The patterns and prevention of suicidal behavior

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"The findings and conclusions in this presentation have not been formally disseminated by the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry nor the Substance Abuse and Mental Health Services Administration and should not be construed to represent any agency determination or policy."
At the conclusion of the session, participants should be able to:

- Describe why suicide is an important public health problem
- Describe the magnitude of suicidal behaviors
- Identify high risk groups for suicidal behaviors
- Identify risk and protective factors for suicidal behavior
- Cite examples of useful interventions to prevent suicide
Why use a public health approach to prevent suicidal behavior?

- Because suicide is a complex and multi-factorial issue, no one sector or system can address it alone
  - It encourages emphasis on upstream, midstream and downstream efforts in promoting successful results

- Because it is comprehensive, coordinated and collaborative
  - It requires involvement and partnership from many sources

- Because if we wait for people at risk for suicide to show up in medical offices we won’t stop the rise in suicide in the US

- Because it works and it is necessary… everyone has a role in preventing suicide
  - Examples - motor vehicle safety, vaccines, tobacco cessation, heart disease, workplace safety, infectious disease control, HIV/AIDS
Factors that Affect Health: Health Impact Pyramid

Examples:
- Eat healthy; be physically active
- Rx for high blood pressure; high cholesterol; diabetes
- Immunizations; colonoscopy
- Fluoridation; smoke-free laws; tobacco tax
- Poverty; education; housing; inequality

Source: Frieden TR. A framework for public health impact: The health impact pyramid. AJPH 2009
Different Forms of Violence

- **Peer Violence**
- **Suicidal Behavior**
- **Child Maltreatment:** physical, sexual, emotional, neglect
- **Intimate Partner Violence**
- **Dating Violence**
- **Sexual Violence**
- **Bullying**
- **Elder Abuse**
Public Health Approach to Suicide Prevention

- The public health approach seeks to answer the foundational questions:
  - Where does the problem begin?
  - How could we prevent it from occurring in the first place?
- To answer these questions, public health uses a systematic, scientific method for understanding and preventing suicide.
The Public Health Approach to Prevention

1. Define and monitor the problem
2. Identify risk and protective factors
3. Develop and test prevention strategies widely
4. Disseminate successful strategies widely
## Leading causes of death – United States, 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
<th>Number of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart Disease</td>
<td>647,457</td>
</tr>
<tr>
<td>2</td>
<td>Malignant Neoplasms</td>
<td>599,108</td>
</tr>
<tr>
<td>3</td>
<td>Unintentional Injuries</td>
<td>169,936</td>
</tr>
<tr>
<td>4</td>
<td>Chronic Lower Respiratory Disorders</td>
<td>160,201</td>
</tr>
<tr>
<td>5</td>
<td>Cerebrovascular Disorders</td>
<td>146,383</td>
</tr>
<tr>
<td>6</td>
<td>Alzheimer’s Disease</td>
<td>121,404</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes mellitus</td>
<td>83,564</td>
</tr>
<tr>
<td>8</td>
<td>Influenza and pneumonia</td>
<td>55,672</td>
</tr>
<tr>
<td>9</td>
<td>Nephritis</td>
<td>50,633</td>
</tr>
<tr>
<td>10</td>
<td>Suicide</td>
<td>47,173</td>
</tr>
</tbody>
</table>

Source: CDC vital statistics
Suicide among all persons by sex -- United States, 1933-2017

Source: CDC vital statistics
Suicidal rates among males by age group -- United States, 1999 and 2017

Source: CDC National Vital Statistics
Suicidal rates females by age group -- United States, 1999 and 2017

Source: CDC National Vital Statistics
Suicidal rates among by race/ethnicity - United States, 1999 and 2017

### Leading causes of death for selected age groups – United States, 2017

<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>Unintentional Injuries</td>
<td>Malignant Neoplasms</td>
</tr>
<tr>
<td>2</td>
<td><strong>Suicide</strong></td>
<td><strong>Suicide</strong></td>
<td><strong>Suicide</strong></td>
<td><strong>Suicide</strong></td>
<td>Malignant Neoplasms</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>3</td>
<td>Malignant Neoplasms</td>
<td>Homicide</td>
<td>Homicide</td>
<td>Malignant Neoplasms</td>
<td>Heart Disease</td>
<td>Unintentional Injuries</td>
</tr>
<tr>
<td>4</td>
<td>Congenital Malformations</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>Homicide</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
<td>Homicide</td>
<td>Liver Disease</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>6</td>
<td>Heart Disease</td>
<td>Congenital Malformations</td>
<td>Diabetes Mellitus</td>
<td>Liver Disease</td>
<td>Diabetes Mellitus</td>
<td>Chronic Lower Respiratory Ds</td>
</tr>
<tr>
<td>7</td>
<td>Chronic Lower Respiratory Ds</td>
<td>Diabetes Mellitus</td>
<td>Congenital Malformations</td>
<td>Diabetes Mellitus</td>
<td>Cerebro-Vascular</td>
<td><strong>Suicide</strong></td>
</tr>
<tr>
<td>8</td>
<td>Cerebro-Vascular</td>
<td>Influenza and Pneumonia</td>
<td>Complicated pregnancy</td>
<td>Cerebro-Vascular</td>
<td>Homicide</td>
<td>Cerebro-Vascular</td>
</tr>
</tbody>
</table>

Source: CDC vital statistics
Suicide rates among all persons by age and sex--United States, 2017

Source: CDC vital statistics
Suicides and suicide rates among all persons -- United States, 2017

Source: CDC vital statistics
Age-adjusted suicide rates among all persons by state -- United States, 2017 (U.S. avg 14.0)

Source: CDC vital statistics
Suicide rates by level of county urbanization among persons aged ≥10 years – U.S., 1999-2015

Source: CDC vital statistics
Number and ratio of persons affected by suicidal thoughts and behavior among adults aged ≥18 years — United States, 2016

- Deaths*: 43,427 (1)
- Hospitalizations†: 114,725 (2.6)
- Emergency Department visits$: 397,975 (9.1)
- Suicide attempts¶: 1,319,000 (30.4)
- Seriously considered suicide**: 9,829,000 (226.3)

*Source: CDC’s National Vital Statistics System,
†Source: Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project - Nationwide Inpatient Sample (HCUP-NIS) only 1st diagnosis
§Source: Source: CDC’s National Electronic Injury Surveillance System-All Injury Program
¶Source: SAMHSA’s National Survey on Drug Use and Health
**Source: SAMHSA’s National Survey on Drug Use and Health
Number in parentheses represent the ratio of deaths to other categories
Self-inflicted injury among all persons by age and sex--United States, 2017

Source: CDC WISQARS NEISS-AIP
Results

Nearly 45,000 lives lost to suicide in 2016.

Suicide rates went up more than 30% in half of states since 1999.

More than half of people who died by suicide did not have a known mental health condition.

Percent change in annual age-adjusted suicide rates,*

Percent change

Decrease 1
Incr 6-18
Incr 19-30
Incr 31-37
Incr 38-58
Many factors contribute to suicide among those with and without known mental health conditions.

- Relationship Problem (42%)
- Crisis in the past or upcoming two weeks (29%)
- Physical health problem (22%)
- Criminal legal problem (9%)
- Job/Financial problem (16%)
- Problematic substance use (28%)
- Loss of housing (4%)

Note: Persons who died by suicide may have experienced multiple factors. Data on mental health conditions and contributing factors are from coroner/medical examiner and law enforcement reports. It is possible that mental health conditions or other contributing factors could have been present and not diagnosed, known, or reported.

Source: CDC’s National Violent Death Reporting System, data from 27 states participating in 2015
The Public Health Approach to Prevention

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2. Identify risk and protective factors
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Conceptual Framework on the Social Determinants of Health
World Health Organization (WHO)

Sociopolitical and Economic Context
- Governance
- Macroeconomic Policies
- Social Policies
- Public Policies
- Culture and Societal Values

Socioeconomic Position (of groups)
- Social Class
- Gender
- Race/Ethnicity

Education
- Occupation
- Income/Wealth

Structural Determinants of Health Inequities

Impact on Equity in Health and Well-Being

Sociocultural and Values

Macroeconomic Policies

Social Policies

Public Policies

Culture and Societal Values

Structural Determinants of Health Inequities

Living and Working Conditions
- Behavior and Biological Factors
- Psychosocial Factors

Social Cohesion and Social Capital

Health Systems

Intermediary Determinants of Health
### Population attributable risk (%) estimates for risk factors for suicidal behavior

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Psychiatric disorder</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective disorder</td>
<td>26.3</td>
<td>31.6</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>19.0</td>
<td>25.4</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>4.6</td>
<td>11.7</td>
</tr>
<tr>
<td>Personality disorder</td>
<td>15.2</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Socioeconomic factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>10.2</td>
<td>4.0</td>
</tr>
<tr>
<td>Education</td>
<td>40.9</td>
<td>20.3</td>
</tr>
<tr>
<td>Occupation</td>
<td>33.1</td>
<td>6.8</td>
</tr>
<tr>
<td>Unemployment</td>
<td>4.0</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Source: Li Z, 2011
The Public Health Approach to Prevention

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3. Develop and test prevention strategies
Helping States and Communities Take Advantage of the Best Available Evidence

http://www.cdc.gov/violenceprevention/pub/technical-packages.html

The Public Health Approach to Prevention

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National Strategy for Suicide Prevention (NSSP)

- 4 strategic directions; 13 goals; 60 objectives

- Strategic Directions
  1. Healthy and Empowered Individuals, Families, and Communities
  2. Clinical and Community Preventive Services
  3. Treatment and Support Services
  4. Surveillance, Research, and Evaluation

Guidance for State and Local Health Agencies and Other Stakeholders

VetoViolence.cdc.gov

Taking Action
7 phases in *comprehensive* violence prevention

- Planning
- Partnership
- Policy Efforts
- Strategies and Approaches
- Adaptation
- Implementation
- Evaluation
Planning

Set yourself up for success

- Use Data to Understand Assets, Needs, Resources and Context
- Develop a Shared Vision
- Prioritize Risk and Protective Factors
- Write the Plan
Connecticut
Policy approaches can shape the social environments in which children grow up in ways conducive to better health and well-being. In 2015, Connecticut passed a provision in the state budget establishing what it calls a “two-generational” school readiness and workforce development pilot program to foster family economic self-sufficiency in low-income families. The program delivers early education and workforce services concurrently across generations (i.e., parent and child or caregiver). To oversee the program, the legislation established an interagency workgroup comprised of commissioners of the departments of public health, social services, early childhood, education, housing, transportation, labor, and corrections, as well as the chief court administrator, nonprofit and philanthropic organizations, and other business and academic professionals.

Source: ASTHO, Essential for Childhood Policy Guide. (pg. 5) http://www.astho.org/Prevention/Essentials-for-Childhood-Policy-Guide

Florida
Policy comes in many different forms including organizational policies. State and local health departments can help
Conclusion

• Suicide is a significant public health problem

• Results from an interaction of factors
  - never a single item that causes a suicide
  - multiple opportunities for action

• Research has shown much of suicidal behavior can be prevented

• Broad responsibility for addressing the issue
  - communities must work together
  - no one person or group can do it alone
Thank You

For more information please contact
Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info
Questions and Comments
Suicide rates among persons aged 10-24 years by age group – U.S., 1999-2017

Source: CDC vital statistics
# Leading causes of death by ethnicity – United States, 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>White</th>
<th>Black</th>
<th>American Indian/AN</th>
<th>Asian</th>
<th>Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
</tr>
<tr>
<td>2</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
<td>Malignant Neoplasms</td>
<td>Heart Disease</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>3</td>
<td>Chronic Low Respiratory</td>
<td>Unintentional Injuries</td>
<td>Unintentional Injuries</td>
<td>Cerebrovascular</td>
<td>Unintentional Injuries</td>
</tr>
<tr>
<td>4</td>
<td>Unintentional Injuries</td>
<td>Cerebrovascular</td>
<td>Diabetes Mellitus</td>
<td>Unintentional Injuries</td>
<td>Cerebrovascular</td>
</tr>
<tr>
<td>5</td>
<td>Cerebrovascular</td>
<td>Diabetes Mellitus</td>
<td>Liver Disease</td>
<td>Diabetes Mellitus</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>6</td>
<td>Alzheimer’s Disease</td>
<td>Chronic Low Respiratory</td>
<td>Chronic Low Respiratory</td>
<td>Alzheimer’s Disease</td>
<td>Alzheimer’s Disease</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes Mellitus</td>
<td>Homicide</td>
<td>Cerebrovascular</td>
<td>Influenza and pneumonia</td>
<td>Liver Disease</td>
</tr>
<tr>
<td>8</td>
<td>Influenza and pneumonia</td>
<td>Kidney Disease</td>
<td>Suicide</td>
<td>Chronic Low Respiratory</td>
<td>Chronic Low Respiratory</td>
</tr>
<tr>
<td>9</td>
<td>Suicide</td>
<td>Alzheimer’s Disease</td>
<td>Influenza and pneumonia</td>
<td>Kidney Disease</td>
<td>Suicide</td>
</tr>
</tbody>
</table>

Source: CDC Vital Statistics
Suicide rates by ethnicity and age group -- United States, 2013-2017

Source: CDC Vital Statistics
Suicide Among All Persons by Selected Age Groups in Years United States, 1999-2017

Source: CDC vital statistics
Test Today: Othello

PSAT Tutoring after school today

Good Morning, Teacher
Suicide Variables*

- Current depressed mood
- Current mental health problem
- Other mental health diagnosis
- Current treatment for mental illness
- Ever treated for mental illness
- Alcohol problem
- Other substance problem
- Other addiction
- Job problem
- School problem
- Financial problem
- Anniversary of a traumatic event
- Person left a suicide note
- Disclosed intent to commit suicide
- History of suicide attempts
- Crisis in past 2 wks
- Physical health problem
- Intimate partner problem
- Other relationship problem
- Suicide of friend or family in past 5 years
- Other death of friend or family in past 5 years
- Recent criminal legal problem
- Eviction/loss of home

*Source: Nat’l Violent Death Reporting System
Military and Veteran Suicide Surveillance

**Findings and Impacts**

- **Intimate partner problems are just as important as mental health problems**
  
  **Impact:** Submitted DoD proposal to evaluate “Strength at Home” program re suicide-related outcomes

- **Military /Veteran suicides mostly involve firearms and are highly concentrated in small % of counties**
  
  **Impact:** Informed 2017 DoD Safe Firearm Storage Policy

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Suicide by method – United States, 2017

- Firearms: 50.6%
- Suffocation: 27.7%
- Poisoning: 13.9%
- Cut/pierce: 1.8%
- Fall: 2.4%
- Other: 3.6%

Source: CDC vital statistics
Overlap of spheres of influence for suicidal behavior

- Age
- Sex
- Mental illness
- Substance misuse
- Stressful life events

- Inappropriate access to lethal means
- Geography
- Economy
- Cultural values

- Family history of interpersonal or self-directed violence
- Exposure to violence

- Spirituality
- Incarceration
- Social isolation vs support