Research Trends

Coping with Youth Suicide and Overdose

One Community's Efforts to Investigate, Intervene, and Prevent Suicide Contagion

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Abstract. From 2000–2005, Somerville, MA, experienced a number of youth overdoses and suicides. The community response followed CDC recommendations for contagion containment. A community coalition, Somerville Cares About Prevention, became a pivotal convener of community partners and a local research organization, the Institute for Community Health, provided needed expertise in surveillance and analysis. Mayoral leadership provided the impetus for action while community activists connected those at risk with mental health resources. Using a variety of data sources (including death certificates, youth risk surveys, 911 call data, and hospital discharges) overdose and suicide activity were monitored. Rates of suicide and overdose for 10–24-year-olds were higher than in previous years. Using case investigation methods, the majority of suicide victims were found to be linked through common peer groups and substance abuse. Subsequent community action steps included: a community-based trauma response team, improved media relationships, focus groups for suicide survivors, and prevention trainings to community stakeholders. Youth suicide and overdose activity subsided in May of 2005. The community partnerships were critical elements for developing a response to this public health crisis. This collaborative approach to suicide contagion used existing resources and provides important lessons learned for other communities facing similar circumstances.

Keywords: youth suicide, suicide contagion, overdoses, community coalition

Introduction

Suicide is a leading cause of death among young people in the US (Gould, Wallenstein, Kleinman, O'Carroll, & Mercy, 1990) and although the rate of adolescent suicide has declined over the last decade (Gould, Greenberg, Velting, & Shaffer, 2003), the impact of even one youth suicide on a community can be far reaching. Episodes of suicide contagion among young people have occurred nationally and internationally (Gould, Wallenstein, & Davidson, 1989; Gould, 2004). Suicide contagion, as defined by the Centers for Disease Control and Prevention (CDC), is "a process by which exposure to the suicide or suicidal behavior of one or more persons influences others to commit or attempt suicide" (CDC, 1994). Adolescents are disproportionately affected by this contagion. Some studies have estimated that clusters may account for 1% to 5% of adolescent suicides (Gould et al., 1990; O'Carroll & Mercy, 1990; Mercy et al., 2001). Explanations for suicide contagion may include heightened community awareness, media attention, imitation among peer group members, and glorification of the deceased (O'Carroll, Crosby, Mercy, Lee, & Simon, 2001; CDC, 1988; Pirkis, Blood, Beautrais, Burgess, & Skehan, 2006).

The public health approach to contagious entities includes investigation, case-finding, and intervention and prevention strategies. The National Strategy for Suicide Prevention advocates such an approach for suicide prevention (U.S. Department of Health and Human Services, 2001). Specific recommendations for contagion containment were published by the CDC in 1988 (CDC, 1988). It is clear that orchestrating a coordinated community-wide response is critical for success. Community coalitions can be important vehicles for mobilizing community members

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and exponentially expanding the reach of any efforts. In addition, access to suicide data will assist the community in making informed decisions about intervention and prevention strategies (Suicide Prevention Resource Center, 2007).

In Somerville, MA, a series of youth suicides and overdoses occurred from 2000–2005. In keeping with the CDC recommendations, a community coalition, Somerville Cares About Prevention (SCAP) in partnership with the Institute for Community Health (ICH), a local community-based participatory research organization, led the citywide response. This paper will describe the process that the Somerville community employed to investigate, intervene, and prevent suicide contagion.

Background

Somerville, MA, is a city of 77,478, which borders Boston and the cities of Cambridge, Arlington, Medford, and Everett (U.S. Census Bureau, 2000). It is a city that has changed substantially both economically and demographically in the last decades. While the number of white residents has decreased, all other ethnicities have increased. In 2005, 32% of Somerville residents were estimated to be foreign-born from diverse countries such as Brazil, Portugal, El Salvador, Haiti, and China compared to 29% in 2000 (Community Action Agency of Somerville, 2005; About Somerville, 2007). Simultaneously, the average home price escalated from $231,595 in 2000 to $428,450 in 2005, an increase of 87% (Somerville Mayor's Office of Strategic Planning, 2005). Long-standing working-class residents can no longer afford their own parents' houses. Gentrification and immigration have led to tensions between native Somervillians, transplanted residents, and ethnically diverse immigrant groups. Disaffected youth have expressed their dissatisfaction through graffiti in local parks (Parker, 2005).

Somerville is also a community that has been plagued by long-standing substance abuse. Heroin and other opiate use has been growing in the region (Massachusetts Department of Public Health, 2006). The arrival of oxycodone and other oral pain killers in the late 1990s created a particularly risky environment for substance abusers and a threat for young persons involved in experimentation (Paulozzi, 2006). This triad of economic change, long-term substance abuse, and diversification is the back-drop against which a suicide increase in youth overdoses and suicides occurred.

The First Overdose and Suicide

Recognizing the first death in a suicide contagion can be difficult. Unfortunately, it is often only in retrospect that the first influential death is acknowledged as a trigger for others. While several youth suicides had taken place in previous years, it wasn't until 2001, when one young man took his own life and two popular high school students died of oxycodone overdoses, that concerns about contagion began to surface. One of the young men who died was particularly well known and a popular member of the Somerville High School hockey team.

In 2002, the Somerville Health and School Departments conducted their first high-school teen health survey based on the CDC Youth Risk Behavior Survey (YRBS; Brener, Collins, Kann, Warren, & Williams, 1995). The survey assessed risky behaviors in a number of areas and included the YRBS questions on suicide behaviors (depression, self-reports of suicidal thoughts, plans, and attempts in the last 12 months). The results found that 38% of the 1,337 students who responded said they had felt so sad or hopeless almost every day for 2 weeks or more that they stopped doing some usual activities during the past 12 months (43% of females and 34% of males), 21% said they seriously considered suicide (22% of females and 19% of males), and 14% of students said they had attempted suicide during the last 12 months (14% of females and 14% of males) (Somerville Health Department, 2002). The rate of attempts was almost twice the national rate.

Based on these results, the Institute for Community Health (ICH) was engaged to conduct an assessment of mental-health and substance-abuse needs in the high school (Gall et al., 2002). The final report noted that there was an existing atmosphere of "tolerance" of drug and alcohol use in Somerville and that the surge in drug-related youth deaths and suicidal behaviors represented an increase from previous behavior. The level of existing services did not meet the demonstrated need.

Community Coalition Building: Critical Partners

Members of an existing coalition, SCAP, began to emerge as leaders in orchestrating a community response to the suicides and overdoses. SCAP, originally formed to address historic substance abuse problems, had already brought together a diverse group of stakeholders including community leaders, agencies, and activists and was poised to mobilize the community.

Then in 2002, with the election of a new mayor, the coalition received the necessary support to convince critical stakeholders that a public health crisis was occurring. The Mayor, a life-long resident of Somerville, had known several of the victim's families and acknowledged the problem of drug abuse in his inaugural speech of 2003 (Curtatone, 2003). Subsequently, two task forces were convened: The Mayor's Suicide and Mental Health Taskforce and the Mayor's Opiate Taskforce. They engaged citywide departmental leadership (schools, police, fire) and community mental health partners and were charged with investigating the growing crisis and strategically planning solutions.

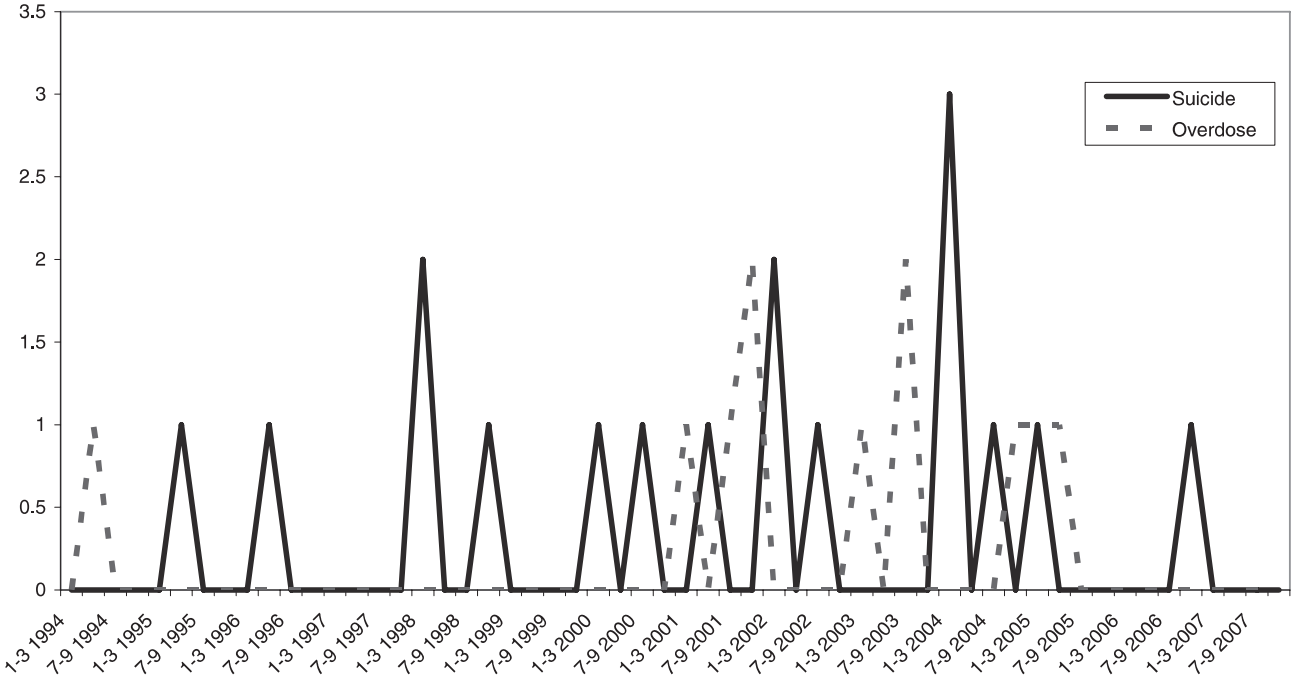


Figure 1. Suicides and lethal overdoses among 10–24-year-olds, Massachusetts 1/1994–12/2007. *Data source:* Death Certificate Data, City of Somerville 2001–2005.

Developing a Surveillance System

Taskforce members needed information in order to answer several critical questions: (1) Were the suicide and overdose deaths significantly elevated from baseline? (2) Were there common links between victims and was this a contagion/cluster? While Somerville had no existing surveillance system, several data sources were available for this purpose.

Death Certificates

Death certificates are maintained by the City Clerk in Somerville, MA. They include information on age of the deceased, gender, and cause of death. They are initially filed with the city before being sent to the state Registry of Vital Records and Statistics. Coalition members began examining death certificates in 2001 and continued to do so through December 2007 to identify all deaths in a rapid manner. Subsequently, death certificates were examined back to 1994 for comparison.

State Data from MassCHIP

Mortality data, available electronically from the state through MassCHIP (Massachusetts Department of Public Health, Massachusetts Community Health Information Profile, 2007), were extracted on fatal drug overdoses and suicides for 10–24-year-old Somerville residents for 1994 through 2005 (the most recent available through MassCHIP). Data on self-inflicted injuries and opiate-related hospital discharges (1994–2006) for Somerville residents were also reviewed.

According to death certificate data, there were 21 suicide- and overdose-related deaths of people between 10–24 years of age (11 suicides and 10 overdoses) that occurred in Somerville between January 2000 and December 2005. Three of these young persons did not live in Somerville at the time of their deaths but were well known in the community (one suicide victim and two overdose victims). There were two additional deaths of young people, which took place during this time, that were suspected of being drug-related but were not reported as overdoses on the death certificates.

All but one of the suicide victims were males and their ages ranged from 16–24 years of age. Three overdose victims were females and the rest were male. While six suicides and four overdoses occurred between 2000 and 2002, five suicides and six overdoses took place between January 2003 and May 2005 (Figure 1).

According to state data, rates for suicide in 10–24-year-olds during this time were substantially higher in Somerville than statewide. The rate for Somerville for 2000–2005 was 9.77/100,000 compared to the state rate of 4.27/100,000. Additionally, there was an increase in the Somerville age-specific rates for suicide in 2000–2005 compared

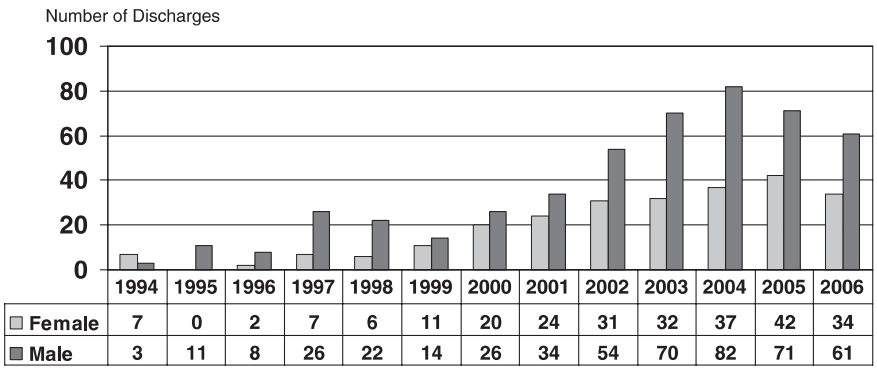


Figure 2. Opioid-related hospital discharges among Somerville residents ages 10–24, 1994–2006. *Data source:* Massachusetts Hospital Discharge Database, MA Division of Health Care Finance and Policy.

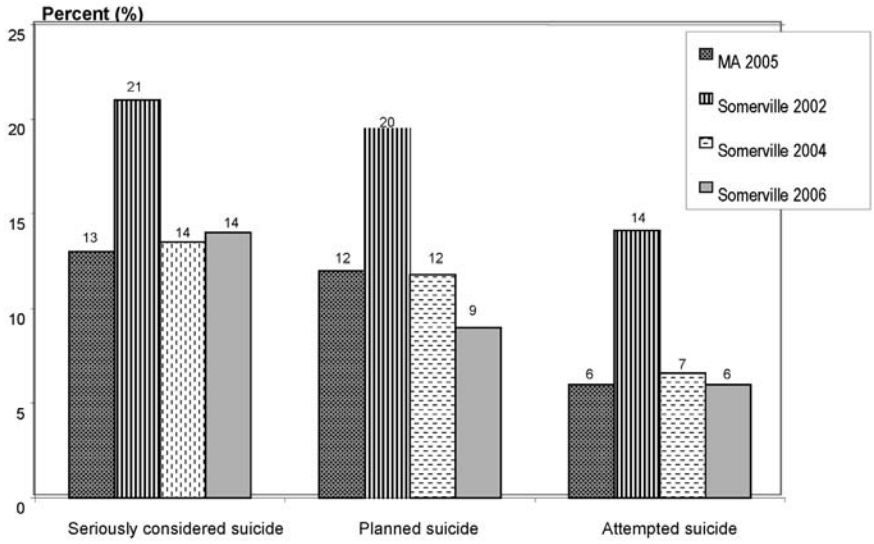


Figure 3. High-school students who reported suicidal thoughts and behaviors in the last 12 months. *Data source:* MassCHIP v3.00r3.13 of January 2007, Somerville High School 2002 (N = 1466), 2004 (N = 1382), and 2006 (N = 1003) health surveys.

to the previous 5 years, when the rate was 6.04/100,000 (1994–1999). Similarly, rates for opioid-related fatal overdoses in this age group also exceeded state rates (Somerville-23.2/100,000 in 2001 and 5.91/100,000 in 2004, compared to statewide rates of 4.27/100,000 and 5.22/100,000; respectively). For 2000–2005 the Somerville rate was 5.86/100,000 compared to the state rate of 4.36/100,000. The rate for opioid-related age-specific overdoses in Somerville from 2000–2005 was also substantially higher than during the previous 5-year period (5.86/100,000 compared to 1.21/100,000). While we did not have statistical evidence that the 2000–2005 suicides and overdoses represented a cluster, data certainly suggested elevated activity (MassChip, 2006).

Hospital Discharge Data

State data for nonfatal self-inflicted hospital discharges and opioid-related causes were reviewed from 1994 through 2006 for 10–24-year-old Somerville residents. Somerville's rate of hospital discharges for self-inflicted injuries exceeded state rates in 2004 (130.5/100,000 compared to the state rate of 76.4/100,000), which had not happened since 1999. Opioid-related hospital discharges increased substantially from 1994 to 2001 and continued to rise until 2004 when the Somerville rate was 706.0/100,000 compared to the state rate of 269.2/100,000 (Figure 2) (MassCHIP, 2007).

Teen Surveys

The teen health survey conducted in Somerville High School provided pertinent information on student risk behaviors. From 2002 to 2004, the fraction of teens who had considered, planned, and attempted suicide in the last 12 months dropped substantially. By 2004, percentages were lower than statewide rates (Figure 3).

911 Call Data

The Somerville Fire Department agreed to share data on 911 dispatch calls for drug and alcohol overdoses and suicide attempts involving 10–24-year-olds. This data, col-

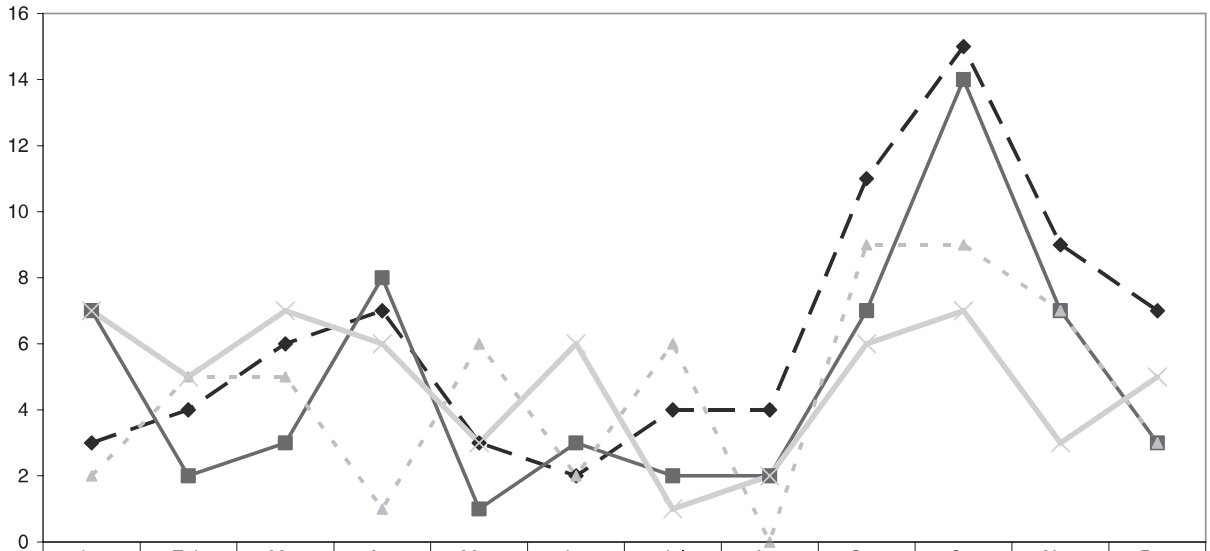
Figure 4. Suicide attempts and completed suicides among Somerville residents ages 10 to 24 years ($N = 37$ cases: 9 suicides and 28 suicide attempts). *Data source:* 911 Fire Call Data, (01/04–12/05 and Death Certificate (01/01–12/05) data. Note: One case when a Malden resident completed suicide in Somerville (2002) was included in mapping.

lected by the dispatch desk, included the location, the reason (drug, alcohol, or suicide attempt) for the call, and the age of the person involved and was available starting 12/1/2004. Prior to this time, data were not kept in an organized fashion and were, therefore, unavailable for comparison. Once collected, data on 10–24-year-olds were mapped using GIS (ArcGIS, 9.1) mapping software as an overlay on the city grid. In addition, data were put into a Microsoft Excel spreadsheet in order to look at trends over time. The GIS map of suicides highlighted the areas of the community most impacted by the events, which informed prevention and intervention efforts (Figure 4).

Fire call data showed increased activity in nonlethal drug overdoses during the months of July through November of 2004 and 2005 (Figure 5) while suicide attempts did not demonstrate the same patterns. Overall, suicide behaviors were higher in 2004 than in 2005 but no clear year-to-year patterns emerged (Figure 6).

Determining Contagion and Identifying Those at Greatest Risk

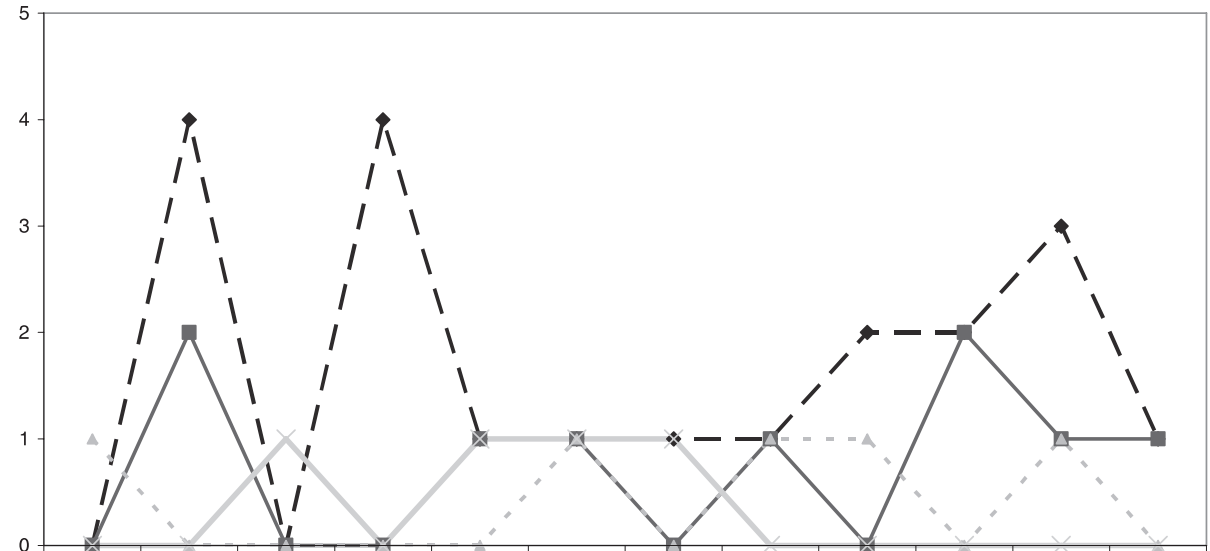
To determine whether the current crisis reflected a contagion, it was necessary to establish the relationships between known victims. Members of the coalition needed to talk to victim's family members and friends. This type of postmortem assessment has been used in previous studies of suicide (Gould et al., 1989; Shaffer, 1988; O'Carroll et al., 2001). After initial attempts, it became clear that family members did not want to discuss their losses with mental health professionals. This was an important realization for the professionals in the group. Several SCAP members who were long-term Somerville residents and had relationships with the impacted families were able to gather the necessary information. While actual individual psychological autopsies were not performed, information was gathered about a group of deaths from different perspectives in



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2004	3	4	6	7	3	2	4	4	11	15	9	7
2005	7	2	3	8	1	3	2	2	7	14	7	3
2006	2	5	5	1	6	2	6	0	9	9	7	3
2007	7	5	7	6	3	6	1	2	6	7	3	5

Months

Figure 5. Nonlethal overdoses among Sommerville youth ages 10–24, 1/2004–12/2007. *Data source:* 911 Fire Call Data, Fire Department City of Somerville, MA.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2004	0	4	0	4	1	1	1	1	2	2	3	1
2005	0	2	0	0	1	1	0	1	0	2	1	1
2006	1	0	0	0	0	1	0	1	1	0	1	0
2007	0	0	1	0	1	1	1	0	0	0	0	0

Months

Figure 6. Suicide attempts among Somerville youth ages 10–24, 1/2004–12/2007. *Data source:* 911 Fire Call Data, Fire Department City of Somerville, MA.

an effort to understand common threads. A leadership group of coalition members, including mental health clinicians, school leadership, police, and several key community parents, met weekly to review information on newly discovered relationships between victims and their social circles. This mapping exercise helped create a picture of the

crisis, including the families most impacted by the losses, and the youth at highest risk for suicide and overdose.

It was discovered that youth were communicating about suicide and overdose activity via internet sites (Somerville's Lost Souls, 2007). The legacy pages of the obituaries (Boston Globe Legacy Pages, 2007) and several "myspace" pages became places where loved ones and friends paid their respects, memorialized those lost, and talked about their feelings (Save our Somerville, 2006; YouTube, 2006). It was on these websites that the concerned adults learned about additional connections between the victims. While the use of the internet for social support has been documented elsewhere (Whitlock, Powers, & Eckenrode, 2006), we have not found other reports of its use in episodes of suicide contagion.

Based on their findings, the leadership group defined the circles of influence that surrounded the victims; their family members, their friends, and their peer group, and was able to identify those who were most vulnerable. Via their connections in school and in the community, they were able to reach out to youth at risk and try to help link them to care.

Investigation revealed that 57% (12) of the victims of suicide and overdose (four suicides, eight overdoses) were connected to each other through friendship. The first of these victims died in 2001. While two suicides occurred in 2000, there were no relationships established between them and the victims that followed. One young man's comments at the 2007 Somerville Peace conference were particularly poignant, "I entered high school in 2001 and by 2005, I had lost 16 friends, acquaintances, or classmates" (McLaughlin, 2007). It is quite possible that starting in 2001, as many as 16 victims were part of a common peer group known to be part of the "old" Somerville culture (referred to as "da ville"): multigenerational families of white Northern European origin. While several of the deceased had moved to neighboring cities and towns, they continued to associate with their friends in Somerville. Investigation also revealed that five individuals were connected through sports teams (hockey, basketball), six of the nine suicide victims were involved with substance abuse, and eight of the overdoses involved heroin or other opiates.

The relationship between substance abuse and suicide has been documented extensively in the literature (Hacker, Suglia, Fried, Rappaport, & Cabral, 2006; Kelly, Corneilius, & Clark, 2003; Garland & Ziegler, 1993; Wu et al., 2004). In Somerville, this relationship was particularly strong. Not only did a number of suicide victims engage in substance use but the young people in the affected peer group did not differentiate by mode of death. Rather, they referred to all the friends they had lost. On several websites, all those who were lost were named regardless of means of death (including murder, illness, and accidental death). One website called "Somerville's Lost Souls" started with the introduction, "This group is dedicated to the youth (anyone under 30) of Somerville, MA. who died tragically before their time." (Somerville's Lost Souls, 2007). Some 47 names were listed.

Intervention Steps

From 2003–2005, SCAP and ICH reviewed data and presented their analysis to the Mayor's Suicide and Mental Health Taskforce. With this information, the Taskforce strategically planned and implemented a series of interventions to prevent youth suicide and promote emotional well-being. In keeping with the CDC recommendations, the Taskforce leaders functioned as coordinators and facilitators of the community-wide response, working with other groups to maximize impact while identifying gaps that existed. Intervention activities were identified in several focus areas: support services, youth development, media approaches and education, and then resources were aligned to achieve goals.

Support Services

During the early phases of the crisis, with guidance from local experts, SCAP implemented a local Trauma Response Network. Community members including parents, mental health professionals, and teachers who were closest to the young people impacted by the situation were trained in posttraumatic stress management. These individuals were then available to investigate traumatic events and their repercussions, attend wakes, funerals, and respond to youth suffering from the impact of these tragedies. A trauma coordinator was hired to facilitate and expand the network. The network met throughout the crisis and continues to meet regularly in the postcrisis period. To date more than 100 community members have been trained and maintained in posttraumatic stress management and over 20 interventions have been conducted.

Simultaneously, other community-wide activities were underway to increase awareness and drive prevention efforts. A candle-light vigil was held to honor the deceased, regardless of cause of deaths, in an effort to grieve the departed without stigmatizing the manner of death. A substance abuse "speak-out" was held which allowed community members to talk openly about the impact of substance abuse on their lives and their community. Education forums and trainings on the signs and symptoms of substance abuse were held throughout the community and efforts were made to reach out to the recovery community and link substance abusers with needed resources.

The schools, in collaboration with local mental health agencies and the Trauma Response Network, provided crisis counseling to students and their parents. In addition, these agencies expanded school-based mental health services and worked with staff and faculty to encourage referral and consultation as needed. The local hospital insured that beds were preferentially made available for treatment of Somerville residents and the emergency room monitored activity and communicated with the network.

As the crisis progressed, coalition members identified

the need to offer support to friends and family members of the victims. State funding was procured by a local community mental health agency to reach out to known suicide survivors and determine appropriate services. To date, 14 people have responded to recruitment strategies and helped generate recommendations for the community.

Youth Development and Teen Leadership

Youth development activities were lacking in Somerville and were seen as crucial ingredients for long-term support of young people. Young people needed more positive opportunities for community involvement and leadership. In 2003, the Mayor enlisted the Center for Teen Empowerment to assess and make recommendations for improvement of youth services in Somerville. These recommendations provided a framework for youth development in the community (Center for Teen Empowerment, 2004). Subsequently, a series of efforts including a Youth Worker Network, recreation programs, and after-school activities were either launched or expanded across the city by various organizations and city departments.

Several organizations initiated programming in teen leadership. These included the SCAP Youth Development Leadership Program (YDLP; focused on empowering and educating youth about substance abuse), the Somerville Youth Council, and the Center for Teen Empowerment's youth leadership programs. One YDLP graduate went on to hold a leadership role at both Teen Empowerment and the Somerville Youth Program and recently cofounded his own nonprofit named Save Our Somerville (SOS) while another was awarded a community service award.

Media and Education Approaches

As part of the crisis response, Taskforce members met with the editor of the local newspaper to discuss guidelines for reporting on suicide based on the CDC recommendations (CDC, 1994). These were adopted and resulted in nonsensational reporting of deaths. Other media approaches included writing a newspaper section for youth and families, publishing prevention articles at holidays and anniversaries of youth deaths, and creating a video for the local cable channel called "Building Emotional Strength in Teens and Families."

Prevention efforts also took the form of broader community education efforts. Funding was secured to hold a series of workshops entitled "Caregiver Conversations" with coaches, youth workers, and after school program leaders. The workshops focused on enhancing adults' abilities to recognize suicide and substance abuse risk-factors and offered information on referral resources.

Postintervention Data

According to death certificate data, Somerville has experienced only one suicide and no fatal overdoses in 10–24-year-olds since May of 2005 (Figure 1). The suicide victim was a college student and had no relationship to previous victims. Data collected from other sources also provided evidence of decreasing suicide and overdose activity since 2005. Hospital discharge data for nonfatal self-inflicted injuries demonstrated a downward trend revealing that Somerville rates dipped below the state rate in both 2005 and 2006 (47.3/100,000 and 53.2/100,000 compared with 73.7/100,000 and 74.8/100,000 statewide). Nonfatal opioid-related hospital discharges for Somerville residents have also trended downward since peaking in 2004 (Figure 2). The 911 data continued to demonstrate a consistent annual pattern in nonlethal suicide attempts and overdoses. Overall, activity peaked in 2004 and has been diminishing ever since (Figure 5). Lastly, the Somerville Teen Health survey again showed decreasing rates of responses on suicide questions in 2006 (Figure 3).

While the available data suggest that the interventions conducted in Somerville had a favorable impact on containing the contagion, it is impossible to know if there were other factors responsible for the decline in suicide/overdose activity. We can only examine pre- and postintervention activity and speculate on the success of the community response. It is also impossible to determine the impact of any one individual activity on alleviating the crisis. It is likely that the interplay of multiple strategies in multiple settings amplified the effect of the various interventions.

Conclusions

There were a number of key ingredients that contributed to the success of the community response in Somerville. First, there was a level of community readiness and coordination as evidenced by the existence of a strong coalition. SCAP provided needed infrastructure for action and leverage to capture resources. It also provided a forum where various strata of the community were represented: professionals, leaders of local government, and activists with extensive ties to the portion of the community most impacted by the crisis. Second, political leadership was present. The new Mayor embraced the issue and brought resources to bear for both suicide and overdose prevention. Third, the relationship with a community-based research organization, ICH, provided access to data. Data supported perception by identifying a public health crisis. This allowed the community to ask questions, determine root causes, and plan accordingly. While these elements catalyzed action and provided the "glue" for collaborative efforts, a fourth element, the commitment and willingness of various community agencies and individuals to provide voluntary resources to solve a community problem, cannot be

underestimated. This collective action may, perhaps, be the most important element in this or any other community response to crisis.

The Somerville experience represents a community response to a youth suicide and overdose contagion, but would the community have responded similarly if the young victims had been unrelated? In examining the early phases of the response, when relationships of victims were still unknown, it appears that the community would have mourned, supported survivors, and moved on. It was the contagious nature of the crisis and the associated urgency that fueled a heightened community response and mobilized the various partners in the manner described.

Statewide, Somerville has been cited as a model for change on issues related to youth alcohol and drug abuse (Moulton, 2005). While too many young people have been lost prematurely, what remains is a trained and vigilant network of public health professionals, agency directors, substance abuse and mental health clinicians, as well as a strong cadre of community residents. Intervention, treatment, and prevention leaders are working together more closely than before the crisis and Somerville is a more informed and alert community. Now, more than a year later, the community will continue its efforts and build on its successes.

Acknowledgment

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