



## Detailed description of systems-level diagram for school-based point clusters

What we know about the epidemiology of suicide clusters is very limited. Researchers know very little about the mechanisms underlying the formation of suicide point clusters. Building on the work of previous researchers, we offer a systems-level diagram to illustrate the complex interplay of factors surrounding school-based suicide point clusters (Figure 2).

This diagram depicts the relationships between community level, school level, and individual level factors that contribute to the formation of suicide point clusters. The primary causal pathway is depicted in bold. The primary causal pathway starts at the moment of a sentinel death within a school community. A sentinel death results in exposure to a peer's suicide for the entire student body. Researchers have theorized about diffusion or contagion mechanisms that contribute to the spread of suicidal thoughts and suicidal ideation (Baller and Richardson 2009). Suicidal ideation must be present at the individual level in order for another student to make a suicide attempt on their own life, which may result in death. Subsequent suicide deaths from within the same school within a particular time frame result in the formation of a suicide point cluster.

At the individual level, suicidal ideation and access to lethal means must be present for another student to attempt suicide (Turecki and Brent 2016). Discussion about another person's suicide or discussion of suicide prevention strategies do not cause suicidal ideation, however, the suicide death of someone in the individual's peer group may make suicide a more acceptable option for an individual who is already considering suicide (Kleiman 2015). Diffusion or contagion mechanisms may reinforce suicidal ideation or lead to imitation of suicidal behaviors (Gould 2001; Stack 2009). A student may become trapped in the reinforcing loop of contemplating suicide, which when combined with access to lethal means may lead to a suicide attempt or death.

The primary point of interruption for this causal pathway comes from postvention strategies at the school level, in the school's response to the aftermath of a suicide death. The school's response following a suicide death and the implementation of postvention strategies are interchangeable and concurrent, and this is depicted with a reinforcing loop.

There are three main postvention strategies depicted in the diagram. These are mental health support systems, grief and bereavement support, and support for families. Each of these postvention strategies decreases the likelihood that suicide would be seen as an acceptable option by another individual student. Also, each of these postvention strategies relies on a collaborative, cross-sectorial network of community-based support mechanisms (Blanco 2020; Mueller, Diefendorf, et al. 2021), which we refer to in the diagram as the response from the community. The school-based postvention strategies then work in tandem with community-based suicide prevention strategies, and this is depicted in bold with a reinforcing loop.

Suicide deaths impact more than just the school. Following the sentinel death, schools must engage in bidirectional collaboration with the wider community, and acknowledge the community-level trauma following suicide loss (Cox et al. 2016; Leenaars et al. 2001; O'Carroll et al. 1988). The postvention as prevention pathway for preventing suicide deaths is the main balancing loop of this causal loop diagram, depicted with bold lines. The coordinated response from the school and community to prevent subsequent suicide deaths is depicted by the balancing loop.

The response from media and the response from community before and after suicide death contribute to shared understanding about the meaning of suicide and the cultural acceptability of suicide, depicted in the diagram by a reinforcing loop. The cultural acceptability of suicide, along with the social network proximity and geographic proximity to community members and peer groups, contribute to the social integration that students experience in school. Community-level social network proximity and geographic proximity along with school-level social integration contribute to peer influence and attitudes about the acceptability of suicide death, and this is depicted by a reinforcing loop. The influences of the wider community, peer attitudes about suicide, and social integration with peers reinforce messages about suicide acceptability among the peer group (Abrutyn et al. 2020), making suicide acceptability more salient for individuals.

The interplay of community level, school level, and individual level factors are complex, and difficult to disentangle, when it comes to preventing school-based point clusters.