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Epidemiological Investigation of a Youth Suicide Cluster: Delaware 2012

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Abstract

In the first quarter of 2012, eight youth (aged 13–21 years) were known to have died by suicide in Kent and Sussex counties, Delaware, twice the typical median yearly number. State and local officials invited the Centers for Disease Control and Prevention to assist with an epidemiological investigation of fatal and nonfatal youth suicidal behaviors in the first quarter of 2012, to examine risk factors, and to recommend prevention strategies.

Methods—Data were obtained from the Delaware Office of the Medical Examiner, law enforcement, emergency departments, and inpatient records. Key informants from youth-serving organizations in the community were interviewed to better understand local context and perceptions of youth suicide.

Results—Eleven fatal and 116 nonfatal suicide attempts were identified for the first quarter of 2012 in Kent and Sussex counties. The median age was higher for the fatalities (18 years) than the nonfatal attempts (16 years). More males died by suicide, and more females nonfatally attempted suicide. Fatal methods were either hanging or firearm, while nonfatal methods were diverse, led by overdose/poisoning and cutting. All decedents had two or more precipitating circumstances. Seventeen of 116 nonfatal cases reported that a peer/friend recently died by or attempted suicide. Local barriers to youth services and suicide prevention were identified.

Recommended prevention strategies included: Training to identify at-risk youth and guide them to services; development of youth programs; monitoring trends in youth suicidal behaviors; reviewing evidence-based suicide prevention strategies; and continued implementation of CDC media guidelines for reporting on suicide.

Discussion—Several features were similar to previous clusters: Occurrence among vulnerable youth, rural or suburban setting, and precipitating negative life events. Distribution by sex and method were consistent with national trends for both fatalities and nonfatalities. References to the decedents in the context of nonfatal attempts support the concept of ‘point clusters’ (social contiguity to other suicidal youth as a risk factor for vulnerable youth) as a framework for understanding clustering of youth suicidal behavior.

INTRODUCTION

Suicide is the third leading cause of death for youth aged 10–24 years in the United States, making it an important public health problem.¹ Between January 11 and March 22, 2012, eight adolescents and young adults (aged 13–21 years) were known to have died by suicide in Kent and Sussex counties, Delaware. This attracted local concern because this exceeded the number of suicide deaths typically reported for this age group in this area in an entire year (median: four, years 2000–2009)² and because four of the eight youths attended the same high school. This prompted a coordinated investigation by the state health and education departments, the Governor’s office, mental health agencies, law enforcement, and others. The Centers for Disease Control and Prevention (CDC) was invited to assist with the epidemiologic investigation of these deaths. The CDC team visited from April 24 to May 4, 2012. The objectives were to determine the rates of fatal and nonfatal suicidal behaviors in the first quarter of 2012, examine risk factors for suicide among Delaware youth, and to recommend potential strategies to prevent future suicides.

METHODS

Information about the cases was obtained from various data sources, including records from the Office of the Medical Examiner, law enforcement, emergency departments, and in patient behavioral health facilities.

We used the following definitions:

- **Fatal case:** A resident of Kent or Sussex County, Delaware, aged 12–21 years, whose death was classified in coroner/medical examiner records as being caused by intentional self-harm, and occurred between January 1, 2012, and May 4, 2012 (endpoint of CDC visit).
- **Nonfatal case:** A resident of Kent or Sussex County, aged 12–21 years whose records indicated suicidal behaviors between January 1, 2012, and May 4, 2012. Cases involving suicidal ideation and threats not accompanied by suicidal behaviors were excluded.

To better understand community perceptions of youth suicide in Kent and Sussex counties, we interviewed key informants who regularly interact with area youth or work in youth-serving organizations. The interview participants were: the superintendent, principal, select teachers, and guidance personnel from High School A (the high school with four decedents); crisis workers from an area counseling agency; and the principal and guidance personnel from another large area high school (High School B).

RESULTS

Eleven deaths by suicide occurred between January 1 and May 4, 2012, among Kent and Sussex County youth. One of these deaths occurred during the investigation. A timeline of the fatal and nonfatal events is shown in Figure 1.

The decedents' median age was 18 years. One was aged 12–13 years, eight were aged 16–18 years, and two were aged 19–21 years. Seven were male and four were female. Ten were White, and one was Asian. All deaths occurred by either hanging/strangulation (n=7) or firearm (n=4) See Figure 2.

We estimated 116 nonfatal suicide attempts between January 1 and May 4, 2012. The median age was 16 years. Eight (7 percent) were aged 12–13 years, 31 (27 percent) were aged 14–15 years, 45 (39 percent) were aged 16–18 years, and 32 (28 percent) were aged 19–21 years. Fifty-one (44 percent) were male and 65 (56 percent) were female. Seventy-seven were White (66 percent), 18 were Black (16 percent), nine were Hispanic/Latino (8 percent), seven were more than one race/other (6 percent), and two were Asian (2 percent). Race/ethnicity was unknown in three cases (2 percent). The methods of injury were: Overdose/poisoning (n=41, 35 percent), cutting (n=28, 24 percent), hanging/strangulation (n=16, 14 percent), multiple methods (n=9, 8 percent), motor vehicle (n=8, 7 percent), gunshot (n=6, 5 percent), jumping (n=5, 4 percent), and other (n=1, 1 percent). The method of injury was unknown in two cases (2 percent) See Figure 3.

Circumstances surrounding the fatal suicide attempts in this cluster were: mental health problems (n=7); problem with parent (s) (n=5); legal problems (n=5); problem with boyfriend/girlfriend (n=4); substance use (n=4); academic problems (n=3); communication with others about suicide (n=3); peer problems (n=2); sexual minority status (n=2). All cases indicated two or more of these circumstances. Over half the decedents had five or more.

Seventeen of the 116 youth who nonfatally attempted suicide indicated that a peer or friend had recently attempted or died by suicide; 12 of these 17 indicated that the peer or friend was one of the decedents from High School A or another decedent in this cluster.

Informants described the following community barriers to suicide prevention: limited positive activities for youth outside of school; limited youth mental health resources and long wait lists for those that do exist; lack of transportation to appointments and activities; lack of community education about mental health, substance abuse, suicide prevention, and parenting skills; youth and parental resistance to seeking mental health treatment; inappropriate access to firearms; and limited ongoing staff training about substance abuse, mental health, crisis response, and available health-related resources for youth.

LIMITATIONS

The primary limitations of this investigation were that we did not speak directly with youth in the community, who may have offered additional perspectives; that we were unable to canvass every hospital in the area, although we visited those that attend to the majority of patients; and that although we reviewed the cases that would likely be most prone to

misclassification (e.g., overdose and trauma), some cases of suicidal behavior might have been missed due to ambiguity of circumstances.

DISCUSSION

Eleven youth aged 12–21 years died by suicide in Kent and Sussex Counties, Delaware between January 1 and May 4, 2012. We identified 116 nonfatal suicide attempts in this same age group and time period. Several features of this cluster bore similarities to characteristics identified in other studies on suicide clusters^{3,4} such as occurring among adolescents or young adults, particularly those whom exhibit certain vulnerabilities like recent negative life events, and occurring in a rural or suburban setting. In addition, findings about the distribution by sex (more males than females died, while more females engaged in nonfatal attempts) and method (the fatalities were most commonly by hanging, followed by firearms; and the nonfatal attempts were most commonly by overdose/poisoning, followed by cutting) were consistent with national data or trends.^{5,6} The circumstances most frequently indicated for the decedents were also consistent with the most commonly identified factors associated with youth suicidal behavior in the research literature.⁷ Multiple factors (i.e., a compounding of circumstances) were indicated for all decedents.

The findings that four decedents attended the same high school and that 12 nonfatal cases' records indicated an explicit reference to one of the decedents as a contextual factor for their suicide attempt supports the idea of 'point clusters'⁴ as one framework for understanding some of the suicidal behavior observed in this cluster. This concept proposes that for vulnerable youth, social contiguity to another young person (most commonly at school or in a hospital) who attempts or dies by suicide lowers their own threshold for suicidality.

Youth who commit or attempt suicide typically have multiple risk factors for suicide before an attempt is made. A precipitating event then often triggers the attempt in an already vulnerable person. Therefore, it is possible to detect risk factors and prevent suicidal behaviors in vulnerable young persons. With this and CDC's strategic direction in suicide prevention of increasing connectedness between individuals and communities in mind, our preliminary recommendations were: Mental health awareness training (including training on suicidal behavior and substance abuse) for persons in youth-serving organizations, to help staff identify at-risk youth and guide them to appropriate services; development of partnerships among community institutions in different sectors (e.g., education, faith-based organizations, recreation) to combine resources to help address the needs of youth through programs and other activities; to continue to monitor trends in youth suicidal behaviors through local resources (e.g., health department, medical examiner, hospitals); to review evidence-based suicide prevention strategies for youth (see Table 1); and continued implementation of CDC media guidelines for reporting on suicide.⁸ Public health strategies like these have been successfully applied to suicide clusters.^{9,10}

Next steps include case-control analyses of risk factors among the decedents and further descriptive analyses of risk factors among nonfatal cases in this cluster.

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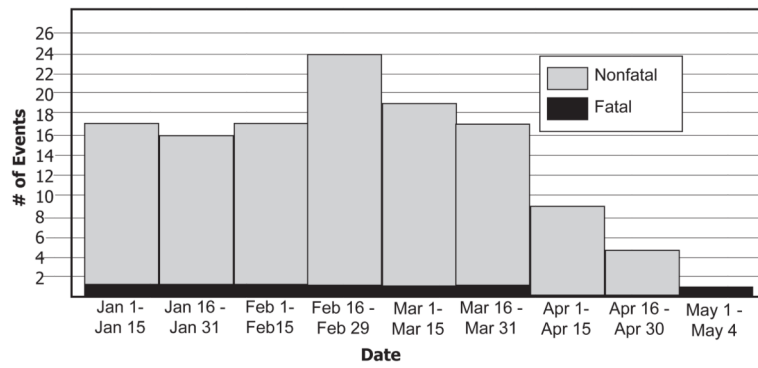


Figure 1.
Timeline of fatal and nonfatal suicide attempts among youth age 12–21, Kent and Sussex counties, Delaware. January 1–May 4, 2012.

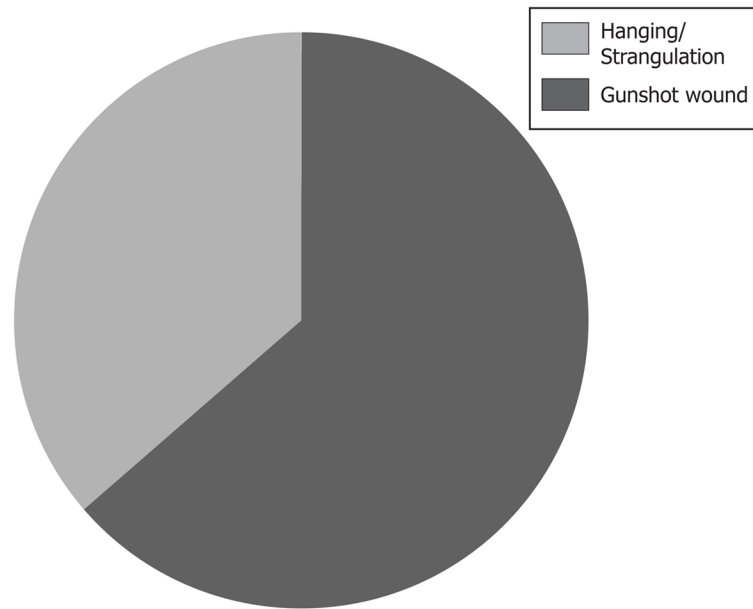


Figure 2. Methods of death by suicide for fatal cases among Kent and Sussex County youth aged 12–21 from January 1 through May 4, 2012.

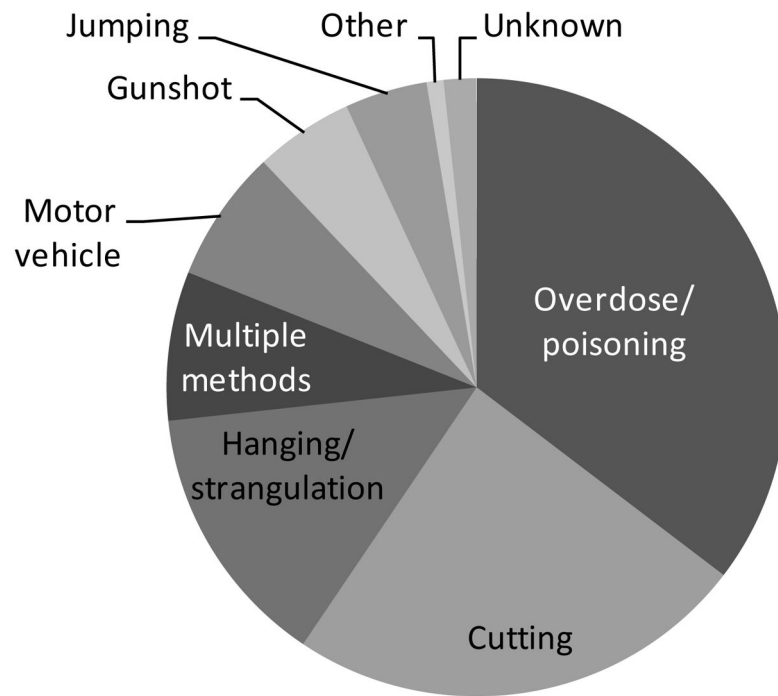


Figure 3.
Methods of suicide attempt for nonfatal cases among Kent and Sussex County youth aged 12–21 from January 1 through May 4, 2012.

Table 1

Evidence-based resources for youth suicide prevention

Resource	Description	Website
Lifelines	School-based suicide Prevention program for middle and high school students and staff	http://www.hazelden.org/web/public/lifelines.page
Suicide Prevention Research Centre (SPRC) adolescent suicide prevention program manual	Description of a suicide prevention program implemented for over 10 years in a Native American community	http://www.sprc.org/library_resources/items/adolescent-suicide-prevention-program-manual
National Registry of Evidence-based Programs and Practices (NREPP)	Searchable web-based database of over 200 mental health and substance abuse prevention and intervention programs	http://www.nrepp.samhsa.gov/
Substance Abuse and Mental Health Services Administration, "Preventing Suicide: A Toolkit for High Schools"	Provides guidance to high schools and school districts in developing strategies for suicide prevention and promotion of behavioral health	http://store.samhsa.gov/product/Preventing-Suicide-A-Toolkit-for-High-Schools/SMA12-4669