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Leveraging Surveillance and Evidence: Preventing Adverse Childhood Experiences Through Data to Action

Angie S. Guinn, MPH[1],

Phyllis G. Ottley, PhD[1],

Kayla N. Anderson, PhD[1],

Maureen L. Oginga, MPH[1],

Derrick W. Gervin, PhD, MSW[2],

Gayle M. Holmes, PhD[1]

[1]Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia

[2]Office of Extramural Research Program Office, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia

Abstract

Adverse childhood experiences are potentially traumatic events that occur in childhood that have been associated with lifelong chronic health problems, mental illness, substance misuse, and decreased life opportunities. Therefore, preventing adverse childhood experiences is critical to improving health and socioeconomic outcomes throughout the lifespan. The Preventing Adverse Childhood Experiences: Data to Action (CDC-RFA-CE20-2006) funding initiative is a comprehensive public health approach to adverse childhood experience prevention that aims to understand the prevalence of and risk factors for adverse childhood experiences among youth, track changes in adverse childhood experience prevalence over time, focus prevention strategies, and ultimately measure the success of those evidence-based prevention strategies. Recipients will achieve the goals of the initiative by leveraging multisector partnerships and resources to: (1) enhance and build infrastructure for state-level data collection, analysis, and application of

Address correspondence to: Angie S. Guinn, MPH, Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, 4770 Buford Highway, Northeast, Mail Stop F63, Atlanta GA 30341. lsj8@cdc.gov.

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CREDIT AUTHOR STATEMENT

Angie S. Guinn: Conceptualization; Data curation; Methodology; Writing - original draft; Writing - review and editing. Phyllis Ottley: Conceptualization; Data curation; Methodology; Writing - original draft; Writing - review and editing. Kayla N. Anderson: Data curation; Methodology; Writing - original draft; Writing - review and editing.
Maureen Oginga: Data curation; Writing - review and editing. Derrick Gervin: Project administration; Supervision; Writing - review and editing. Gayle Holmes: Project administration; Supervision; Writing - review and editing.

SUPPLEMENTAL MATERIAL

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SUPPLEMENT NOTE

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adverse childhood experiences related surveillance data; (2) implement at least 2 prevention strategies based on the best available evidence to prevent adverse childhood experiences; and (3) undertake data to action activities to leverage statewide surveillance data to inform and tailor adverse childhood experience prevention activities. Since the start of this initiative, recipients have focused on building surveillance capacity based on the needs of their individual states; implementing strategies and approaches based on the best available evidence to better prevent adverse childhood experiences; and ultimately improve the mental, physical, and social well-being of their populations. Although evaluation of Preventing Adverse Childhood Experiences: Data to Action is ongoing, this article outlines the current recipient surveillance, prevention, and data-to-action implementation efforts.

INTRODUCTION

Decades of research have shown that childhood experiences, both positive and negative, impact health, well-being, and opportunities throughout the course of life.[1–3] Adverse childhood experiences (ACEs) such as experiencing violence, abuse, or neglect; witnessing violence in the home or community; having a family member attempt or die by suicide; and other experiences can undermine a child's sense of safety and stability.[4] Research has also shown that exposure to childhood adversity may result in toxic stress responses that are associated with increased risk for chronic physical and mental health conditions, health risk behaviors, violence victimization and perpetration, fewer life opportunities, and even decreased life expectancy.[1–5] In addition, numerous studies have documented inequities in childhood adversity attributed to the historical, social, and economic environments in which some families live.[1] As ACEs are a substantial public health problem that impacts multiple outcomes, the Centers for Disease Control and Prevention's (CDC) National Center for Injury Prevention and Control has prioritized preventing ACEs before they occur through the creation of safe, stable, and nurturing relationships and environments for all children and families and commitment toward understanding and addressing the social and structural inequities that put some children at greater risk for experiencing ACEs.[6–8]

A Public Health Approach to Preventing Adverse Childhood Experiences

Public health considers the conditions necessary to assure the health, safety, and well-being of entire populations. The public health approach uses data to: (1) define the problem, (2) identify risk and protective factors, (3) develop and test prevention strategies, and (4) ensure widespread adoption and uptake of these strategies.[9] Therefore, public health can play an important role in understanding and preventing ACEs.[10] Utilizing the public health approach to prevent ACEs, the first step is to define the problem. Surveillance research has indicated that ACEs are common, with about two-thirds of individuals reporting exposure to at least 1 childhood adversity.[1] The next step is to identify risk and protective factors. Etiological research on individual ACEs has identified risk and protective factors at multiple levels of the social-ecologic model[10] that may increase or decrease a person's likelihood of experiencing a childhood adversity. Examples of common risk factors include, but are not limited to, family stress[11] and community violence.[12] Protective factors that have also been identified include the presence of caring adults in the child's life[13] and community connectiveness[14] in addition to other individual- and community-level factors. Based on

available research, prevention strategies and approaches can be designed for program planning and implementation. Once prevention strategies are developed or existing strategies are identified, they can be evaluated rigorously to determine their effectiveness.

Based on the best available evidence, CDC's Division of Violence Prevention published a resource called *Preventing Adverse Childhood Experiences: Leveraging the Best Available Evidence*,[6] which outlines several strategies and approaches to prevent and mitigate the harms of ACEs. The strategies and approaches highlighted are cross-cutting and multigenerational, and address societal and structural determinants that give rise to ACEs; they are intended to provide a blueprint to guide states and communities on their programmatic efforts to prevent ACEs. In the last step of the public health approach, strategies shown to be effective are implemented and adopted more broadly. The science of implementation is the creation, adoption, use, support, and integration of the best available evidence on programs, practices, and policies in real-world settings, including research, program evaluation, and dissemination.[15] Program dissemination and evaluation of the best available evidence is critical to assess continuously whether strategies are achieving the goal of prevention.

To implement step 4 of the public health approach in addressing ACEs, CDC published a notice of funding opportunity entitled, Preventing Adverse Childhood Experiences: Data to Action (CDC-RFA-CE20-2006: PACE:D2A).[16] PACE:D2A is a cooperative agreement designed to leverage multisector partnerships and resources to: (1) enhance and build infrastructure for state-level data collection, analysis, and application of ACE-related surveillance data among middle and high-school youth; (2) implement at least 2 prevention strategies based on the best available evidence to prevent ACEs; and (3) undertake D2A activities to leverage statewide surveillance data to inform and tailor ACE prevention activities.

The purpose of this article is to describe the PACE: D2A funding initiative and current recipient surveillance, prevention, and D2A implementation efforts. The PACE:D2A initiative creates a D2A surveillance infrastructure for the collection, analysis, and application of ACE data, so that states can monitor the prevalence of ACEs among children and youth to ultimately use those data to inform the implementation of prevention efforts at the state and community levels.

PREVENTING ADVERSE CHILDHOOD EXPERIENCES: DATA TO ACTION

In September 2020, the PACE:D2A funding initiative awarded funding to 4 recipients for 3 years to address state-specific needs related to ACE surveillance and prevention. In addition to the 4 original recipients, congressional appropriations have increased for this initiative, allowing for 2 more recipients beginning in September 2021 (i.e., 6 recipients in total) to measure, track, and prevent ACEs by concentrating on 3 foci that drive expected outcomes (Appendix Figure 1, available online). The 6 recipients include 3 state health departments (HDs), 1 state children and families agency, and 2 nonprofit public health organizations. The infrastructure and expertise exerted to accomplish the focus areas are interdependent and are being implemented as part of a comprehensive and coordinated

program. Recipients are leveraging multisector partnerships and resources to improve ACE surveillance and implementation at the state and local levels. Therefore, increased state capacity to develop and sustain a surveillance system that includes ACE-related data and increased implementation and reach of ACE prevention strategies that help to promote safe, stable, and nurturing relationships and environments where children live, learn, and play is expected.

Focus 1: Building Surveillance Capacity to Monitor Adverse Childhood Experiences

A critical first step in preventing ACEs is conducting surveillance to understand the scope of the problem, where and when ACEs occur, and who is at the greatest risk for ACEs and poor ACEs-related outcomes. However, comprehensive approaches to ACE data collection which can be used to better understand the prevalence of ACEs, understand underlying risk and protective factors, and focus prevention and intervention activities are limited.[17] To address limited comprehensive data collection on ACEs, recipients of PACE:D2A are building a state-level surveillance infrastructure that ensures the capacity to collect, analyze, and use ACE data to inform statewide prevention strategies and activities. Though the specific efforts being undertaken by each recipient are diverse and wide-ranging, primary components for building surveillance infrastructure for each recipient include: (1) gathering and synthesizing state and local-level ACE data, with special emphasis placed on obtaining data on ACEs from youth-based surveillance systems; (2) using at least 1 mechanism to collect ACE data using near–real time or other innovative surveillance strategies; (3) producing annual state data profiles about ACEs, which could include discussion of the burden of ACEs in the state as well as associated risk and protective factors; and (4) developing data dissemination plans to ensure that surveillance data on ACEs are disseminated and used to inform prevention strategies. To undertake these activities, PACE:D2A recipients conducted a capacity assessment of their surveillance infrastructure and enhanced their capacity by acquiring staff or contractual support and leveraging multisector partnerships to utilize existing resources to build and strengthen ACE surveillance systems.

Focus 2: Implementation of Adverse Childhood Experience Prevention Strategies

Using strategies and approaches based on the best available evidence is critical in minimizing risk factors, increasing protective factors, and ensuring effective ACE prevention. Resources such as the *Preventing Adverse Childhood Experiences: Leveraging the Best Available Evidence*[6] include multigenerational strategies and approaches that focus on changing norms, environments, and behaviors that communities can use to achieve ACE prevention. Working together, these strategies reinforce each other to prevent ACEs and reach population-level impact. Activities for implementing ACE prevention strategies for each recipient include: (1) enhancing an existing state action plan to support sustainability of ACE prevention and (2) implementing at least 2 of 3 core ACE prevention strategies that have the potential to achieve population-level impact. These strategies include strengthening economic supports to families, promoting social norms that protect against violence and adversity, and ensuring a strong start for children.[6] Each strategy contains several approaches (i.e., ways to advance the strategy), with examples of evidence-based programs, policies, and practices provided. To increase awareness, uptake, and reach of comprehensive ACE prevention strategies, recipients will be expected to leverage

multisector partnerships and resources by serving as convener and coordinator of partners focused on ACE prevention. Creating multisector partnerships can be accomplished by partnering with other state-level stakeholders (e.g., data owners, education sector partners, tribal healthcare workers, nongovernmental youth-serving and family serving serving organizations, policymakers, healthcare providers, local HDs, statewide violence coalitions) who already may be implementing or are poised to begin implementing these types of strategies.

Focus 3: Data-to-Action Foundational Activities

The overall goal of PACE:D2A is to build capacity to conduct D2A activities to inform statewide primary prevention needs. By using ACE surveillance data to guide prevention strategy implementation, recipients are creating a continuous process to foster changes or adaptations to existing strategies or implementation of additional strategies. The D2A process includes building ACE surveillance activities and implementing ACE primary prevention policies, programs, and practices, creating a feedback loop to improve understanding of the scope and nature of the problem of ACEs at the state level and to drive the selection/adaptation of ACEs prevention strategies moving forward. D2A activities also focus on using data to identify subpopulations within a state that have the greatest burden of and risk for ACEs. Foundational activities include assessing current state capacity to monitor ACEs and assessing current ACE prevention strategies implemented within the state to identify gaps. Based on the assessments, recipients develop recommendations to build or enhance a state surveillance system to monitor ACEs and to increase alignment of state prevention strategies with strategies highlighted in CDC's *Preventing Adverse Childhood Experiences: Leveraging the Best Available Evidence* Resource.[6]

IMPLEMENTATION SCIENCE: PUTTING PREVENTION TO PRACTICE

Implementation science seeks to increase the understanding of implementation facilitators and barriers; translate knowledge about evidence-informed strategies; and support violence practitioners in planning, implementing, and evaluating these strategies.[18] Since the start of PACE:D2A, recipients have focused on building surveillance capacity based on the needs of their individual state, implementing strategies and approaches based on the best available evidence to better prevent ACEs and improve the mental, physical, and social well-being of their populations. Although evaluation of PACE:D2A is ongoing, this section outlines current recipient surveillance, prevention, and D2A implementation efforts.

Surveillance Activities

To achieve a state-level surveillance infrastructure (Focus 1), most recipients are collecting ACE data among youth by partnering with their state administrator for the Youth Risk Behavior Survey (YRBS)[19] to add between 2 and 13 ACE items to the 2021 administration of the survey (Appendix Table 1). The state YRBS provides representative statewide estimates of high-priority health behaviors, including those contributing to violence, among high-school students.[19] In the context of ACEs, administration of the YRBS indicates that there will be statewide estimates for individual ACEs—such as child abuse and neglect experiences—among high-school students within the jurisdiction; these data have not been

available previously. At least 1 PACE:D2A jurisdiction has also added items on positive childhood experiences to the 2021 administration of the state YRBS. In addition to the YRBS ACE data collection, 3 of the 6 jurisdictions are using additional youth-based surveillance strategies that generate local estimates of select ACEs and associated risk and protective factors at the county or school district level. These data can be used to inform local-level prevention strategies, with increased community focus beyond the state level. Multiple recipients have also generated or sustained productive relationships across programs in the HD to incorporate aspects of near–real time data collection on ACEs. For example, several states are leveraging existing emergency department syndromic surveillance infrastructure[20] and adapting their use of these systems to include monitoring of trends in select ACEs, such as visits related to child abuse and neglect or community violence.

Recipients are also leveraging administrative data sources from across state agencies that can provide insight into ACEs. Although administrative data often only reflect a small proportion of the true burden of violence and adversity among a population, they can be useful to understand under–identification as well as access and use of services. Key administrative data sources being accessed include those from state departments of children and family services (which often include data on child welfare system contact), mental health and substance use, education, or justice. Most PACE:D2A recipients are engaging with these cross-agency partners and their available data to better understand service use and identification of needs related to ACEs in their jurisdiction. Recipients are also undertaking efforts to layer in data on risk and protective factors for ACEs into their comprehensive surveillance systems. For example, some recipients are exploring how to incorporate data from the U.S. Census Bureau's American Community Survey[21] as well as the Annie E. Casey Foundation's Kids Count indicators[22]—both of which are free and accessible to the public—to better identify structural and social determinants of health that lead to disproportionate burden of ACEs among some subpopulations.

Implementation Activities

To achieve Focus 2, PACE:D2A recipients are implementing approaches related to at least 2 of 3 core ACE prevention strategies focused on strengthening economic supports for families, promoting social norms that protect against violence and adversity, and ensuring a strong start for children (Appendix Table 2). Most recipients have chosen to promote social norms that protect against violence and adversity through public education campaigns on how to prevent ACEs within their state. Public education campaigns can shift the narrative from individual responsibility to one that is shared across the community to promote safe, stable, and nurturing relationships and environments for all children and normalize protective factors by enhancing connectedness and reducing stigma.[23] Data collected through ACE surveillance informs whether this prevention strategy should be adapted to target populations within their state who may be at higher risk of experiencing ACEs.[24] A total of 5 of 6 recipients have also chosen to ensure a strong start for children through early childhood home visitation or preschool enrichment with family engagement as a prevention strategy. Effective home visiting models can provide training and caregiver support on child health and development, reducing rates of child abuse

and neglect. Recipients enhance early childhood home visitation programs by increasing access and providing training on ACE prevention to providers. Preschool enrichment programs with family engagement help children improve their physical, social, emotional, and cognitive development. In addition, these programs can help by strengthening the connections between home and school environments, benefiting children who may not have educational resources or support at home to help them learn and thrive.[24] A total of 3 of 6 recipients have also chosen to implement strengthening economic supports to families by strengthening household financial security. Parents facing financial hardship have fewer resources to invest in their children, increasing the likelihood of experiencing stress, depression, and family conflict.[25,26] Research consistently links having a low income to ACE exposures.[27] Therefore, household financial security policies such as earned income tax credits and paid family and medical leave can prevent ACEs by increasing economic stability and improving parental resources to meet children's needs. In addition to these core strategies, 2 of 6 recipients are implementing strategies related to teaching skills through social emotional learning and connecting youth to caring adults by enhancing after-school mentoring programs through educating providers on adverse and positive childhood experiences. Furthermore, recipients are working toward sustainable system-level changes to increase coordination and collaboration between state agencies and other sectors. For example, recipients have leveraged multisector partnerships from child advocacy organizations, state HDs, and education sector partners to enhance data availability and existing state action plans. These partnerships support implementation and sustainability of ACE prevention strategies by improving awareness of existing state prevention strategies and convening workgroups. State representative workgroups are integral in identifying gaps and weaknesses and increase capacity to maintain surveillance systems among stakeholders. Building relationships and partnerships across multiple sectors and including nontraditional partners provides the opportunity to maximize prevention activities that could lead to higher impact and reach. Furthermore, identifying a common agenda with shared goals, strategies, and activities improves coordination, engagement, and participation, increasing prevention efforts.

Data-to-Action Activities

As part of the D2A foundational activities, recipients assess their state's capacity to monitor ACEs and implement and evaluate ACE prevention strategies. Recipients used various tools to assess their capacity, including CDC's Division of Violence Prevention capacity assessment tool.[28] Preliminarily, strong areas of capacity among 3 of 6 recipients include having appropriate infrastructure and having leaders (both organizational and community) who were knowledgeable and strong advocates for preventing ACEs. Limited capacity at the onset of the PACE:D2A initiative was reported in the areas of staffing and resources. For example, recipients reported not having sufficient staffing capacity and staff with requisite expertise to implement evidence-based prevention efforts. In terms of resources, insufficient capacity with respect to fiscal resources for ACE prevention was reported. Causes of limited capacity and resources varied, but all the recipients reported the coronavirus disease 2019 (COVID-19) pandemic affecting programmatic timelines. Another area of insufficient capacity reported by 2 of 6 recipients was partnership engagement. There is difficulty engaging partners who are typically not in the violence prevention space or having to

compete for resources with those involved in ACE prevention efforts. Recipients are using the information from their capacity assessment to identify gaps in their surveillance and implementation activities, inform their prevention activities, identify new partners to engage, and enhance their evaluation activities (e.g., identify appropriate outcomes).

Foundational D2A activities also involved implementing a process and outcome evaluation. Recipients are expected to achieve short-term and intermediate outcomes during the 3-year funding cycle and identify indicators to measure the implementation and outcomes of prevention activities. Examples of state-level outcomes being measured include increases in state-level monitoring of trends in ACE indicators and tracking (e.g., increase access to state and local data sources); increased coordination and collaboration between state HDs and other sectors; increased reach of ACE prevention strategies; and increased use of enhanced surveillance data to design, target, and monitor primary prevention strategies related to ACEs. Program-level outcome examples include increases in the number and type of individuals and organizations reached by the implementation of prevention strategies, increases in the number of subpopulations served by prevention strategies, and increases in social connections. Most outcomes are measured at the community and societal levels and focus on risk and protective factors for ACEs.

DISCUSSION

As ACEs can have extensive consequences across one's lifespan, they create a serious public health problem. However, ACEs are preventable. Utilizing the public health approach to violence prevention and the science of implementation, strategies shown to be effective should be scaled up and disseminated broadly to assess their impact within communities.[29] Evaluating the impact of prevention strategies is imperative to understand their effectiveness and improve health outcomes for populations to prevent ACEs from happening in the first place. These strategies take a multigenerational approach to prevent ACEs and are intended to reinforce each other, ultimately achieving synergistic impact ensuring safe, stable, and nurturing relationships and environments for all children.[6] The PACE:D2A initiative builds upon the work of other CDC efforts to monitor and prevent ACEs, such as ongoing work to expand ACE surveillance,[17] the Essentials for Childhood funding initiative,[30–33] and CDC resource tools that includes a series of evidence-based strategies and approaches to prevent ACEs.[6,7,23]

The focus of PACE:D2A on collecting surveillance data among youth is critically important to understanding the scope of the problem, where ACEs occur, and populations with the highest burden. Other available data that examine the prevalence of ACEs retrospectively among adults (e.g., data from the Behavioral Risk Factor Surveillance System), though valuable, do not address the current burden of ACEs among children and adolescents, and therefore provide little information to inform prevention of ACEs among children and adolescents. The activities of this cooperative agreement allow for statewide tracking of ACEs indicators and outcomes, inform prevention activities, and determine the effectiveness of those activities. Based upon lessons learned from other funding initiatives implementing prevention strategies and approaches, the success of PACE:D2A programs will be determined by the level of multisector engagement, the ability to collect and track

data on ACE prevalence and associated risk and protective factors, and effectiveness of implementation activities to prevent ACEs. Currently, recipients are laying the foundation to successfully conduct these activities and their effectiveness will be extensively evaluated in 2023. The efforts of these recipients will pave the way for utilizing ACE data for action to better understand how to help states and local communities facilitate and inform effective prevention program planning, implementation, and evaluation. The future evaluation of this funding initiative will provide insight into widespread adoption and uptake of ACE prevention strategies, providing essential knowledge into preventing ACEs from happening in the first place.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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