Measurement Systems to Assess Individual and Population Level Change: Youth Suicide Outcomes

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Presentation for the IOM meeting: Innovations in Design and Utilization of Measurement Systems to Promote Children’s Cognitive, Affective, and Behavioral Health

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Presenter Disclosure

Jane Pearson

The following personal financial relationships with commercial interests relevant to this presentation:

No relationships to disclose
Many Data Gaps Noted - Particularly Linkages Between Systems; Risk Trajectories

Goal was to prioritize research objectives that if implemented, could reduce suicides by 20% in five years.

Sought to identify places of suicide ‘burden’; where at-risk individuals could be currently reached (health care systems, justice systems, schools, etc.)

Identified research gaps across 6 key questions—many gaps were related to limitations in understanding risk trajectories within systems, across systems, and individual patterns of (repeated) attempts.
Presentation overview

- Accessible youth suicide death and attempt statistics (national and state level)
- Recently funded study to characterize risk among youth seen in emergency care using new measurement approaches
- Example of how state vital statistics shaped prevention efforts within a state agency
- Impact of Garrett Lee Smith federal grants on youth suicide mortality
- Examples of youth ‘system relevant’ measures
- Social media example and ‘Big Data’
Suicide accounted for 40,600 deaths in the U.S.

Among these are 5,178 youth aged 10-24. (13% of suicides)

Suicide is the second leading cause of death for youth aged 10–24 in the U.S.

The suicide rate nationally is 12.54 per 100,000

.....for American Indian/Alaska Native youth is 4.4/100,000

.....for white youth is 2.7/100,000


- National Center for Injury Prevention and Control
  - Division of Violence Prevention
  - www.cdc.gov/ncipc
- www.cdc.gov/ncipc/wisqars/default.htm
- Injury mortality and leading cause of death statistics available by:
  - Intent, Method
  - Year
  - State
  - Demographics
    - Age, Sex, Race
- Injury morbidity
  - Hospital emergency department events
- National Violent Death reporting System
Suicide Among all Persons by Sex -- United States, 1933-2012

Rate per 100,000 population

Year

Male
Female
Total


Source: CDC vital statistics

Courtesy Alex Crosby
Suicide Rates Among Persons Aged 15-19 years -- United States, 1956-2012

Rate per 100,000 population

Year

Male
Total
Female

Source: CDC vital statistics

Courtesy Alex Crosby
<table>
<thead>
<tr>
<th>Rank</th>
<th>10-14 years</th>
<th>15-19 years</th>
<th>20-29 years</th>
<th>30-39 years</th>
<th>40-49 years</th>
<th>50-59 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
</tr>
<tr>
<td>2</td>
<td>Malignant Neoplasms</td>
<td><strong>Suicide</strong></td>
<td><strong>Suicide</strong></td>
<td><strong>Suicide</strong></td>
<td>Heart Disease</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>3</td>
<td><strong>Suicide</strong></td>
<td>Homicide</td>
<td>Homicide</td>
<td>Malignant Neoplasms</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
</tr>
<tr>
<td>4</td>
<td>Homicide</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
<td>Heart Disease</td>
<td><strong>Suicide</strong></td>
<td>Liver Disease</td>
</tr>
<tr>
<td>5</td>
<td>Congenital Malformations</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
<td><strong>Homicide</strong></td>
<td>Liver Disease</td>
<td>Chronic Lower Respiratory Ds</td>
</tr>
<tr>
<td>6</td>
<td>Heart Disease</td>
<td>Congenital Malformations</td>
<td>Congenital Malformations</td>
<td>Liver Disease</td>
<td>Diabetes Mellitus</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>7</td>
<td>Chronic Lower Respiratory Ds</td>
<td>Cerebrovascular</td>
<td>Diabetes Mellitus</td>
<td>Diabetes Mellitus</td>
<td>Cerebrovascular</td>
<td><strong>Suicide</strong></td>
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<tr>
<td>8</td>
<td>Cerebrovascular</td>
<td>Chronic Lower Respiratory Ds</td>
<td>HIV</td>
<td>Cerebrovascular</td>
<td>Homicide</td>
<td>Cerebrovascular</td>
</tr>
</tbody>
</table>

Courtesy Alex Crosby  
Source: CDC vital statistics
Emergency Department Self-inflicted Injury Among All Persons by Age and Sex--United States, 2012

Source: CDC WISQARS NEISS
Suicidal Ideation and Behavior among High School Students by Category and Sex*
Youth Risk Behavior Survey (YRBS) United States, 2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of all students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seriously consider suicide</td>
<td>22.3% (Female)</td>
</tr>
<tr>
<td>Suicide plan</td>
<td>15.2% (Male)</td>
</tr>
<tr>
<td>Attempted suicide^</td>
<td>10.4% (Total)</td>
</tr>
<tr>
<td>Suicide attempt with medical</td>
<td>5.5% (Female)</td>
</tr>
<tr>
<td></td>
<td>2.9% (Male)</td>
</tr>
</tbody>
</table>

Courtesly Alex Crosby. Source: CDC Youth Risk Behavior Survey
* During the 12 months preceding the survey
^One or more times

- 9.8 million ED visits
- 700,755 visits involved a psychiatric concern, and
- 128,456 visits were for intentional self-harm


Will include innovative assessments such as:


- **Implicit Association Task** (Cha et al., J Abnorm Psychol. 2010 Aug;119(3):616-22.)
Western Mountain States have highest suicide rates in the US; Utah is consistently in the top 10.

UT is one of the few states with centralized Medical Examiner.

Studied consecutive youth suicides (n = 151) between August 1, 1996, and June 6, 1999, aged 13-21 years.

Decedent contact with government agencies examined: Juvenile Justice, Department of Human Services, and the Department of Education.

63% had contact with the Juvenile Justice System.

Because decedents had high frequency of contact with Juvenile Justice:

1- A one month screen of all youth coming to the juvenile court system demonstrated high rates of mental illness, and severe mental illness.

2- Development of an in-home and outpatient preventative treatment program for juvenile offenders:
   - Based on data from a small controlled study (N=44)
   - In home treatment model (“Families First”) provided a behavior specialist for 80-100 hours of in-home treatment over a three-month period. Free psychiatric outpatient visits and case management for one year.
   - Intervention youth had improved mental health, fewer had new offenses, and they had fewer costs over time. Recommendation that screening an intervention begin early in the juvenile justice process
   

These efforts led to Utah’s application for Garrett Lee Smith Youth Suicide (GLS) prevention application.
Most GLS grantees train gatekeepers—school personnel, juvenile justice, etc. As an assessment of implementation of programs, counties with measures of training were compared to counties without training, matched through propensity scoring.

The analysis compares the change in the suicide mortality rates between 2006 and 2010 among the population aged 10 to 24 years in counties implementing GLS trainings, with mortality observed in similar counties that did not implement these trainings.

SAMHSA, 2013. Report to Congress: Garrett Lee Smith Youth Suicide Prevention Program
Reduction of 1 suicide death per 100,000, or the prevention of 237 deaths between 2007 and 2010

SAMHSA, 2013. Report to Congress: Garrett Lee Smith Youth Suicide Prevention Program
Challenge: suicide ideation is almost ‘normative’

20% + *ideation* rates per YRBS high school youth;

• Suicidal youth have detrimental coping/help-seeking strategies (Gould, et al 2004. JAACAP, 43(9)1124)

• High school youth more likely to disclose their suicide ideation to peers (about half) compared to adults (about 25%) (Pisani et al 2012, J Youth Adolescence, 41:1312)

• Measures of social systems/environment that reflect social network quality. Examples (from Schmeelk-Cone et al 2012, SLTB)
  - Help-seeking acceptability
  - Adult help for suicidal youth
  - Reject codes of silence
Example: Difficult to Reach Youth

Trevor Project’s “TREVORSpace” online social network for LGBTQ youth & allies

‘safe’ place to network: user profiles, testimonials, traversable lists of friends, monitored to provide support for those at risk for self harm

Trevor Project’s online social network for LGBTQ youth & allies

• NSF supported research on social ‘structure’ and depression in TrevorSpace

• Network measures were developed to detect mental health features of individual users within TrevorSpace

• If replicated, suggests that network structural features [low density] could point to individuals with higher rates of psychological symptoms.

Using social media to better understand, prevent, and treat substance use, NIH announces 11 awards funded across three Institutes…

More than $11 million over three years will be used to support research exploring the use of social media to advance the scientific understanding, prevention, and treatment of substance use and addition…NIDA..NIAAA…NCI
Thank you

www.suicide-research-agenda.org

A Prioritized Research Agenda for Suicide Prevention:
An Action Plan to Save Lives
Research Prioritization Task Force

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