should not be described, displayed or photographed. This is because evidence shows that copycat suicides can result from detailed descriptions or depictions of the method. Where possible avoid disclosing the method of suicide – and there should generally be a public interest justification for doing so. Therefore, both journalists and editors face a twin test: they must both publish with sensitivity and avoid excessive detail.

Reporting the location of suicides may lead to them becoming popular places for suicide attempts, so you should be very careful not to portray these locations as “suicide spots” and don’t refer to them in your reporting as “suicide hotspots”. If it is necessary to refer to the location then try to do this in general terms instead of giving the exact location. For example, refer to the location as the Erskine Bridge and avoid using details such as its height or the actual place of the suicide, and do not use a photograph of the exact spot.’

Source: *Responsible reporting on mental health, mental illness and death by suicide: a practical guide for journalists*. London: National Union of Journalists; 2014.

www.nuj.org.uk/documents/nuj-guidelines-for-responsible-reporting-on-mental-health (accessed 22 February 2016)

Integrating suicide prevention measures into infrastructure development

Various infrastructure and design considerations will impact upon measures to restrict access to jumping sites (see box below). New infrastructure developments have to comply with relevant legislative and structural requirements, some of which may contribute to suicide prevention at locations of concern. However, there are no suicide prevention-specific statutory requirements for new infrastructure developments in Scotland. International

evidence, however, suggests a number of infrastructure interventions to reduce suicidal acts at jumping sites.

Restricting access to means at jumping sites: infrastructure and design considerations

1. Barriers at jumping sites should:

- be at least 250 cm or higher
- not offer footholds for potential jumpers
- have minimal visual and aesthetic impact
- not significantly reduce existing pedestrian access to bridges
- be structurally and aerodynamically stable
- be easy and cost effective to install, maintain and clean
- not present a physical challenge to be overcome in risky activities.

2. To restrict access in tall buildings:

- enclose stairwells
- restrict rooftop and balcony access
- restrict window openings.

Source: Beautrais AL, Gould MS and Caine ED. *Preventing suicide by jumping from bridges owned by the City of Ithaca and Cornell University: Extended Report*. Ithaca: Cornell University; 2010. Available at: https://meansrestrictionstudy.fs.cornell.edu/file/Suicide%20Prevention%20Consultation,%20Extended%20Rpt,%202010_07.pdf (accessed 22 February 2016)

5. Monitoring and Evaluation

Given the uncertainty associated with the evidence for reducing suicides at locations of concern, it is important to monitor the interventions to assess their effectiveness. The absence of robust and ongoing monitoring and evaluation limits opportunities to establish the effectiveness of interventions and cross-agency learning on implications for further action and improvements as required. It is considered that a monitoring period of three years would be necessary in order to determine whether or not the measures introduced at each site have led to a reduction in numbers of suicidal acts at the target site. The important work completed by the lead agent or agencies at Step 2 of the process to collect and analyse data for identifying a location of concern and monitoring actions will prove vital in the ongoing monitoring and evaluation of effectiveness.

Part 3: Summary of available evidence and resources

Evidence supporting actions at locations of concern

This section provides a synopsis of published research relating to the key actions described in Figure 1 and Table 1.

The majority of published studies which provide evidence of the effectiveness of actions at locations of concern rely on before-and-after data. This is because it is not usually possible to have any sort of comparison site, and there is certainly no opportunity to randomly offer the intervention to some people and not to others.

Such studies can contribute to knowledge about how well certain actions work, particularly when they are done rigorously and when several of them start to provide evidence that points in the same direction. It is also important to note that although some actions have not yet been comprehensively evaluated, this doesn't necessarily mean they don't work, only that further evaluation is needed.

Physical barriers

Physical barriers can be installed at relevant sites. These barriers might include railings, glass or mesh screens, fences, safety netting, and impenetrable vegetation. (Vegetation can act as a physical barrier, but it can also offer a hiding place to a suicidal person, making it more difficult for them to be located by support or emergency services. The use of such 'natural fences' has not been evaluated.) These barriers have the dual aim of reducing the incidence of suicidal acts and reducing deaths from such acts.

There is strong evidence suggesting that erecting physical barriers on bridges, tall buildings and cliffs known to be locations of concern is effective in reducing suicide from those sites (see Table 2, below).⁷ A number of international studies have demonstrated decreases in suicides by jumping from particular locations of concern following the erection of barriers at these sites. One New Zealand study⁸ also showed that the removal of a bridge barrier was associated with an increase in suicides.

There is less evidence available regarding the effectiveness of railway barriers, although the few studies that have been conducted suggest that these interventions show promise.

It is often assumed that restricting access to means at a location of concern may simply result in people using another site. However, as indicated in Table 2, this assumption is not supported by evidence. The only study which demonstrates an increase in nearby sites is of the Toronto Bloor Street Viaduct site. This suggests that a post-intervention shift may be location specific, rather than a general phenomenon, and the possibility of this should therefore be assessed as part of each action. Similarly, some hypothesise that restriction of access to jumping sites will result in those intent on suicide using another method. Method substitution is difficult to evaluate but available research suggests that although some may seek alternative means, many won't.⁹

Table 2: Summary of evidence and observations related to the effectiveness of physical barriers at jumping sites

| Site and Action | Outcome |
|---|---|
| West Gate Bridge, Melbourne, Australia: Construction of temporary barriers commenced in early 2009; construction of permanent barriers ongoing into 2011. | Between 1 May 2009 and 14 February 2011, five people jumped from the West Gate Bridge, representing a reduction of approximately 85% in the number of suicides at this location compared to |

| Site and Action | Outcome |
|--|---|
| | the two-year period immediately preceding installation of the temporary safety barrier. There has been no apparent concomitant shift to other locations in Victoria. ¹⁰ |
| Gateway Bridge, Brisbane, Australia: Anti-climbing screens of approximately 3m height erected in 1993. ^{11, 12} | Following construction of the screens there has been a significant reduction in the number of suicides. ¹² |
| Clifton Suspension Bridge, Bristol, UK: Fencing of main span (overall fence height 2m from path) in December 1998. | Bridge suicides halved from 8.2 per year (1994–1998) to 4.0 per year (1999–2003). Suicides migrated to the unfenced edges of the bridge, but no increase was observed in male suicide by jumping from other sites in the Bristol area (90% of pre-barrier suicides were males). ¹³ |
| Ellington Street Bridge, Washington, DC, USA: Suicide prevention barriers constructed in 1985. | Bridge suicides reduced from 25 in the seven years prior to barrier construction to one in the five years after construction. There was no increase in suicides from Taft Bridge (one block away), where no barriers had been installed, and there was an overall decrease in the suicide rate in Washington, DC. ¹⁴ |
| Memorial Bridge, Augusta, Maine, USA: Fence constructed in 1983. | 14 suicides occurred prior to barrier construction in 1983; no suicides were recorded in the 22 years after. There was no change in suicides related to jumping from other possible sites in the area. ¹⁵ |

| Site and Action | Outcome |
|---|--|
| Bern Terrace, Switzerland: Safety nets installed in 1998. | Suicides reduced from 2.5 per year to zero. ¹⁶ |
| Grafton Bridge, Auckland, New Zealand: Removal of safety barriers in 1996, reinstallation in 2003. | There was a substantial increase in suicide deaths by jumping from the bridge and fewer suicides by jumping were recorded at surrounding sites after removal of the barriers. No further suicides occurred once barriers were reinstalled. ⁸ |
| Bloor Street Viaduct, Toronto, Canada: A 5m high 'luminous veil' barrier, consisting of thousands of thin steel rods spaced closely together with an angled steel frame, was completed in 2003. | There was a reduction from an average of 9.3 suicides per year to zero in four years after the barrier was installed. There was an increase in the annual rates of suicide by jumping at nearby sites, although this increase was only statistically significant for other bridges (8.7 > 14.2). ¹⁷ |
| Mass Rapid Transit, Singapore: Sliding door system at stations since opening in 1987. | There were no suicides from when the network opened in 1987 until the early 1990s (when the study was published). ¹⁸ |
| Subway system, Hong Kong: Platform station doors (PSD) installed at all 71 platforms in 30 underground stations on the three prominent transit lines between 2002 and 2005. | There was a significant reduction of 59.9% in railway suicides after the PSD installation. There was no sign of displacement of potential attempters to unsealed platforms. ¹⁹ |

Signs and telephone hotlines

Signs displaying crisis hotline telephone numbers encouraging distressed people to seek help have been placed in locations known to be suicide locations of concern, including train stations, bridges and cliffs. Emergency telephones connecting people to dedicated suicide prevention helplines have also been installed at some known locations of concern. At present, there are only a handful of published studies formally evaluating this action. Results are mixed, but some appear promising (see Table 3).

Table 3: Summary of evidence and observations related to the effectiveness of signs and telephone hotlines at known suicide locations of concern

| Site and Action | Outcome |
|--|--|
| Mid-Hudson Bridge, New York, USA: Two telephones connected to a 24-hour emergency service installed in 1984. | In a two-year period, 30 out of 39 people intending to jump from the bridge used the telephone to call for help. Only one person who called the helpline went on to complete suicide. ²⁰ Local media reports indicate that up until 2010, 75 people were assisted to leave the bridge after calling the helpline. ²¹ |
| Car parks, New Forest, UK – identified as a location of concern for suicide by car exhaust (CO) poisoning: In 1998, signs with the Samaritans’ national telephone number and the location of the nearest telephone were posted in 26 car parks where there had been more than one suicide, or | Suicide numbers reduced from an average of 10 per year prior to the intervention to an average of 3.3 per year over a three-year period (October 1998 – September 2001). The average annual total numbers of suicides in the New Forest registration district also decreased in the period. ²² |

| Site and Action | Outcome |
|--|--|
| which were in close proximity to another car park where multiple suicides had occurred. | |
| Golden Gate Bridge, San Francisco, USA: Crisis and suicide hotline phones installed in 1993. | There was no apparent reduction in suicides by jumping from the bridge. In 1994 (the year after phones were installed), there were 38 known deaths; in 1993 there had been 21. ²³ |
| Coronado Bay Bridge, San Diego, USA: Suicide prevention call boxes and signs promoting their use were installed in 1990. | Suicides by jumping from the Coronado Bridge have remained consistent since crisis telephones were installed. ²⁴ |

Surveillance measures

Surveillance methods at locations of concern include on-site measures such as patrols, and remote methods such as closed-circuit television (CCTV). Patrols may be made by police, paid suicide prevention officers, security officers, unpaid volunteers and ‘community lifesavers’. Paid patrols can be a costly intervention, and despite there being no published studies regarding their effectiveness, they are active at a number of locations worldwide. CCTV at locations of concern allows monitoring of high-risk people at the location, and can facilitate provision of emergency intervention.

New technologies may influence the effectiveness of measures such as telephone and surveillance technologies at locations of concern. These include triangulation of text messages, social media and telephone calls from mobile phones which can pinpoint a person’s location, and the use of ground radar which can trigger an alarm if a person moves into a certain location by, for example, scaling a barrier.

Data Fusion Technology may be able to trigger alarms based on the body language of people at the sites. Advances in relevant technology should be researched as part of the development of the intervention strategy.

Table 4: Summary of evidence and observations related to the effectiveness of surveillance measures at known suicide locations of concern

| Site and Action | Outcome |
|---|---|
| <p>Clifton Suspension Bridge, Bristol, UK: CCTV cameras installed along barriers. Staff based in the Bridgemaister’s offices at either end of the bridge monitor footage and conduct regular patrols.</p> | <p>There has been no clear decrease in the number of incidents recorded by bridge staff, but the number of deaths has halved. Bridge staff suggest that CCTV enables them to see and then act quickly when people climb up the wires. The cameras alert them to incidents, and the barriers can buy them time to respond as they are difficult to scale. Only one incident had been recorded where bridge staff had spoken to someone who then jumped from the bridge. In 91% of the cases, suicide attempters on the bridge have been subsequently removed from the area by the police or other services.¹³</p> |
| <p>Beachy Head cliffs, Sussex, England: Beachy Head Chaplaincy Team commenced patrols in August 2004. In 2011, this comprised 15 frontline team members providing 100 hours per</p> | <p>Between 2006 and 2010, the Chaplaincy Team responded to a total of 3,376 incidents and rescued 1,165 ‘despondent persons’.²⁵ Coastguard sources quoted in the media suggest there are about 20</p> |

| Site and Action | Outcome |
|--|--|
| week of patrols and an on-call response team providing 24-hour coverage. | suicides by jumping per year at Beachy Head. ²⁶ |
| Golden Gate Bridge, San Francisco, USA: CCTV monitored 24 hours a day was upgraded in the mid-1990s (after the crisis telephone installation) and again in 2001 (to provide detailed surveillance of foot paths). Public safety patrols and law enforcement patrols trained in suicide prevention and crisis action began in 1996. | Initial anecdotal reports suggested patrols were effective in reducing the number of suicides from the bridge by more than half ²⁷ (16 deaths in 1996 compared to 34 in 1995). ²⁸ However, in 1997, the number climbed again to 28 deaths. In 2007, the highest number of suicides by jumping from the bridge was recorded (officially 35, but an additional four were witnessed directly or through surveillance camera records). In 2008, 34 deaths were recorded. ²⁸ |

Restriction of access

Expanses of natural cliffs or headlands can be difficult sites at which to construct barriers such as fences and nets. It has been suggested that ease of access to a site may contribute to it becoming a location of concern.²⁹

Restricting vehicular and pedestrian access to jumping sites such as cliffs and bridges is proposed to contribute to decreases in the number of suicidal acts from such sites. Only one published study of this kind of action was identified in the literature search, and this found it to be effective.

Table 5: Summary of evidence and observations related to the effectiveness of restricting vehicular access to known suicide locations of concern

| Site and Action | Outcome |
|---|---|
| <p>Lawyer’s Head, Dunedin, New Zealand: Vehicular access to the headland was closed by Dunedin City Council on 1 August 2006 for sewage works. A high locked gate (first 1.6km then 1.2km from the headland) was installed on the access road. Pedestrian access was still possible via a number of routes.</p> | <p>In the 10-year period before access was restricted (1 August 1996 – 31 July 2006) there were 16 incidents (13 of jumping and three of falling) from the cliffs, resulting in 15 deaths. Eleven of these were ruled suicide by the coroner. In the two years after restriction of access there were no deaths and no jumps from Lawyer’s Head. Police callouts to Lawyer’s Head because of threatened suicide fell to 9.5 per year, compared with 19.3 per year for the preceding four years at the cliff.³⁰</p> |

Training for staff working at or near locations of concern

Providing training for staff who work close to a known location of concern, also referred to as ‘gatekeeper training’, may be a useful strategy. This training focuses on recognising signs of suicidal behaviour, assessing the level of suicide risk, and intervening accordingly – for example, speaking with the person, and referring them to a source of support. There are no known evaluations of this type of intervention in relation to locations of concern. However, a review of evaluations of gatekeeper training as a more general suicide prevention activity suggests it has promise as part of a multifaceted strategy.³¹ There has been significant investment in gatekeeper training in Scotland since the launch of the Choose Life strategy in 2003. The national training packages that are delivered in Scotland are managed by NHS Health

Scotland. More information can be found on the Choose Life website:

www.chooselife.net/Training/index.aspx

Managing media reporting of suicides at locations of concern

There is strong evidence of a relationship between media reporting of suicide and increases in subsequent suicidal acts.³² Higher rates of suicide by a particular method have been found to follow media coverage of a suicide by these methods.^{33, 34, 35} Because suicidal acts occurring at locations of concern tend to employ the same method, media professionals have been encouraged to exercise caution in reporting stories about these locations. Even the implementation of suicide prevention strategies at locations of concern should be reported with care. Concerns have been expressed that well-intended reporting of this kind may still have the adverse consequence of generating publicity about the site as a suicide location.³⁶ Interventions that reduce the number of suicidal events at a particular location of concern and are reported in a responsible manner are hypothesised to have flow-on effects for other sites.^{16, 37}

Most of the evidence for the effectiveness of responsible media reporting of suicide is related to general suicide prevention, rather than being specific to locations of concern. One study specifically exploring the effectiveness of reducing media reporting in relation to a particular site (in this case railways) was identified (see Table 6, below).

Table 6: Summary of evidence and observations related to the management of media reporting on method-specific suicide

| Site and Action | Outcome |
|---|---|
| <p>Subway system, Vienna, Austria: Implementation of guidelines for responsible media reporting on suicide from 1987.</p> | <p>A reduction in the reporting of subway suicides was accompanied by a 75% decrease in the rate of subway suicides and a 20% decrease in the overall suicide rate, a level largely maintained over the five-year period after the guidelines were introduced.³⁹</p> |

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