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## Research, Practice, and Data Informed Investigations of Child and Youth Suicide: A Science to Service and Service to Science Approach

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### Abstract

**Background:** Suicide rates for children and adolescents have been increasing over the past two decades. In April 2023, the National Institute of Mental Health (NIMH) convened a two-day workshop to address child and youth suicide.

**Purpose:** The workshop focus was to discuss the state of the science and stimulate a collaborative response between researchers, death investigators, and data collection teams to build a science-to-service and service-to-science approach toward understanding - and ultimately preventing - this growing problem of child and youth suicide.

**Highlights:** Topics that meeting participants highlighted as worthy of further consideration for research and practice were: increasing awareness among death investigators, medical examiners, and coroners that child suicide deaths under age 10 years do occur and should be investigated and documented accordingly; emphasizing the value of science based protocols for child and youth

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

death investigations to enhance consistency of approaches; and articulating needs for postvention services to suicide loss survivors.

**Outcomes:** The importance of collecting an accurate and complete cause and manner of death (i.e., unintentional, suicide, homicide, undetermined) among all child decedents, and demographic information such as race, ethnicity, and sexual/gender minority status was underscored as critical for enhanced surveillance. For prevention efforts, approaches to assessing and understanding suicidal thoughts and behaviors among diverse groups of children, and the variability in proximal and distal risk factors are needed to inform opportunities for preventive interventions for diverse communities. The need for consistent measures and processes to improve death investigations, fatality review committees, and coordination between data collection systems and agencies was also raised.

**Practical applications:** Collaborations among researchers, death investigators, and data collection teams can help to fully describe the child and youth suicide crisis and provide actionable information for new research, and prevention and response efforts.

### Keywords

Youth; suicide; postvention; Death investigation; suicide prevention

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## 1. Introduction

Suicide is a major public health problem. After declining in 2019 and 2020, suicide rates increased approximately 5% in the United States in 2021.<sup>1</sup> Provisional estimates indicate that suicide deaths further increased in 2022, rising from 48,183 deaths in 2021 to nearly 50,000 deaths in 2022.<sup>2</sup> In 2021, suicide cost the United States nearly \$500 billion dollars in medical and value of statistical life costs.<sup>3</sup>

Suicide remained the second leading cause of death for youth 10–14 years of age in 2022 despite an 18% drop in the number of suicides from the previous year (2022=493; 2021=598).<sup>4</sup> Suicide was the third leading cause of death for youth 15–18 years of age in 2021 (1,689) and 2022 (1,597).<sup>4</sup> Suicide rates for children 10–14 tripled from 2007–2018, and then held steady through 2021.<sup>5</sup> There were 59 suicides among children age 5–9 year between 2018–2022 (2022 data are provisional).<sup>4</sup>

Encounters for suicidal ideation and attempts accounted for an increasing number of emergency department (ED) and inpatient visits at children's hospitals nationwide between 2008 and 2015<sup>6,7</sup> with other studies showing increases from 2016 to 2019, declines in 2020, and subsequent increase in 2021.<sup>8</sup> In 2021, approximately one-third of female high school students reported that they had seriously considered attempting suicide, approximately one-fourth reported making a suicide plan, and 13.3% reported attempting suicide.<sup>9</sup> These percentages were all significant increases over 2019.

Like most public health problems, suicide is preventable. However, suicide is not caused by any single factor and suicide prevention cannot be achieved by any single strategy or approach. Suicide occurs in response to multiple biological, psychological, interpersonal, environmental, and societal influences that interact with one another, often over time. The

complex nature of suicide for children and youth is less well understood. The influence of certain factors remain uncertain such as, younger children's ability to reason regarding the finality of death,<sup>10</sup> the nature of circumstances such as academic and social pressures in the school setting,<sup>11</sup> and the influence of social media.<sup>12,13</sup> There are a variety of issues to be considered to understand and prevent child and youth suicide.

The issue of child and youth suicide has garnered national attention, particularly at the federal level. A 2019 Report to Congress from The Congressional Black Caucus Emergency Task Force on Black Youth Suicide and Mental Health<sup>14</sup> indicated that the suicide death rate among Black youth had been increasing faster than any other racial/ethnic group. It was followed closely by a Surgeon General's Advisory on Protecting Youth Mental Health in 2021<sup>15</sup> and a White House Report on Mental Health Research Priorities in 2023<sup>16</sup>. These reports called attention to rising suicide and suicidal behaviors among U.S. youth and encouraged the widespread use of evidence-based interventions to mitigate the problem. The National Institutes of Health (NIH) endorsed further research to strengthen the suicide prevention science base.

NIH's National Institute of Mental Health (NIMH) hosted several meetings and workshops over that period of time that focused on suicide risk factors that are potentially modifiable in upstream preventive intervention programs, and areas of discussion highlighted issues worthy of future research and federal attention. Recurrent themes emerged within the child and adolescent suicide meeting discussions: How are manner of death determinations made in young children or youth (i.e., suicide vs. unintentional, homicide, or undetermined)? What challenges do medical examiners and coroners (ME/Cs) face when determining manner of death? Are there research questions that – if addressed – could assist ME/Cs and the broader suicide data collection communities in the course of their work? How can the data gathered during suicide death investigations be enhanced to provide information for prevention?

## 1.1 Purpose

NIMH convened a two-day workshop in April 2023 to address these and other questions regarding child and youth suicide. Co-planned by individuals from NIMH, the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) and National Center for Injury Prevention and Control (NCIPC), and the Health Resources and Services Administration's (HRSA) Maternal and Child Health Bureau (MCHB), the workshop was designed to stimulate collaborative work among death investigators, suicide researchers, epidemiologists, mental health professionals, and social workers. It sought to build a science-to-service and service-to-science approach to provide actionable information in the service of understanding and ultimately preventing suicide in children and youth. This paper summarizes content from that workshop including current sources to study the problem of child and youth suicide, efforts to address challenges, and identification of knowledge gaps.

## 2. National, State and Local Level Data Collection Activities in Child and Youth Suicide

The workshop was divided into sessions that covered a variety of topics to include: medicolegal death investigation approaches; national, state and local data collection systems; considerations for collecting data on child and youth suicide decedents; using information obtained from data collection systems to identify emerging issues and suicide prevention program focus areas; postvention approaches for suicide loss survivors; and descriptions of current suicide surveillance and prevention resources (Table 1) at the federal level. Each of these topic sessions are summarized below.

### 2.1 Medicolegal Death Investigation

Medicolegal death investigation (MDI) systems are statutorily responsible for investigating sudden, unexpected, and unexplained deaths and injury-related deaths (“accidents,” suicides, and homicides ranging from blunt trauma to asphyxia to gunshot wounds to drug intoxication). The prototype MDI system consists of a corps of medicolegal death investigators and leadership by a forensic pathologist medical examiner or an elected coroner who work in an environment of objectivity and independence. Each investigated death (sudden, unexpected, unexplained or caused by an injury) is a systematic exercise in data collection to learn about the decedent, understand the circumstances of death, and arrive at a medical conclusion about the disease or injury that caused death. Characterizing the individual before death based on health records and personal interviews, examining the individual after death including physical examination of the body, and knowledge of the circumstances of death or sudden presentation followed by later death usually permit a conclusion of a disease-related death or an injury-related death (self-inflicted, unintentional, or caused by another person).

As noted earlier, objectivity and independence are essential characteristics of each medicolegal death investigation. In brief, this means that arriving at a medical conclusion of cause and manner of death is the result of a deliberate and open-minded analysis of individual case data without external influence from law enforcement, family, the medical community, and so forth. In other words, let the case speak for itself.

Some death investigations are particularly challenging because the process of understanding a decedent’s history may be construed by family or friends as an invasive and/or offensive conversation. This may be particularly true during the immediate aftermath of the death of a young person. Also, individual medicolegal death investigators may lack the breadth of specialized training and experience – and may simply lack enough time - to conduct such a delicate interview with efficiency, patience, and grace.

There is yet another layer of the investigation and interpretation of a young person’s apparent suicide: Is there an age at death that is too young to be considered a suicide? While the answer is “No,” an arbitrary “cut-off” (e.g., 10 years old) is used in some MDI systems. Having an age cut-off as part of an office policy is expedient in these difficult cases but incompatible with current evidence regarding how the very young can understand

fundamental concepts of death (irreversible, universality, and caused by something).<sup>17</sup> Whether concluding suicide as manner of death in the very young is inhibited by office policy or certifier reluctance, the epidemiologic result is potentially an artificially low number of suicides in this age group. A priority outcome of the workshop was to initiate communication with ME/Cs and other death investigators at professional meetings via platform presentations and, subsequently, via publication(s) in professional journals on the discussions of the panel. The essential content to convey is that current science informs us that the very young can be capable of understanding suicide as a final and permanent fatal self-inflicted injury. Instead of an age cut-off for concluding suicide, objective investigation of each death, regardless of young age, should drive the manner of death conclusion.

## 2.2 Surveillance Systems

**The National Vital Statistics System (NVSS-Mortality)**—Vital statistics mortality data from the National Vital Statistics System (NVSS) is a fundamental source of demographic, geographic, and cause-of-death information in the United States. The NVSS mortality data include information on all deaths occurring within the United States annually from information reported on death certificates, which are completed by funeral directors (the demographic portion) and the attending physicians, or ME/Cs (the medical portion). National data for vital statistics are provided through contracts between CDC's NCHS and state vital registration systems that are legally responsible for the registration of deaths. Information on demographics, geographic details, and cause of death is provided for all decedents. State- and county-level information is available by place of occurrence as well as place of residence. Causes of death, including suicide, are coded by NCHS in accordance with the International Classification of Diseases, Tenth Revision (ICD-10). Data are available in various formats, including reports, downloadable data files ([https://www.cdc.gov/nchs/data\\_access/vitalstatsonline.htm](https://www.cdc.gov/nchs/data_access/vitalstatsonline.htm)), restricted use data files (<https://www.cdc.gov/nchs/nvss/nvss-restricted-data.htm>), and online query systems (<https://wonder.cdc.gov>; <https://www.cdc.gov/injury/wisqars/index.html>). Vital statistics mortality data are used to present characteristics of persons who have died in the United States, understand leading causes of death, determine life expectancy, and compare the U.S. mortality data with those in other countries. Annual numbers of suicides including by various factors are available in reports, and provisional data provides an early glimpse for action.<sup>2,18</sup>

**National Violent Death Reporting System (NVDRS)**—The National Violent Death Reporting System (NVDRS) is an ongoing, state-based surveillance system that is in all 50 states, the District of Columbia, and Puerto Rico. NVDRS methods have been described previously.<sup>19</sup> Briefly, the system uses information from existing data sources: death certificates, ME/C reports, and law enforcement (LE) reports to provide a complete picture of violent deaths, including suicide. Trained abstractors write detailed narratives of the incident using information from ME/C and LE reports. The NVDRS provides context by collecting information on circumstances, those events that preceded or were related to the incident. Suicide circumstances collected include school problems, suicide of a friend or family member, history of suicide attempts, and history of suicidal thoughts or plans.<sup>19</sup>

The uniqueness of NVDRS also allows for the analysis of patterns in circumstances and risk, which is not possible with other data sources.<sup>20</sup>

The NVDRS includes all age groups and all settings, including children and adolescents. The data have been utilized by researchers to study the phenomena of child and youth suicide.<sup>21,22</sup> State VDRS programs use the data for action to help inform and develop prevention efforts. For example, California VDRS data were used to address increasing rates of youth suicide. Programs were developed through the California Youth Behavioral Initiative and programs included an outreach and media campaign and a crisis response effort that offered community resources and support following a suicide attempt or suicide death.<sup>23</sup> In New Jersey, VDRS data were used to support the NJ Health Department of Children and Families Garrett Lee Smith Grant application to focus on youth suicide prevention, supporting New Jersey's Ready to Stand United against Youth Suicide, a New Jersey Public Health Community Initiative that was a statewide collaborative. Nevada VDRS data were analyzed to determine intervention points with youth suicides (ages 10–17). As a result, the Nevada Office of Suicide Prevention established Project AWARE, a school-based mental health and suicide prevention program that works with the state department of education to provide school personnel training including how to respond to mental health challenges.

NVSS and NVDRS data have been used to provide estimates of youth suicides for CDC rapid responses Epidemiologic Assistance (Epi-Aids)<sup>13</sup> and are a valuable tool for public health practitioners to have baselines as they go out in the field to investigate. NVDRS data are also cited, for example, in *The Surgeon General's Call to Action to Implement the National Strategy for Suicide Prevention* (NSSP)<sup>24</sup> and CDC's data modernization efforts, including work with ME/C to facilitate the exchange of data<sup>25</sup> will benefit users of medicolegal death investigation data.

**National Fatality Review-Case Reporting System (NFR-CRS)**—Another source of data on child and youth suicides is Child Death Review (CDR) data entered into the National Fatality Review-Case Reporting System (NFR-CRS).<sup>26</sup> Systematic fatality reviews provide insight into gaps in services, systems, and modifiable risk factors not obtained from administrative surveillance systems.<sup>27</sup> The NFR-CRS is the data system used by state and local CDR teams across the country. It is a web-based, standardized case report tool available at no cost to CDR teams that allows authorized committee members to enter case data, summarize findings, review team recommendations, access and download data, and create standardized reports. Currently 47 states participate in the NFR-CRS.

CDR is a multidisciplinary review process where teams of professionals come together to conduct systematic reviews that identify causes and contributing factors at individual, environmental, clinical, or systems levels that can be addressed to prevent future deaths.<sup>27</sup> Information from these reviews can inform community, state, and federal level program planning, quality improvement, health systems integration, and policy development, to enhance health promotion and risk reduction programs. There are more than 1,400 state, territorial and local CDR teams in the United States in all 50 states, D.C., Guam, and

some tribes. These teams typically review deaths ages 0–17 years for many types of death, including suicides in most states.

The standardized case reporting form used by teams includes demographics about the child, biological parents, caregivers, and supervisor at the time of the death.<sup>28</sup> Additionally, data are collected on the circumstances of the death, investigative actions, services provided or needed, key risk factors and actions recommended and/or taken by the team to prevent other deaths. There is a section on suicides that collects information specific to suicide risk and protective factors. These questions are based on evidence-based Warning Signs literature.<sup>29</sup> Lastly, NFR-CRS collects contextual information about the family and community called Life Stressors. These Life Stressors are grouped into the following sections: social/economic, medical, relationships, schools, and transitions stressors that were present for this child and family at the time of death.

As of July 3, 2023, there were 14,019 suicides entered into the NFR-CRS. Suicide researchers can request access to the de-identified database by submitting a proposal to the National Center.<sup>30</sup> The data cannot be used to generate population estimates or rates because not all suicide deaths are reviewed. Researchers have used these data to publish articles on pediatric suicides in peer-reviewed journals.<sup>31–34</sup> The National Center has developed recommendations for suicide prevention reviews based on CDR reviews and NFR-CRS data. Relevant recommendations include consistent access to information in records and improved suicide death scene investigation standards.<sup>35</sup>

State and local CDR programs have used their data to catalyze prevention and to produce more actionable data in a variety of ways. For example, the El Paso County, Colorado Coroner's office struggled to collect information about one young person's gender identity and sexual orientation, so the medical examiner trained his investigators and added the collection of these data points to standard death scene investigation forms. By adding these questions to the data forms, more consistent data were collected and individual bias in collecting this information was reduced. Rhode Island added suicide prevention messaging to bridges that were commonly used in suicides. Another state modified the way mental health care was delivered following a suicide attempt in a young person including increasing the level of care for treatment and providing additional access to resources and follow up after psychiatric discharge following a suicide attempt.

### **2.3 Challenges Associated with Collecting Information on Child and Youth Suicide Deaths**

Virtually all that we know about children and youth who die by suicide originates from information collected after death. This may include medical and social history from records, key informant interviews and social media, physical examinations of bodies such as through autopsies, and medical tests, such as toxicology. The variety of sources to consider and the time and complexity of acquiring the information makes the work difficult for ME/C death investigators, individuals who compile records for state VDRS and CDR teams, and the researchers who rely on analysis of that data to inform their hypotheses. During the course of a death investigation, ME/Cs gather information on the death to determine a cause and manner of death, but they may be limited in resources and challenged in obtaining accurate

information from families and other sources. State and federal surveillance efforts such as the NVDRS and NFR-CRS systems have more time and resources to gather information from sources such as health care providers, social service administrators, school officials and law enforcement/juvenile justice representatives. Data from these systems can help to identify important risk variations and patterns as well as emerging issues related to child and youth suicide deaths at the national, state, and local level.

The data collected are necessarily historical and, unless written or recorded by the child before death, rely on informants. In some instances, these informants may not be particularly accurate or forthcoming. For example, studies have shown large discrepancies between parent and child responses to questions about the child's suicidal behaviors.<sup>36</sup> Family members and other key informants of a now deceased child may withhold information for fear of disclosing details on factors such as unhealthy relationships, sexual orientation, gender identity, trauma, juvenile justice involvement, and bullying.

Social media interactions are an emerging source of firsthand information from youth who have died by suicide, although depending on the media platform, some information may only be accessible with the appropriate authorization or to the parent. Examination of the child or youth decedent's social media content and patterns of use (defined here as text exchanges, posts or views on large or small messaging platforms such as TikTok or YouTube, gaming interactions, etc.) can provide useful contextual information for death investigation teams and suicide research. Written communications can provide clues and inform investigators regarding the child's state of mind just prior to death. Longer-term analysis of social media interactions may reveal 'red flag' factors that could be considered within the death investigation process and as potential markers of focus for suicide prevention efforts.

Children and youth that fall into groups such as Lesbian, Gay, Bisexual, Transgender, Questioning (LGBTQ+),<sup>9</sup> racial/ethnic minorities, those with autism spectrum disorder (ASD)<sup>37</sup> and other comorbidities, and those with pre-school onset major depressive disorder<sup>38,39</sup> are at higher risk for suicidal thoughts and behaviors, and are likely at higher risk for suicide death. This is similarly found for youth involved with the child welfare system<sup>40</sup> or the juvenile justice system.<sup>41,42</sup> It is notable that these characteristics are risk markers deserving of careful attention, and are not modifiable risk factors in the traditional sense of the public health term. Given variations in data collection procedures and record completion rates (i.e., the rate of records that do not have missing data), it is difficult to consistently identify these groups using existing systems that currently collect information for vital statistics, violent death reports, and child death review procedures.

The annual number of suicides among children under 10 years of age reported on death certificates is low. This could represent the true burden in these age groups. However, some ME/C offices have policies that do not allow deaths in children under 10 to be considered a suicide. However, studies indicate the emergence and persistence of suicidal thoughts and behaviors among pre-adolescents.<sup>38,43</sup> As a more science-based understanding of suicide is shared with the ME/C community and changes to policies are made, there may be an



increase in the number of recognized suicides. This anticipated shift should be carefully monitored and analyzed lest an increase in suicide rate be attributed incorrectly.

Vital statistics data linkage studies found racial and ethnic misclassifications accounting for 3% among Hispanic individuals, 3% among Asian/Pacific Islander individuals, and 34–40% among American Indian/Alaska Native individuals among people of all ages and causes of death.<sup>44,45</sup> These findings emphasize the need to improve data collection at its entry points.

Advances in understanding suicide in children requires having sufficient information about all child deaths to accurately discern shared and discrete risk factors for suicide and requires a large volume of data to be collected, analyzed, and translated into public health interventions for the living. Ideally, common types of data would be collected via a standardized form or checklist. Data collection burden may be alleviated by adopting an extended timeline approach (i.e., 2 or 3 months) to data collection that prioritizes information relevant to the manner of death determination early in the investigation followed by interviews that go into more historical data depth later. Additional connections between pre- and postmortem functional comparisons would be facilitated by adapting common mental health and suicide risk measures used for children and youth into measures that can be used postmortem.

### 3. Postvention Approaches as Opportunities for Suicide Loss Survivors

Preventive strategies may help address the increased morbidity and mortality among those who are affected by child suicide. This prevention at a point in the chain of care often is referred to as ‘postvention.’ The field of suicide prevention identifies those who experience the death of a contact to suicide as a suicide loss survivor, which can include parents, siblings, extended family, peers, and community members. Understanding how this loss impacts people across a continuum characterized by intensity and length of time may inform approaches to support the grieving process and prevent deterioration in mental health and overall functioning.<sup>46</sup>

Previous research has demonstrated that parents who survive the loss of a child to suicide are at elevated risk for suicide, depression, anxiety, and marital break-up in the years that follow.<sup>47,48</sup> Results from a study<sup>47</sup> utilizing four Danish longitudinal register databases indicated that the first month following the suicide death of a child is a particularly dangerous period for the parents’ own suicide risk, with women continuing to experience elevated risk across the first year. Younger age of offspring decedents was shown to have a stronger effect on suicide risk of parents.

Given the low base rate and relative recency of studying pre-teen suicide, research on youth suicide attempt survivors has mostly been limited to adolescents. A meta-analysis of 18 studies found that among adolescents, 18.1% reported lifetime exposure to suicide loss, and 16.7% reported lifetime exposure to suicide loss of a friend or peer.<sup>49</sup> A separate study using a population-based sample of youth aged 12–17 years who completed the Canadian National Longitudinal Survey of Children and Youth between 1998/99 and 2006/07 demonstrated in a cross-sectional analysis that exposure to a classmate’s suicide was shown to increase risk of

suicide ideation and suicide attempt.<sup>50</sup> From the studies' longitudinal analyses, exposure to a classmate's suicide predicted risk for suicide across a 2-year period for youth 12–15 years of age and closeness to the suicide decedent did not moderate the risk.

The National Action Alliance for Suicide Prevention has published a resource on responding to grief, trauma, and distress after suicide<sup>46</sup> that contains examples of resources for families, schools, and communities. Preventive approaches have involved universal, selective, or indicated strategies, and should be designed in such a way that they can increase the knowledge base through evaluation. Efforts should therefore use existing resources for tracking data to inform identification, delivery, and assessment, or alternatively consider where novel data resources could be obtained. As described earlier, the CDC Epi-Aid<sup>51</sup> mechanism was used to address suicide risk among students in an observed suicide cluster in Ohio. The community has benefited from local strategies for accessing healthcare utilization data and community school-based efforts at universal screening.<sup>12</sup>

Each level of intervention should ideally be informed by an empirical understanding of the factors that confer risk. Previous research has identified factors such as meaning making,<sup>52</sup> grief and depression,<sup>53</sup> guilt and shame,<sup>54</sup> and perceived avoidance from family members<sup>54</sup> as occurring at the individual level. At the school level, important factors to consider when delivering preventive interventions include school connectedness,<sup>55,56</sup> access to evidence-based healthcare services,<sup>57</sup> and school staff competency and self-efficacy.<sup>58</sup> Community-level postvention strategies could address factors that impact economic support,<sup>59</sup> environmental safety,<sup>60</sup> community connectedness,<sup>61</sup> teaching coping and problem-solving skills, and safe reporting and messaging about suicide.<sup>62</sup> These strategies are consistent with the CDC Comprehensive Suicide Prevention approach guiding community-based interventions.<sup>63</sup>

#### 4. Summary

Recognizing that rates of suicide for adolescents and children have been increasing over the past two decades, federal agencies have been working to bring together a variety of science, practice, and data communities to stimulate a collaborative response to the growing problem. A workshop among youth suicide death investigators, and research and post-suicide data collection team communities underscored the importance of collecting accurate and complete data on manner of death among all decedents; the recognition that local policy-based age cut-offs for suicide determinations are not substantiated; and the promise of 'postvention' interventions that recognize the heightened suicide risk of family, friend, and community suicide loss survivors.

#### 5. Practical applications

Collaborations among researchers, death investigators, and data collection teams can help to fully describe the child and youth suicide crisis and provide information for action in future prevention and response efforts.

## Biographies

**Lisa J. Colpe, PhD, MPH** is a Senior Advisor for Psychiatric Epidemiology working with the Suicide Prevention Research Team at NIMH. Dr. Colpe is a clinical psychologist with postdoctoral training in epidemiology and survey methodology. Over the past two decades she has overseen several large-scale mental health and suicide research projects within NIMH and in collaboration with the CDC, SAMHSA and the US Army.

**Janet Blair, PhD** is Team Lead of the Mortality Surveillance Team in the Surveillance Branch, Division of Violence Prevention, National Center for Injury Prevention and Control, at the Centers for Disease Control and Prevention (CDC), where the scientific and information technology aspects of the National Violent Death Reporting System (NVDRS) reside. Her research interests include violence prevention, minority health, and women's health. She received her B.S. degree in Biological Sciences from the University of Southern California, and her MPH and PhD degrees in Epidemiology from the University of California, Los Angeles School of Public Health.

**Rebecca Kurikeshu, MPH** is a Scientific Program Analyst for the National Institute of Mental Health (NIMH) in the Office of the Director. She currently is a member of the Suicide Research Team at NIMH and works on various suicide prevention projects. Ms. Kurikeshu earned her master's in public health from the George Washington University where she focused on maternal and child health. She previously served as the Senior Project Coordinator for the Maryland Collaborative to Reduce College Drinking. She has an interest in adolescent and young adult health risk behaviors and global mental health.

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**Marcus Nashelsky, MD** is a forensic pathologist and Clinical Professor of Pathology at the University of Iowa Carve College of Medicine. He is the former Autopsy Service Director at the University of Iowa Hospitals and Clinics and the former Johnson County, IA medical examiner. He served as president of the National Association of Medical Examiners in 2015. Most of his current work is divided between the CDC National Center for Health Statistics and the Iowa Cancer Registry.

**Stephen O'Connor, PhD** is Chief of the Suicide Prevention Research Program in the National Institute of Mental Health (NIMH) Division of Services and Intervention Research. Dr. O'Connor manages a portfolio of grants that includes projects on youth and adult-related suicide risk detection and interventions to reduce suicide ideation, attempts, and deaths. He serves as a Federal Subject Matter Expert in suicide prevention and contributes to U.S. Department of Health & Human Services initiatives on the topic.

**Jane Pearson, PhD** is the Special Advisor to the Director of the National Institute of Mental Health (NIMH) on Suicide Research. She leads the NIMH Suicide Research Team, overseeing the development of suicide research initiatives. Dr. Pearson led the development of the National Action Alliance for Suicide Prevention's Prioritized Research Agenda. Dr. Pearson is an adjunct associate professor at Johns Hopkins University, and a Fellow of the American Psychological Association. She has had a private practice in clinical psychology, and has authored papers on suicide research needs, and the ethical challenges of suicide research.

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**Brendan Weintraub, MPH, CHES** is the Scientific Program Manager for the Suicide Research Team at the National Institute of Mental Health (NIMH). In this capacity, he manages workflow strategies to effectively guide matrixed teams across NIMH and NIH on suicide research. Previously, he served as Program Associate II at the Patient-Centered Outcomes Research Institute (PCORI). Mr. Weintraub earned his Master of Public Health in behavioral sciences and health education from Emory University Rollins School of Public Health. He is currently a doctoral student in public health at Johns Hopkins University Bloomberg School of Public Health.

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### Measuring the Public Health Impact of Suicide

It is important to note that the public health purpose of collecting a wide array of information about any death is to be able to fully describe circumstances or contributing factors that led up to the death and to examine and compare the clinical and epidemiological similarities between and among various types of manners of death.

- Having a demographically similar, non-suicide comparison group is critical in suicide research to uncover common and distinct risk markers and/or modifiable risk factors for suicide deaths.
- There are likely some characteristics among all external-cause mortality cases (suicide, overdose, accident, homicide) that could benefit from upstream or universal prevention interventions.
- Some characteristics are sentinel risk 'flags' that could identify children and youth at the very highest risk for suicide.

Without comprehensive information about all child deaths, suicide risk markers or factors cannot be accurately determined.

**Table 1.**

Federal efforts and resources for preventing child and youth suicide.

<b>CDC</b>	
<a href="#">Collaborating Office for Medical Examiner and Coroners (COMEC)</a>	COMEC works to bring together resources from across the Centers for Disease Control and Prevention (CDC) to support the work in the ME/C community. Content is continuously updated as new materials are developed or identified.
<a href="#">Interagency Workgroup on Medicolegal Death Investigation</a>	A way to coordinate Federal initiatives to strengthen the MDI system and support death investigation services practiced by ME/Cs across the United States.
<a href="#">Data Modernization Initiative</a>	The ultimate goal of CDC's Data Modernization Initiative (DMI) is to get better, faster, actionable insights for decision-making at all levels of public health. The vision is to create one public health community that can engage robustly with healthcare, communicate meaningfully with the public, improve health equity, and have the means to protect and promote health.
<a href="#">Comprehensive Suicide Prevention Program (CSP)</a>	CSP funds programs in 24 states to implement and evaluate a comprehensive public health approach to suicide prevention, with a special focus on populations that are disproportionately affected by suicide.
<a href="#">National Violent Death Reporting System (NVDRS)</a>	The NVDRS is a state-based surveillance (reporting) system in 50 states, the District of Columbia, and Puerto Rico that links information from death certificates, ME/C reports, and law enforcement reports. By linking this information, NVDRS provides a more complete picture of the circumstances that contribute to violent deaths. The case definition for NVDRS includes suicides, homicides, deaths due to legal intervention (excluding legal executions), unintentional firearm deaths, and deaths of undetermined intent. Information is collected for all age groups and deaths that occur in all settings. NVDRS data are available via the NVDRS Restricted Access Database to researchers who meet specific criteria. <sup>15</sup>
<a href="#">Suicide Prevention Resource for Action</a>	CDC's Suicide Prevention Resource for Action (Prevention Resource) document details the strategies with the best available evidence to reduce suicide. The Prevention Resource can help states and communities prioritize suicide prevention activities most likely to have an impact. The programs, practices, and policies in the Prevention Resource can be tailored to the needs of populations and communities.
<b>HRSA</b>	
<a href="#">National Center for Fatality Review and Prevention</a>	The National Center for Fatality Review and Prevention is the national resource and data center for Child Death Review and Fetal Infant Mortality Review. They support local and state fatality review teams to review suicides and other manners/ causes of death and gather data on risk and protective factors at the individual family and community level in order to inform prevention. <a href="https://ncfrp.org/">https://ncfrp.org/</a>
<b>NIH</b>	
<a href="#">NIH NeuroBioBank</a>	A network of post-mortem brain banks that facilitates research to better understand human brain function and disorders.