Suicide Deaths by Firearm in Children and Adolescents

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NATIONWIDE CHILDREN’S
When your child needs a hospital, everything matters.”
Disclosures

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• Dr. Sheftall has no financial relationships or Conflicts of Interest (COIs) to disclose
Objectives

• Provide a brief overview of the epidemiology of suicide in children and adolescents
• Discuss recent findings concerning racial disparities in suicidal behavior
Definitions

- **Suicide**: Fatal self-inflicted act with explicit or inferred intent to die

- **Suicide attempt**: Non-fatal self-injurious behavior with stated or inferred intent to die

- **Suicidal ideation**: thoughts of ending one’s life

- **Suicidal behaviors**: A spectrum of activities related to thoughts and behaviors that include suicidal thinking, suicide attempts and suicide

Source: O’Carroll et al., 1996
Youth Suicide Rate in the U.S., 1997-2018, 10-19 Years

The Problem of Youth Suicide*

- In 2018, suicide was the 10th leading cause of death for all ages but the 2nd leading cause of death for youth aged 10-19 years in the United States

Comparison of Suicide Rates in Males and Females Aged 10-19 Years in the US, 2008-2018

Suicide rates in males are four times higher than females and represent 76% of all youth suicide deaths.

Source: Centers for Disease Control and Prevention; WISQARS; 2017
Percentage of U.S. High School Students Reporting Suicidal Thoughts and Behavior in the Past 12 Months, by Sex, 2019

Source: Youth Risk Behavior Surveillance-US, 2019; USDHHS, CDC.
Self-Harm Rates in the U.S. Aged 5 to 85+ Years, 2008-2018

Source: CDC, WISQARS; data accessed from http://webappa.cdc.gov/sasweb/ncipc/dataRestriction_inj.html
Suicide Deaths by Mechanism in Young People Aged 10-19 Years, 2006-2015

**Males**
- Firearms: 42.0%
- Suffocation: 4.2%
- Poisoning: 6.5%
- Other methods: 47.3%

**Females**
- Firearms: 59.4%
- Suffocation: 20.5%
- Poisoning: 8.0%
- Other methods: 12.1%

Age-Adjusted Rate of Suicide Deaths by Firearm in Youth Aged 5-19 Years

82% increase in the past decade
Suicide Deaths by Firearm by Age Group

65% change in the past decade

304% change in the past decade
Suicide Deaths by Firearm by Race

<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Black</th>
<th>Am Indian/AK Native</th>
<th>Asian/Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1.30</td>
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<td></td>
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<tr>
<td>2009</td>
<td></td>
<td>0.91</td>
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<td>2010</td>
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<td>2018</td>
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</tbody>
</table>
Suicide Deaths by Firearm by Sex

155% increase in females
Suicide Rates by Age and Sex in US Youths, 2008-2018

*CDC WISQARS, 2020*
Suicide Trends in Elementary School-Aged Children in the United States, 1993 to 2012

- 657 children died by suicide during this period
  - roughly 33 deaths per year
  - 11th leading cause of death in 2012
- 553 (84%) boys
- 558 (85%) aged 10-11 years
- 441 (67%) white and 177 (27%) black
- 555 (84%) non-Hispanic
- 514 (78%) hanging/suffocation

Bridge et al., JAMA Pediatrics, 2015
Suicide Rates Among Children Aged 5 to 11 Years in the US: 1993-1997 to 2008-2012

No significant change in the overall suicide rate between 1993-1997 and 2008-2012 (incidence rate ratio [IRR] = 0.96, 95% CI = 0.90-1.03)

Bridge et al., 2015
## No Significant Trends in Several Demographic Subgroups

<table>
<thead>
<tr>
<th></th>
<th>Period Trend IRR (95% CI), 1993-1997 to 2008-2012</th>
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</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
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<tr>
<td>5-9</td>
<td>1.01 (0.85 – 1.21)</td>
</tr>
<tr>
<td>10-11</td>
<td>0.95 (0.88 – 1.02)</td>
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<tr>
<td><strong>Sex</strong></td>
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<tr>
<td>Male</td>
<td>0.93 (0.86 – 1.00)</td>
</tr>
<tr>
<td>Female</td>
<td>1.16 (0.98 – 1.39)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>Hispanic</td>
<td>0.97 (0.80 – 1.16)</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>0.98 (0.91 – 1.06)</td>
</tr>
</tbody>
</table>

IRR indicates Incidence Rate Ratio; CI, confidence interval

Bridge et al., 2015
Suicide Rates Among White and Black Males Aged 5-11 Years in the US: 1993-1997 to 2008-2012

![Graph showing suicide rates among white and black males aged 5-11 years in the US from 1993-1997 to 2008-2012. The graph indicates a higher suicide rate for black males compared to white males.]

- For black males, the incidence rate ratio (IRR) is 0.91 with a 95% confidence interval (CI) of 0.6-1.5.
- For white males, the IRR is 2.65 with a 95% CI of 1.8-4.0.

Source: Bridge et al., 2015
Follow-up Study of Suicide in Elementary School-Aged Children and Early Adolescents
National Violent Death Reporting System (NVDRS)

- State-based surveillance system collects data on all violent deaths
- **Uses multiple sources**, including medical examiners, coroners, law enforcement, crime labs, and death certificates
- Currently active in 32 states
- **Information collected** includes circumstances related to suicide (e.g., depression, relationship or school problems)

Available at: http://www.cdc.gov/violenceprevention/nvdrs/
Precipitating Circumstances of Suicide in Children and Early Adolescents

• We obtained 2003-2012 data on all suicide decedents aged 5 to 14 years
• Restricted-use data available for 17 states
• Precipitating circumstances included: mental health history/treatment, substance use, physical health history, stressful life events, & suicide-related circumstances
• Comparisons were made based on:
  – Age group (5-11 vs. 12-14 years)
  – Race (black vs. non-black)

Sheftall et al., Pediatrics, 2016
Differences Between Child (N=87) and Early Adolescent (N=606) Suicide Decedents*

*All differences significant at $P < 0.05$; Sheftall et al., *Pediatrics* 2016
Differences Between Child (N=87) and Early Adolescent (N=606) Suicide Decedents*

*All differences significant at $P < 0.05$; Sheftall et al., Pediatrics, 2016
No Differences Between Child and Early Adolescent Suicide Decedents

- Ethnicity
- Time of injury leading to death
- In public custody at time of death
- Perpetrator or victim of interpersonal violence
- Recent criminal legal problem
- Other legal problems
- Physical health problems
- **School problems (including bullying behaviors)**
- Recent crisis
- Death of a friend or family member
- History of suicide attempt
- **Suicide intent disclosed (29.5% child vs. 28.9% early adolescent)**
- Recent suicide of family member or friend
- Current mental health concern
- Current or past history of mental health treatment
- Problems with alcohol or drugs
- Presence of alcohol or drugs at time of death (toxicology reports)
- **Race-by-precipitating circumstances interactions in child vs. early adol. decedents**

Sheftall et al., *Pediatrics*, 2016
Comparison of Black (N=32) and Non-Black (N=55) Child Suicide Decedents*

• The groups did not differ on any precipitating circumstances, suicide-related circumstances, mental health characteristic, or alcohol/drug use characteristic

• **Limitations:**
  – Only 17 U.S. states
  – Missing information on 13% of decedents
  – Uncontrolled

• Next steps (qualitative, additional states, examine method further)

Sheftall et al., *Pediatrics*, 2016
Comparison of Suicide Incidence Rates Between Black and White Youth in the U.S. From 2001 to 2015, by Age

Bridge et al., JAMA Pediatrics, 2018

Abbreviations: IRR, incidence rate ratio; LOG, natural logarithm. Blue squares indicate the estimated LOG of the age-specific IRR, vertical lines indicate 95% CI, and reference group is white youth. 95% CIs that do not include zero are considered statistically significant.
Thank you!

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Resources

• Crisis Text Line – 741-741
• National Hotline – 1-800-273-TALK
• Project Child Safe: https://projectchildsafe.org/
• Prevent Firearm Suicide: https://preventfirearmsuicide.efsgv.org/
Questions?

The Center for Suicide Prevention and Research

http://www.nationwidechildrens.org/suicide-prevention

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