Undetermined risk factors for suicide among youth, ages 10–24 — Santa Clara County, CA, 2016

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County Briefing

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Disclaimer

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention and the Substance Abuse and Mental Health Services Administration.
From May 2009 through January 2010, five known suicides occurred among incoming, current, or alumni of one high school in one school district in Santa Clara County, California.
From October 2014 through March 2015, four additional known suicides occurred among current or alumni of two high schools in the same school district.
In response to these community identified clusters that occurred in the city of Palo Alto, a formal request for epidemiological assistance, or an Epi-Aid, was made on November 11th 2015 by the California Department of Public Health, on behalf of the Santa Clara County Public Health Department.

The request was made to both the Centers for Disease Control and Prevention, or CDC, and to partners at the Substance Abuse and Mental Health Services Administration, or SAMHSA.
Epi-Aid investigations

- Short, rapid investigation
- Public health authorities must make a formal request
- Not research studies
- Make practical recommendations for public health action

- Epidemiological assistance, or Epi-Aids, are a mechanism at CDC that allows for a short, rapid investigation of a public health issue or emergency
- To initiate an Epi-Aid, public health authorities, such as health departments or ministries of health, must make a formal request to the CDC for assistance.
- Epi-Aids are not research studies. Rather, they are rapid investigations of urgent public health problems that tend to use field epidemiology techniques and approaches.
- The main goal of Epi-Aid investigations is to make practical recommendations for public health action
Objectives

1. Characterize the epidemiology of, and trends in, fatal and nonfatal suicidal behaviors among youth occurring from 2003 through 2015 in Santa Clara County, California; and data permitting, compare characteristics at multiple levels, such as school districts and cities.

2. Examine the degree to which media coverage of youth suicides occurring from 2008 through 2015 in Santa Clara County, California, met safe suicide reporting guidelines.

3. Inventory and compare youth suicide prevention policies, activities, and protocols used in the community to evidence-based and national recommendations.

4. Synthesize information from objectives 1-3 to make recommendations on youth suicide prevention strategies that can be used at the school-, community-, and county-levels.

For this Epi-Aid investigation, we had four main objectives, which are listed on this slide.
Today’s presentation has the following outline.

I will first detail the data sources and analytic approaches used.

Then I will describe selected results for objectives 1 through 3 of this investigation.

And finally I will describe the results of objective 4 and outline recommendations for youth suicide prevention strategies that can be used at the school, community, and county level.
This briefing is meant to provide a broad overview of this investigation.

A selection, but not all, findings and results from this investigation will be presented.

For more detailed and comprehensive information about methods, results, and recommendations of this Epi-Aid, please refer to the final report.
Also, please note that the term “youth” will be used throughout this presentation and this refers to the age range of 10 to 24.

This age range includes adolescents, that are age 10 to 19; and young adults that are age 20 to 24.
To meet the objectives of this investigation, 11 data sources were used. These sources are shown on this slide, and more detailed information on these sources can be found in the final report.
To analyze these datasets, a variety of analytic techniques were used

This includes descriptive statistics to describe counts and frequencies

Rates were calculated and compared to examine trends and differences over time and by place of residence

Bivariate comparisons were used to examine differences between groups on precipitating circumstances, demographic characteristics, and risk factors

And temporal and spatial cluster analyses were conducted to examine if suicides in Santa Clara County were occurring more frequently in time or space than would be expected by chance.

For more detailed information on the statistical analyses used, please refer to the Final Report
Ethical considerations

- Steps taken to ensure confidentiality and limit the possibility of identification of an individual
- Suppressing data when cell size less than 10 individuals
- Suppressing data when cell size was larger than 10 individuals when possibility of identification based on
  - Topic, geographic level, population denominator size
- Data suppressed when cell size was less than or equal to 15 for patient discharge and emergency department data

For all analyses conducted as part of this investigation, several steps were taken to ensure confidentiality and limit the possibility of identification of any individual.

This included suppressing data when a cell size was less than 10 individuals.

Data were also suppressed when a cell size was larger than 10 when there was a possibility of identification based on topic, geographic level, and population denominator size.

Also data were suppressed when a cell size was less than or equal to 15 for patient discharge or emergency department data
I will start with a selection of some of the results for objective one of this investigation which was to

Characterize the epidemiology of, and trends in, fatal and nonfatal suicidal behaviors among youth occurring from 2003 through 2015 in Santa Clara County, California; and data permitting, compare characteristics at multiple levels, such as school districts and cities.
And I will start with results related to fatal suicidal behavior
For the combined years of 2003 to 2014, the crude suicide rate for youth residents of California was 5.3 suicides per 100,000 persons.

A crude suicide rate is the total number of suicide deaths divided by the population total, not adjusted for anything
When looking at Santa Clara County, the crude suicide rate for youth residents for the combined years of 2003 through 2014 was 5.4 per 100,000 persons.
When comparing those two rates,

The Crude suicide rate for youth residents of California was similar to the crude suicide rate for youth residents of Santa Clara County.
To examine rates over time, this graph shows crude suicide rates for two year periods for Santa Clara County, California, and the United States.

On this graph two-year categories are listed on the x-axis, and the crude suicide rate per 100,000 is on the y-axis.

The rate of suicide in Santa Clara County is shown in green dashes, the rate of suicide in California is shown in blue, and the rate of suicide in the United States is shown in purple dots.
Across all time points the crude suicide rate in Santa Clara County is similar to the suicide rate in California.
And the crude suicide rate in Santa Clara County was generally lower than the suicide rate in the United States.
When looking at the predicted suicide rates in cities within Santa Clara County for the combined years of 2003 through 2015, variation by city of residence was identified.
The suicide rate for youth residents of Palo Alto that died in California was 14.1 per 100,000 persons.

<table>
<thead>
<tr>
<th>City</th>
<th>Predicted Crude Suicide Rate per 100,000</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose</td>
<td>4.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>12.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>14.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>6.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>5.1</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Data Source: Vital statistics, combined years 2003-2015
Case Definition: (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.
This was significantly higher than the suicide rate for youth residents of San Jose, Sunnyvale, and Santa Clara;
but was not significantly different from the predicted suicide rate for youth residents of Morgan Hill.
The suicide rate for youth residents of Morgan Hill that died in California was 12.7 per 100,000 persons.
This was significantly higher than the crude suicide rate for Santa Clara County
For the combined years of 2003 through 2015, there were a total of 229 suicides among youth residents of Santa Clara County that died in the State of California. This would include residents of Santa Clara County that died outside of the county.

Of theses 229 decedents
the majority, or 75%, were male
66.4% were young adults age 20 to 24 years old
And the majority were
• White, non-Hispanic
• Hispanic of any race
• Or Asian, Pacific Islander, non-Hispanic
Most suicides among youth that were residents of Santa Clara County and that died in Santa Clara County, occurred in a house, apartment or garage.

NOTE: other locations include a natural area, creek, open field, park, playground, athletic field.
Known precipitating circumstances

- Known precipitating factors for suicide identified by medical examiner and/or law enforcement investigators

- Known precipitating circumstances included in medical examiner reports depends on information provided by family and friends of the decedent
  - May not include all actual precipitating circumstances

Medical Examiner reports provided information about known precipitating factors for suicide that were identified by medical examiner and/or law enforcement investigators.

Precipitating circumstances included in medical examiner reports depends on the information provided by family and friends of the decedent and circumstances included in investigative reports may not include all actual precipitating circumstances.
Youth suicide decedents had, on average, 4.8 known precipitating circumstances

Based on medical examiner data, youth suicide decedents had, on average, 4.8 known precipitating circumstances
81% of youth suicide decedents had two or more known precipitating circumstances

And 81% of youth suicide decedents had two or more known precipitating circumstances
This table shows the proportion of decedents with known precipitating circumstances that were identified as having the circumstance.

Common known precipitating circumstances include, but are not limited to, a recent crisis, current mental health problems, a history of treatment for mental problem, leaving a suicide note, and having a history of suicidal thoughts.
Known precipitating circumstances by city of residence are shown in this table, with each “X” in the table indicating that 25% of more of decedents had the precipitating circumstance listed in the first column.

Across cities of residence in Santa Clara County, there were similarities in the precipitating circumstances identified, such as having current depressed mood, leaving a suicide note, having a recent crisis, having a mental health problem at the time of death, and ever receiving treatment for a mental health problem.

<table>
<thead>
<tr>
<th>Current mental health problem</th>
<th>Morgan Hill</th>
<th>Palo Alto</th>
<th>San Jose</th>
<th>Santa Clara</th>
<th>Sunnyvale</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current depressed mood</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Current treatment for mental illness</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ever treated for mental health problem</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Suicide note</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Suicide intent disclosed</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Suicide thought history</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Suicide attempt history</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Recent crisis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Intimate partner problems</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Argument</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>School problem</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Family relationship problem</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

X indicates that 25% of suicide decedents had the precipitating circumstance indicated in their medical examiner report.
Now I will move on to describe some results related to nonfatal suicidal behavior, such as suicide ideation and attempt.
Emergency department, or (ED), and hospitalization data were used to understand the burden of suicide attempt behavior in Santa Clara County.

For the combined years of 2005 to 2014, there were a total of 3,915 ED visits for suicide attempt without suicidal ideation among youth that were residents of Santa Clara County and seen in California.

For the combined years of 2003 through 2014, there were a total of 1,787 hospitalizations for suicide attempt without suicidal ideation among youth that were residents of Santa Clara County and were hospitalized anywhere in the state of California.
This chart shows the number of emergency department visits for suicide attempt by Santa Clara County youth residents per quarter per year – with year on the x-axis, and number of visits on the y-axis.

Overall, visits for suicide attempt/self-injury have been increasing somewhat since 2007.
it is important to note, however, that any changes over time could result from changes in actual number of visits, from changes in the use of suicide attempt/self-injury ICD-9 codes, or from a combination.
This table shows the number of hospitalizations for suicide attempt by Santa Clara County youth residents per year – with year on the x-axis, and number of visits on the y-axis.

Overall, hospitalizations for suicide attempt/self-injury increased from 2004 to 2014.
As with the ED data, it is important to note that any changes over time could result from changes in actual number of hospitalizations, from changes in the use of suicide attempt/self-injury ICD-9 codes, or from a combination.
This figure shows the crude emergency department visit and hospitalization rate for suicide attempt and self-injury for the combined years of 2006 to 2014 by cities in Santa Clara County with high and low suicide rates.

Crude emergency department visit rate for suicide attempt are shown in purple, and crude hospitalization rate for suicide attempt are shown in green.
The crude emergency department visit rate for suicide attempt among Santa Clara County residents was 137.0 per 100,000 persons.

And the crude hospitalization rate for suicide attempt among Santa Clara County residents was 50.9 per 100,000.
The emergency department visit rates for both Palo Alto/Stanford and for Morgan Hill were both higher than the rates for Santa Clara County overall
And the hospitalization rates for both Palo Alto/Stanford and for Morgan Hill were higher than the hospitalization rates for Santa Clara County overall.
Now transitioning to suicidal ideation and youth survey data

Data from California Healthy Kids Survey conducted in Santa Clara County in 2013 and 2014 were used to understand the prevalence of past year suicidal ideation among public high school students.

Weighted prevalence of past year suicidal ideation ranged from
12% of high school students from Palo Alto Unified School District that participated in the survey
To 20% of high school students from Morgan Hill and Gilroy that participated in the survey.
Data from the California Healthy Kids Survey and the Developmental Assets youth survey conducted among public high school students were also used to identify risk and protective factors for nonfatal suicidal behavior.

Risk factors are characteristics that may put an individual at increased risk for suicidal behavior,

while protective factors are characteristics that could help insulate or buffer an individual from suicidal behavior.
This slide shows a selection of the risk and protective factors for nonfatal suicidal behavior among public high school students that were identified at the individual level.
## Individual level risk and protective factors for nonfatal suicidal behavior among public high school students

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug, alcohol, pain medication, cigarette use</td>
<td>Positive perceptions of self</td>
</tr>
<tr>
<td>Mental health problems</td>
<td>Positive outlook on future</td>
</tr>
<tr>
<td>Sexual orientation (Lesbian, Gay, Bisexual)</td>
<td>Problem solving</td>
</tr>
<tr>
<td>Delinquent behavior</td>
<td>Emotional self-awareness</td>
</tr>
<tr>
<td>Sleep difficulties</td>
<td>Self-efficacy for help-seeking</td>
</tr>
<tr>
<td>Female gender</td>
<td></td>
</tr>
<tr>
<td>Lack of purpose and control over life</td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td></td>
</tr>
<tr>
<td>Sexual intercourse</td>
<td></td>
</tr>
</tbody>
</table>

Data Sources: Developmental Assets Survey (2010), California Healthy Kids Survey (2000-2016)
Population: Public high school students from San Joaquin County

Risk factors include, but are not limited to, alcohol and substance use and mental health problems.
### Individual level risk and protective factors for nonfatal suicidal behavior among public high school students

<table>
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<tr>
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<td></td>
</tr>
<tr>
<td>Sexual intercourse</td>
<td></td>
</tr>
</tbody>
</table>

Data Sources: Developmental Assets Survey (2010), California Healthy Kids Survey (2003-2016)

Population: Public high school students from Santa Clara County

Protective factors include, but are not limited to, positive perception of self, and positive outlook on the future.
At the interpersonal level,

Risk factors include, but are not limited to, violence perpetration and victimization and physical, emotional, and cyber bullying.
Protective factors include, but are not limited to close and positive relationship with parents and family, and caring relationships with other students.
At the community level,

Risk factors include feeling unsafe at school or in the neighborhood.
And protective factors include, but are not limited to, caring relationships with teachers and adults at school, and connection to school.
Overall there was a high level of consistency across risk and protective factors for past year suicidal ideation across school districts examined in this investigation.

In this table, the name of a selection of school districts are at the top, and protective factors on the left side. Each colored box with an X indicates a statistically significant protective factor for past year suicidal ideation among public high school students.

As you can see, there was a high level of consistency across the school districts in the significant protective factors for nonfatal suicidal behavior that were identified.
A similar pattern emerges when look at significant risk factors, which are depicted in this table as purple boxed.

Across school districts there was a high level of consistency in the significant risk factors for past year suicidal ideation among public high school students that were identified.
Now I will briefly review selected results of objective 2 of this investigation, which was to

Examine the degree to which media coverage of youth suicides occurring from 2008 through 2015 in Santa Clara County, California, met safe suicide reporting guidelines.
246 media articles from 2009 through 2015 were identified and abstracted using a checklist

A total of 246 media articles from 2009 through 2015 were identified and abstracted using a checklist
Checklist

- Checklist informed by accepted safe suicide reporting guidelines
  - Safe suicide reporting guidelines available through reportingonsuicide.org
  - Negative Characteristics
  - Positive Characteristics

This checklist was informed by accepted safe suicide reporting guidelines, which can be found at reportingonsuicide.org.

The checklist allowed for an assessment of the number of negative and positive characteristics in each article
Examples of negative characteristics include elements such as having a sensational headline, and photos of location or methods of suicide.

<table>
<thead>
<tr>
<th>Negative Characteristics</th>
<th>Positive Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensational headline</td>
<td>Inclusion of local/national hotline number</td>
</tr>
<tr>
<td>Photos of location or methods of suicide</td>
<td>Inclusion of warning signs</td>
</tr>
<tr>
<td>Photos of memorials/grieving</td>
<td>Discussion of suicide as a public health issue</td>
</tr>
<tr>
<td>Reporting on suicide similar to a crime</td>
<td>Description of suicide as preventable</td>
</tr>
<tr>
<td>Oversimplification of suicide</td>
<td></td>
</tr>
</tbody>
</table>
Examples of positive characteristics include elements such as inclusion of local or national hotline number, and a description of suicide as preventable.
Overall, articles had, on average, 4.3 negative characteristics per article

with a range of 0 to 11 negative characteristics identified per article
Articles had, on average, 0.5 *positive* characteristics per article

with a range of 0 to 7 positive characteristics identified per article
Examples of common negative characteristics for media articles include, having a description of the suicide method in the text of the article, which was found in 93% of articles.

And having the description of the location of suicide in the text of the article, with was found in 83% of articles.
Common negative characteristics for media articles

66% open comments section

22% had comments sections that included memorialization of decedent

Other common negative characteristics, include 66% of articles having open comments sections, and 22% of articles having open comments sections that included memorialization of the decedent.
The number of comments varied, but in some cases there were hundreds – the maximum number of comments on a given article was 224.

The content of some of these comments were identified as being inconsistent with recommendations for safe reporting for suicide, with some comment sections allowing for memorialization of the decedent, which guidelines about safe reporting on suicide recommend against. This is because susceptible individuals may perceive the memorial as honoring the suicidal behavior of the decedent and not an expression of mourning.
Although less common, the characteristics on this slide are examples of other negative characteristics identified in the media scan:

This includes 4% of articles having pictures of memorials and grieving, 3% of articles including pictures of the investigative scenes, and 1% of articles included a picture of a body.
All of the articles that included pictures of a body were from one media outlet; and all were published in 2009.

With no such pictures were found after that.
Positive characteristics

17% provide a hotline number
4% describe suicide as complex

Media reporting was also coded for positive characteristics.

This included 17% of articles providing a crisis hotline number
And 4% of articles describing suicide as complex.
The inclusion of a hotline number did show some improvement – increasing by 36% from 2009 to 2015;

however, by 2015 still only 40% of articles included any hotline number.
Now I will describe selected results of objective 3, which was to

Inventory and compare youth suicide prevention policies, activities, and protocols used in the community to evidence-based and national recommendations.
Materials related to programs, policies, and activities being utilized as part of suicide prevention efforts in Santa Clara County were shared with the Epi-Aid team. A total of 51 programs and policies were identified that were being used in Santa Clara County that were specifically related to suicide prevention.
Over half of these programs and policies were identified as being implemented by the Palo Alto Unified School District.
And 13.7% were identified as being implemented by Santa Clara County
Prevention programs and activities being used in Santa Clara County included the non-mutually exclusive categories listed in this bar chart on this slide.
The majority of programs were education related, and included programs such as ASIST, seminars and presentations.
30% of programs were crisis-related services

such as a crisis lines, and hospitalization assistance
27.5% of programs were clinical services

This included wellness coordinators and mental health therapists
25% of programs were gatekeeper training, such as QPR and mental health first aid
9.7% of activities were prevention policies such as a homework policy, and suicide prevention administration regulations
finally 9.7% of activities were prevention plans such as the suicide prevention toolkit for schools, and the county-wide suicide prevention strategic plan
CDC’s “Preventing Suicide: A Technical Package of Policies, Programs, and Practices” includes a core set of strategies that can be used in communities to reduce suicide and associated risk factors for suicide.

These strategies are based on the best available evidence and include approaches such as strengthening economic supports, strengthening access and delivery of suicide care, and creating protective environments.

Programs and policies identified through the inventory were compared to these strategies.
Overall, many of the programs and policies that are being implemented in Santa Clara County are aligned with strategies in the Technical Package. The table above shows two examples of these strategies along with examples of programs or policies in Santa Clara County that correspond to the strategies.

For more information about how programs and policies align with the strategies in the Suicide Prevention Technical Package, please refer to the Final Report.
Across all programs shared with the Epi-Aid team, a minority of programs have evidence supporting their efficacy.

This was assessed by examining programs and policies identified by the Epi-Aid team in relation to what is included in the Technical Package to Prevent Suicide, and what is listed within the Suicide Prevention Resource Center Programs and Practices database.

The three programs identified as having evidence supporting their efficacy include Applied Suicide Intervention Skills Training, or ASIST, QPR Gatekeeper Training, and Sources of Strength.

Please note, that QPR Gatekeeper Training is not included in CDC’s Technical Package to Prevent Suicide while ASIST and Sources of Strength are included in both the Technical Package and the Programs and Practices database.
Finally, across all programs and activities, a minority were being evaluated for process and/or outcome measures

- Not possible to determine if programs and activities being used are effective or if they are reaching youth at risk for suicide

Across prevention policies and plans, only the county-wide suicide prevention strategic plan was being evaluated

- Evaluation generally limited to process measures

Across prevention policies and plans, only the county-wide suicide prevention strategic plan was being evaluated

- But this Evaluation was generally limited to process measures
Now I will end the presentation describing the results of objective 4, which was to

Synthesize information from objectives 1-3 to make recommendations on youth suicide prevention strategies that can be used at the school-, community-, and county- levels.

To do this I will present a synthesized key finding of the investigation, and discuss a prevention recommendation that links to that finding.
Multiple precipitating circumstances for fatal suicidal behavior and multiple associated risk factors for nonfatal suicidal behavior identified among youth in Santa Clara County

Results from medical examiner reports and youth surveys indicated that there were multiple precipitating circumstances for fatal suicidal behavior and multiple associated risk factors for nonfatal suicidal behavior.
Therefore the first recommendation is to use multiple prevention approaches to address multiple risk factors
Youth suicide is complex, and typically has multiple contributing factors.

Because of this, the use of a comprehensive and coordinated prevention approach that targets multiple risk factors may be the most effective strategy.

This type of approach has been used in the U.S. Air Force Suicide Prevention Program and the White Mountain Apache Suicide Surveillance and Prevention System, which have both been found to be effective prevention approaches that utilize multiple programs targeting multiple risk factors.
Results from this investigation identified a relationship between mental health problems and fatal and nonfatal suicidal behavior among youth in Santa Clara County based on data from medical examiner reports and from youth surveys.
A relationship between mental health problems and fatal and nonfatal suicidal behavior was identified among youth in Santa Clara County.

Recommendation 2
Access to evidence-based mental health care

This leads to recommendation 2, which is to ensure youth have access to evidence-based mental health care.
Mental health problems are common risk factors for youth suicide

Within Santa Clara County, suicide prevention efforts may need to consider ensuring youth have access to quality mental health services that incorporate evidence-based treatment modalities.

Additionally, stakeholder groups that are already engaging in mental health care for youth could examine their treatment approaches to determine alignment with best practices.

Evidence-based treatment modalities and approaches are available, and examples of these are described in the Final Report.
Based on results from youth survey data, connection to family and positive relationships with parents and guardians were identified as protective factors for nonfatal suicidal behavior in Santa Clara County.
Connection to family and positive relationships with parents and guardians were identified as a protective factor for nonfatal suicidal behavior in Santa Clara County.

**Recommendation 3**

*Family relationships and family-based programs*

This leads to Recommendation 3 which is for suicide prevention efforts in Santa Clara County to consider focusing on family relationships and family-based programs.
Connection to family and positive relationships with parents/guardians are significant protective factors for suicidal behavior that have been identified in the literature.

There are several evidence-based programs that focus on bolstering the protective factor of parent-youth relationships, while also targeting risk factors for suicide such as substance use and delinquency.

Examples of these types of programs include, but are not limited to: Multisystemic Therapy, Parent Management Training, Strengthening Families Program, and Incredible Years.

Additionally, engaging in frequent family meals is a home-based approach that has been found to be associated with improvements in a range of outcomes, including suicidal behavior, depression, self-esteem, substance use, violence, and disordered eating.
Connection to, and positive relationships with school, and teachers, were identified as protective factors in Santa Clara County.

In addition to connection to family being identified as a protective factor, connection to, and positive relationships with school and teachers, were also identified as protective factors in Santa Clara County based on youth survey data.
Connection to, and positive relationships with school, and teachers, were identified as a protective factor in Santa Clara County

**Recommendation 4**
Connection to school and school-based programs

These findings inform recommendation 4, which is for stakeholders to consider including programs that focus on building youth connection to schools and school-based programs.
Connection to school and school-based programs

- Connection to school has been identified as a protective factor for suicide in other communities
  - CDC’s report “School Connectedness: Strategies for Increasing Protective Factors Among Youth”

- Social-emotional learning programs that bolster protective factors and reduce risk factors for suicidal behavior among youth may be particularly effective
  - For example: the Good Behavior Game, Youth Aware of Mental Health Program, Sources of Strength

Connection to school has been identified as a protective factor for suicide in several studies conducted in multiple communities

CDC’s report “School Connectedness: Strategies for Increasing Protective Factors Among Youth” is an example of a resource that stakeholders could use to identify strategies to target connectedness.

In addition, school based social-emotional learning programs that bolster protective factors and reduce risk factors for suicidal behavior among youth may be particularly effective.

Examples of these programs are provided in the Final report, and include but are not limited to: the Good Behavior Game, Youth Aware of Mental Health Program, and Sources of Strength.
Over a quarter of youth suicide decedents in Santa Clara County had disclosed their thoughts of suicide prior to death

Over a quarter of youth suicide decedents in Santa Clara County had previously made a suicide attempt

Medical examiner reports showed that over a quarter of youth suicide decedents in Santa Clara County had disclosed their thoughts of suicide prior to death.

And over a quarter of youth suicide decedents in Santa Clara County had previously made a suicide attempt
Over a quarter of youth suicide decedents in Santa Clara County had disclosed their thoughts of suicide prior to death

Recommendation 5
Identify and support people at risk

These findings inform recommendation 5, which is to identify and support people at risk.
Suicide prevention efforts in Santa Clara County could consider continuing, and potentially expanding, current gatekeeper prevention efforts being implemented. Evaluations in other communities have found these programs can improve short-term knowledge, skills and attitudes. Therefore, gatekeeper training may need to be implemented alongside other evidence-based programs as part of a comprehensive and coordinated prevention approach.

In addition, stakeholders could focus efforts on the care and follow-up of youth after admission or other treatment for suicidal behavior, and ensure youth have continuity of care following discharge for suicidal behavior. This could include implementing prevention programs in emergency departments, focusing efforts on encouraging continuity of care following discharge, and identifying ways to ensure access to pediatric psychiatric beds.

The Final Report contains additional examples of Emergency department based programs that could be utilized, such as follow-up programs, and post-discharge interventions.
Recent crisis was a common precipitating circumstance for youth suicide decedents in Santa Clara County

Youth in Santa Clara County were significantly more likely than those in comparison counties to have experienced a recent crisis

Medical examiner reports also indicated that a recent crisis was a common precipitating circumstance for youth suicide decedents in Santa Clara County.

And Youth in Santa Clara County were significantly more likely than those in comparison counties to have experienced a recent crisis
Recent crisis was a common precipitating circumstance for youth suicide deceents in Santa Clara County.

Recommendation 6
Crisis intervention

These findings inform recommendation 6, which is that stakeholders in Santa Clara County may benefit from focusing on crisis intervention.
Crisis intervention

- Stressful life events have been identified in other communities as recognized risk factors for youth suicide
- Crisis lines could provide youth with access to immediate help and referral services
- Could consider continuing to offer ASIST training to Santa Clara County crisis line staff

Stressful life events, such as a relationship break up, have been identified in other communities as recognized risk factors for youth suicide.

Crisis lines could provide youth in crisis with access to immediate help and referral services. These lines could also provide support to individuals with contact with youth in crisis, such as parents or friends.

ASIST trainings have been implemented in Santa Clara County to train crisis line staff. This type of training was found to be effective at improving caller outcomes in evaluations conducted in other communities, and stakeholders in Santa Clara County could consider continuing to offer this type of training.
Suicide of a youth can have an impact on others in the community, such as family, friends, clinicians, teachers, first responders, schools, and coaches.
Suicide of a youth can have an impact on others in the community, such as family, friends, clinicians, teachers, first responders, schools, and coaches.

**Recommendation 7**

**Suicide postvention**

Therefore stakeholders could consider using suicide postvention programs that could help survivors receive support.
Suicide postvention

- Evidence from other communities demonstrate that individuals exposed to suicidal behavior and suicide survivors are at an increased risk for mental health distress and suicidal behavior.

- Use of short- and long-term suicide postvention programs could help survivors receive support and care they need.

- Consider continuing the use of existing postvention programs
  - Evaluation of existing postvention programs could inform if they are meeting objectives of community.

There is evidence from studies in other communities demonstrating that individuals exposed to suicidal behavior and suicide survivors are at an increased risk for mental health distress and suicidal behavior.

The use of short- and long-term suicide postvention programs could help suicide survivors receive the support and care they need.

For stakeholder groups already using existing postvention programs in Santa Clara County, they could consider continuing the use of these programs. However evaluation of existing postvention programs could inform if they are meeting the objectives of community.
Youth survey data examined in this investigation identified that other forms of violence, such as bullying, and family violence were risk factors for nonfatal suicidal behavior in Santa Clara County.
Other forms of violence (e.g., bullying and family violence) were identified as risk factors of nonfatal suicidal behavior among youth in Santa Clara County.

**Recommendation 8**
Prevention of other forms of violence

These findings inform recommendation 8, which is for that prevention efforts in Santa Clara County could aim to prevent other forms of violence.
Research in other communities has identified that exposure to various forms of violence is a risk factor for suicidal behavior.

Santa Clara County could work toward reducing multiple forms of violence experienced by youth by focusing on shared risk and protective factors for multiple forms of violence.

CDC has several Technical Packages that include strategies and evidence based programs that could be used to prevent other forms of violence. Additionally, information on strategies to prevent bullying are available at stopbullying.gov.
Medical examiner reports indicated that youth in Santa Clara County tended to die most often in a home setting, and the most common methods of suicide used in Santa Clara County within a home setting were hanging, firearm, and poisoning.
Most common methods of suicide used in Santa Clara County in a home setting were hanging, firearm, and poisoning.

**Recommendation 9**
**Reducing access to lethal means for youth at-risk**

These findings inform recommendation 9, which is that prevention efforts in Santa Clara County could focus on reducing access to lethal means for youth at-risk.
Reducing access to lethal means for youth at-risk

- Reducing access to lethal means among persons at-risk for suicide is an evidence-based approach to prevent suicide.

- For example, stakeholders could use targeted education programs delivered in emergency departments which have shown some efficacy in improving safe storage in the home.

- For railway suicide, limited evidence-based programs found to be effective for at-grade crossings.

Reducing access to lethal means among persons at-risk for suicide is an evidence-based approach to prevent suicide.

For example, stakeholders could use targeted education programs delivered in emergency departments to parents of youth presenting for suicidal behavior, which have shown some efficacy in improving safe storage of medications and firearms in the home.

With regard to rail suicide, there are currently limited evidence-based programs that have been found to be effective for preventing suicide deaths on at-grade crossings. Therefore strategies used to prevent rail suicide may need to be accompanied by rigorous evaluation to determine if they are effective and meeting the goals of the community.
A review of media articles discussing suicide in Santa Clara County, conducted as part of this investigation, identified unsafe media reporting and limited use of media reporting to educate the public about suicide prevention.
These findings lead to recommendation 10, which is that stakeholders could focus on efforts to encourage safe messaging and reporting about suicide.
Safe messaging and reporting about suicide

- Extensive literature describing the negative effects media reporting can have on suicidal behavior

- Could focus on engaging with local media reporters and news outlets

- Resources include
  - reportingonsuicide.org
  - CDC’s “Suicide contagion and the reporting of suicide: recommendations from a national workshop”
  - Final Report

There is extensive literature describing the negative effects media reporting (for example, news articles) can have on suicidal behavior.

Community stakeholders could focus on engaging with local media reporters and news outlets to educate about the importance of safe media reporting, especially for youth suicide prevention.

Information on safe messaging and reporting about suicide are available through safereporting.org, and through CDC’s “Suicide contagion and the reporting of suicide: recommendations from a national workshop.” Additional resources are also available in the Final Report.
The last three recommendations are broader strategies related to the implementation of a comprehensive and coordinated approach to suicide prevention.

This includes

- Strategic planning for suicide prevention
- Selection and implementation of evidence-based programs
- And continuous program evaluation
Data from this investigation identified multiple factors associated with nonfatal suicidal behavior, suggesting the need for multiple prevention approaches to address multiple risk factors. A strategic plan can help guide stakeholders to plan and implement this type of approach.

Santa Clara County has a strategic plan for suicide prevention and annual reports are published publically that outline the activities engaged in, milestones, limitations, and next steps. The methods used to develop and implement this strategic plan could be used as a model for local communities.

Stakeholders can find references to resources about strategic planning in the Final Report. Examples include the Suicide Prevention Resource Center and the World Health Organization’s Community Engagement Toolkit for how to engage in strategic planning.
As part of the strategic planning process, stakeholders in Santa Clara County can utilize data on risk and protective factors identified in this report to help guide the selection of evidence-based practices that could be used.

Community stakeholders are encouraged to continue to utilize evidence-based programs. This includes considering program benefits that have been documented before selecting new programs, or before determining which programs to continue, expand, or discontinue.

Multiple resources are available to identify evidence-based programs to implement. These are outlined in the final report, and examples include:

- CDC’s Technical Package to Prevent Suicide
- Blueprints for Healthy Youth and Development
Finally, Program evaluation is a central component to any suicide prevention program or policy because it will provide empirical evidence about whether a strategy is working to achieve community goals.

Several of the recommendations made as part of this presentation for prevention efforts are consistent with programs and policies currently being implemented in Santa Clara County.

Therefore Community stakeholders are encouraged to engage in continuous program evaluation to help to monitor the reach and effectiveness of current programs, and new programs implemented.

Multiple resources are available to help stakeholders learn more about program evaluation. Examples include

- RAND’s “Suicide Prevention Program Evaluation Toolkit,” and
- CDC’s Framework for Program Evaluation in Public Health
As I stated at the start of this presentation, this briefing was meant to provide a broad overview of the findings and recommendations of this investigation.

For more information about this Epi-Aid, the results, and the recommendations, please refer to the final report which is available through the Santa Clara county public health department.
I would like to end this presentation with a recognition of the many individuals that have assisted in this investigation. This has been a group effort and we would like to thank everyone for their assistance.
That concludes the presentation. I will now open up the presentation to questions.
Extra Slides
Crude suicide rate among youth, by California County of residence, 2003–2014

Data Source: CDC WONDER Case Definition: Youth suicide deaths, age 10-24, that died in the United States 2003-2014

Data Source: CDC WONDER Case Definitions: Youth suicide death records, age 10-24, that died in the United States 2003–2014
Crude suicide rate among youth, by race, 2003–2014

Crude suicide rate among youth, by ethnicity, 2003–2014

Data Source: CDC WONDER Case Definition: Youth suicide deaths, age 10-24, that died in the United States, 2005–2014
Crude suicide rate among youth, by biological sex, 2003–2014

Data Source: CDC WONDER Case Definition: Youth suicide deaths, age 10-24, that died in the United States 2003-2014
Crude suicide rate among youth, by age category, 2003–2014

Data Source: CDC WONDER Case Definition: Youth suicide, residents, age 10-24, that died in the United States 2003-2014
*Rate not calculated because numerator ≤ 5
## Crude and predicted crude youth suicide rates by city of residence, 2003–2015

<table>
<thead>
<tr>
<th>City</th>
<th>Crude Suicide Rate per 100,000</th>
<th>Predicted Crude Suicide Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>12.7</td>
<td>12.7</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>6.4</td>
<td>6.4</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>5.1</td>
<td>5.1</td>
</tr>
</tbody>
</table>

**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.
To determine if there was significant clustering of suicide deaths among residents of Santa Clara County, a temporal cluster analysis was performed.

One significant temporal cluster of six suicide-related injuries were identified to have occurred from 1/3/2011 through 1/17/2011.

However, available data from vital statistics on method of suicide, city of residence, city of suicide-related injury, age, and biological sex do not show a connection between these suicides.
To determine if there was significant clustering in space of suicide deaths among youth residents of Santa Clara County, a spatial cluster analysis was performed based on the zip code of residence for the decedent.

A total of 11 spatial clusters were identified throughout Santa Clara County. Each significant spatial cluster is identified in this figure as a circle.

Each circle is centered on one zip code and each circle is numbered according to the rank of their likelihoods compared to chance.
For example, cluster 1 is the most likely cluster.
And cluster 2 is the second most likely cluster
Overall, clusters 1, 4, 6 and 11 are all centered near the city of Palo Alto.
Clusters 2, 5, 8 and 10 are centered near the city of Morgan Hill.
Known precipitating circumstances by city of residence are shown in this table, with each “X” in the table indicating that 25% of more of decedents had the precipitating circumstance listed in the first column.

Across methods of suicide used in Santa Clara County, were similarities in the precipitating circumstances identified, such as having current depressed mood, having a mental health problem at the time of death, ever receiving treatment for a mental health problem, and having a recent crisis.
The majority of Santa Clara County youth residents seen in emergency departments or hospitalized for a suicide attempt without suicidal ideation were female.
The majority of Santa Clara County youth residents seen in emergency departments or hospitalized for a suicide attempt without suicidal ideation were also age 15 to 19, followed by age 20 to 24.
And the majority of youth residents of Santa Clara County that were seen in emergency departments or hospitalized for a suicide attempt were White, non-Hispanic, or Hispanic.
Recommended suicide prevention strategies

1. Multiple prevention approaches to address multiple risk factors
2. Access to evidence-based mental health care
3. Family relationships and family-based programs
4. Connection to school and school-based programs
5. Identify and support people at risk
6. Crisis intervention
7. Suicide postvention
8. Prevention of other forms of violence
9. Reducing access to lethal means for youth at risk
10. Safe messaging and reporting about suicide
11. Strategic planning for suicide prevention
12. Selection and implementation of evidence-based programs
13. Continuous program evaluation