

Written Statement of Dr. Nadine Burke Harris
Surgeon General of California
Before the Committee on Education and Labor
United States House of Representatives
Full Committee Hearing:
Trauma-Informed Care in Schools
September 11, 2019

Good Morning. Thank you for the opportunity to participate in this hearing on Trauma Informed Practices. My name is Dr. Nadine Burke Harris and I'm a pediatrician, toxic stress researcher and, now, California's Surgeon General. I also was member of the National Academies of Sciences, Engineering and Medicine (NASEM) committee on applying Neurobiological and Socio-behavioral Sciences from Prenatal through Early Childhood Development: A Health Equity Approach that recently released the report Vibrant and Healthy Kids: Aligning Science, Practice, and Policy to Advance Health Equity. My work has been dedicated to changing the way our society responds to one of the most serious, expensive and widespread public health crises of our time: childhood trauma.

Adverse Childhood Experiences prevalence and impacts in today's society

An overwhelming scientific consensus demonstrates that cumulative adversity, particularly during critical and sensitive developmental periods, is a root cause to some of the most harmful, persistent and expensive health challenges facing our nation.

The term Adverse Childhood Experiences or "ACEs" comes from the landmark study of the same name published by the CDC and Kaiser Permanente over two decades ago and specifically refers to the ten categories of stressful or traumatic events assessed in the study. These include physical, emotional or sexual abuse, physical or emotional neglect or "household dysfunction" including parental incarceration, mental illness, substance dependence, parental separation or divorce, or intimate partner violence. A robust body of literature demonstrates that ACEs are highly prevalent, strongly associated with poor childhood and adult health, mental health, behavioral and social outcomes and demonstrate a pattern of high rates of intergenerational transmission.

According to the most recent published CDC data reporting from the Behavioral Risk Factor Surveillance System (BRFSS) in 23 states, 62 percent of American adults have experienced at least one of the eight ACEs tracked by the BRFSS, and 15 percent have experienced 4 or more.ⁱ ACEs are associated, in a dose-response fashion, with significantly increased odds of negative health outcomes, including 7 out of 10 of the leading causes of death in the United States.

	Leading Causes of Death in US, 2015	Odds Ratio Associated with ≥ 4 ACEs
1	Heart Disease	2.1
2	Cancer	2.3
3	Chronic Lower Respiratory Disease	3.0
4	Accidents	
5	Stroke	2.4
6	Alzheimer's	11.2
7	Diabetes	1.5
8	Influenza and Pneumonia	
9	Kidney Disease	
10	Suicide	30.1

All odds ratios from Hughes et al, 2017 except stroke (Felitti et al, 1998) and Alzheimers (Center for Youth Wellness, 2014).ⁱⁱ

Research has also indicated that the higher the ACE score, the more likely the individual is to struggle with mental health issues such as depression, post-traumatic stress disorder, anxiety, sleep and eating disorders, and to engage in risky behaviors such as early and high-risk sexual behavior and substance abuse.^{iii, iv, v}

Individuals with six or more ACEs have a life expectancy that is 19 years shorter than individuals with none.^{vi}

In childhood, high doses of adversity are associated with increased risk of respiratory infections, asthma, atopic diseases, poor growth, obesity, learning and attention disorders, sleep disorders, teen pregnancy, teen paternity, STIs, mental health disorders, substance use and high risk behaviors (among other conditions).^{vii, viii} For example, a child with 4 or more ACEs are twice as likely to develop asthma as children with no ACEs.^{ix}

In addition to these health and mental health outcomes, ACEs are also associated in a dose-response fashion with increased social risks as well. Research looking at more than 60,000 youth in the Florida juvenile justice system found that 97% had experienced at least one ACE and 52% had experienced 4 or more ACEs.^x In fact, a national study of more than 35,000 adults found that even after adjusting for the impact of socio-demographics and substance use, ACEs are independently associated with as much as 4 times the risk of incarceration.^{xi}

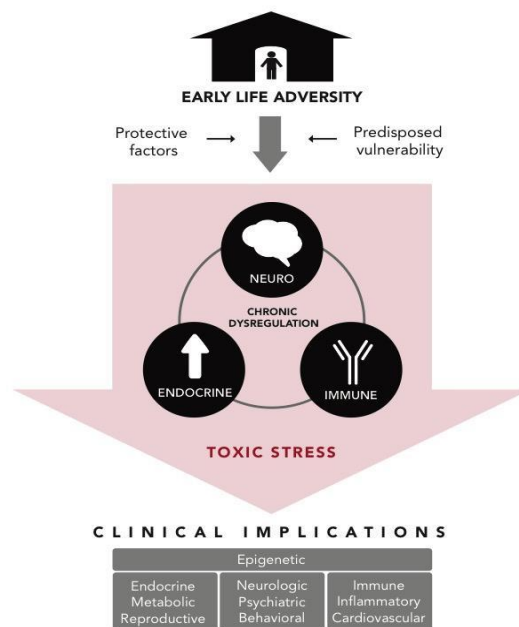
The Toxic Stress Response

Advances in science over the past several decades have demonstrated that long-term changes to the body's stress response system play an important role in the clinical progression from ACE exposure to negative short and long-term health and social outcomes.

When any one of us experiences something scary or threatening, our brains and bodies activate our stress response which leads to the production of high levels of stress hormones including adrenaline and cortisol and is responsible for many of the feelings we associate with being terrified. The amygdala, the brain's fear center, is activated and the prefrontal cortex, which is responsible for executive functioning including attention, judgement and impulse control, is inhibited. Stress hormones stimulate our hearts to beat stronger and faster, raise blood pressure and blood sugar, and activate our immune system, among many other effects. The stress response is a normal and, in fact, essential part of our biological evolution, and allows us to respond and adapt to challenging circumstances.

However, severe, intense or prolonged adversity may lead to overactivity of a child's stress response. In addition, children require the nurturing care of a trusted adult and safe environments to shut off the stress response and restore normal functioning. Without these buffers, the biological stress response becomes overactive. Children are uniquely vulnerable to the effects an overactive stress response because their brains and bodies are just developing. **High levels of adversity, without the buffering protections of trusted caregivers and safe, stable environments, lead to changes in brain structure and function, how genes are read, functioning of the immune and inflammatory systems, and growth and development.** These changes comprise what is now known as the toxic stress response.

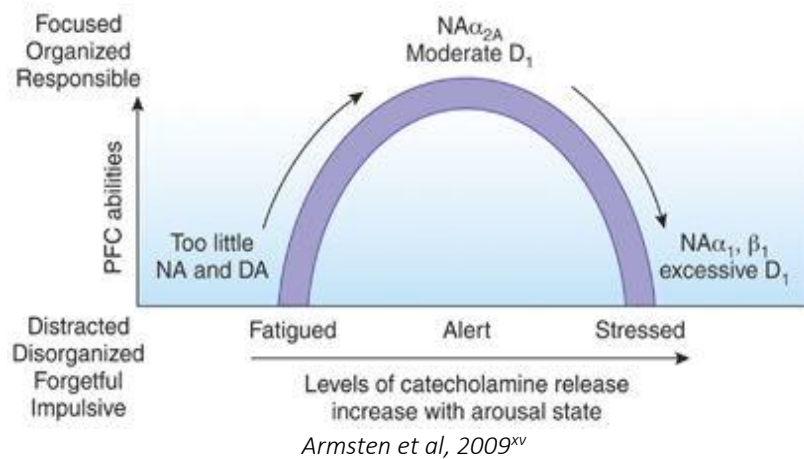
While the term ACEs refers specifically to the 10 categories identified in the ACE study, it is recognized that other social determinants of health such as discrimination, economic hardship, food and housing insecurity (among others) are also risk factors for toxic stress.



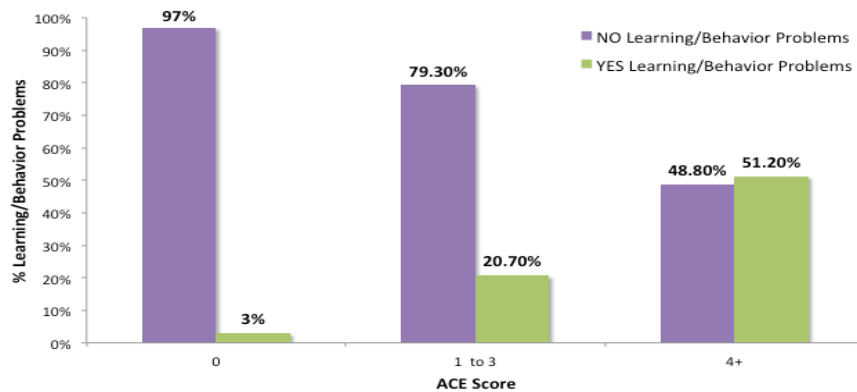
Bucci et al, 2016^{xii}

ACEs, Toxic Stress and Learning

Among the most notable and perhaps well-studied effects of ACEs are the impacts on learning and behavior. As ACEs increase, we see alterations and impairment of several brain regions including the hippocampus — where new memory formation takes place, an area critical to learning; as well as changes in the amygdala (the brain’s fear center) leading to enhanced vigilance, startle, and aggressive behavior.^{xiii} Importantly, the prefrontal cortex, which governs executive function, demonstrates an “inverted U” response curve in relation to stress hormones. While too little PFC activation can lead to symptoms of Attention Deficit Hyperactivity Disorder (ADHD), as stress hormones increase beyond healthy levels, the prefrontal cortex is inhibited, leading to similar symptoms of distraction, disorganization, forgetfulness and poor impulse control^{xiv}.

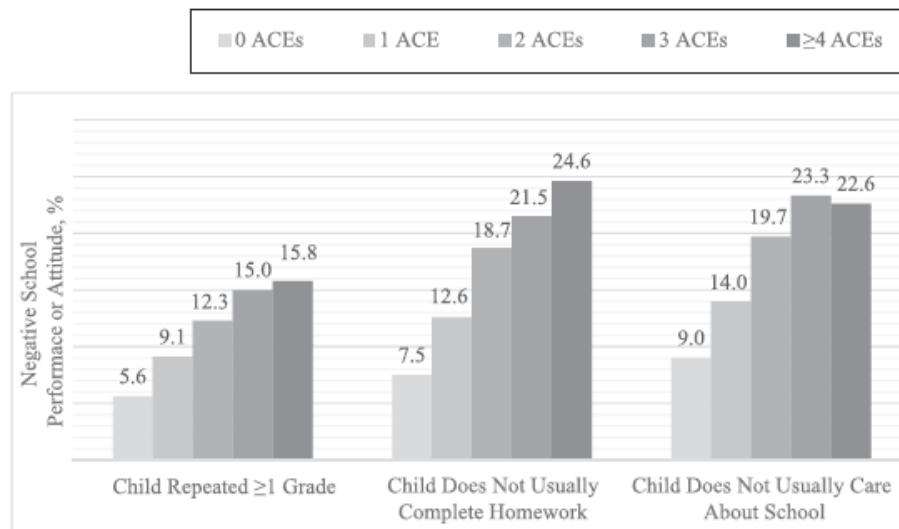


These brain changes underlie the clinical observation that a child’s exposure to ACEs increases, learning and behavior in children are impaired in a dose-response pattern. Children with 4 or more ACEs are as much as 32 times as likely to experience learning and behavior problems as compared to children with 0 ACEs.^{xvi}



Burke, et al 2011^{xvii}

A recent study looking at data from more than 65,000 children also found that as ACE scores increase, risk of repeating a grade increases and homework completion as well as school engagement declines.^{xviii}



Prevalence of negative school performance and attitude outcomes by number of ACEs among children ages 6 to 17 (2011-2012 NSCH). Robles et al, 2019^{xix}

How can we support learners exposed to adversity?

The good news is that we have a clear opportunity to mitigate or reverse the impacts of ACEs and Toxic Stress and increase positive outcomes. Though there is still much work to be done to understand the precise mechanisms of the toxic stress pathways, scientific consensus supports two core principles: 1) **early detection and early intervention improve outcomes**, and 2) **safe, stable and nurturing relationships and environments are healing**.

An extensive body of literature demonstrates that the earlier interventions take place, the more likely they are to be effective and the less intensive and costly they need to be. Safe, stable and nurturing environments are associated with improved immune functioning, hormonal functioning, DNA regulation and brain development.^{xx} In fact, MRI studies found that institutionalized children randomized to high quality nurturant caregiving showed **normalization of the developmental trajectory of white matter structures** as compared to children who received care as usual.^{xxi}

The recently released NASEM report *Vibrant and Healthy Kids: Aligning Science, Practice, and Policy to Advance Health Equity* recommends a range of short- and long-term changes to practice, policy, and systems and a suite of strategies crucial to advancing health equity. To facilitate early detection, the NASEM Report recommends that health providers:

“Adopt and implement screening for trauma and adversities early in life to increase the likelihood of early detection. This should include creating rapid response and referral

systems that can quickly bring protective resources to bear when early-life adversities are detected, through the coordination of cross-sector expertise.”^{xxii}

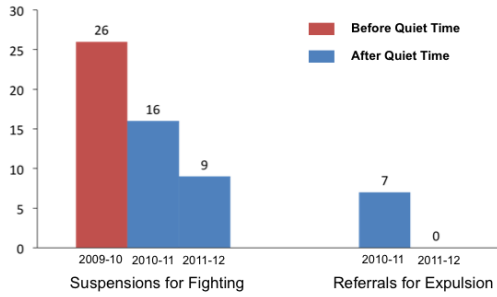
Educational systems have an important role to play in early detection and early intervention by collaborating and coordinating with trained health providers to ensure that children are screened for trauma and adversities and by providing interventions that are appropriate for educational settings such as school-based mental health.

In addition, given the significant prevalence of ACEs in all regions, socio-economic and demographic populations, trauma-informed training, practices and policies in the educational setting are fundamental to ensuring that all children have the best opportunity to learn. This includes establishing systems that enable safety, including predictable routines and social interactions, a calm physical environment, transparent and predictable rules, having clear, non-punitive consequences for violating rules, teaching social-emotional skills, participatory decision-making by students in school policies, and explicit family and community involvement, including support for families on parenting or managing stress.^{xxiii, xxiv, xxv} Restorative disciplinary practices and school structures that support physical and emotional safety, the effective building of such relationships, prevent re-traumatization, and optimize children’s cognitive and social-emotional learning should be the norm.

Stable, safe, and nurturing relationships and environments are known to buffer the toxic stress response.^{xxvi} Trauma-informed practices in schools involves ensuring all personnel are trained to understand that ‘disruptive’ behaviors may be possible symptoms of toxic stress and respond with compassionate, buffering care.^{xxvii, xxviii} Programs to support vulnerable children and youth can align with the six pillars of mitigating the toxic stress physiology, which include promoting sleep hygiene, healthy nutrition, physical exercise, mindfulness, mental health, and supportive relationships.^{xxix} In addition, prevention of vicarious traumatization and supports for educator well-being are essential elements for trauma-informed educational environments. There is a natural alliance between the health and education sectors in responding to ACEs.^{xxx}

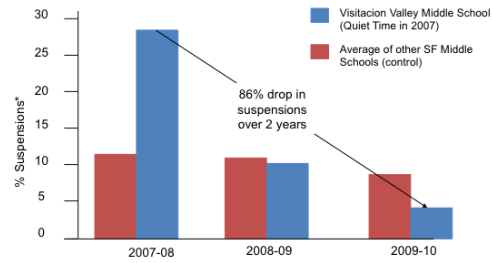
Pilots of programs that have implemented interventions to help target the toxic stress response in school environments, such as the Quiet Time program implemented by the Center for Wellness and Achievement in Education (cwaee.org), have demonstrated improvements in educational outcomes including GPA, standardized test scores, and measures of teacher well-being, while reducing negative indicators such as school violence, suspension, expulsion and the African American achievement gap.^{xxxi}

Reduction in School Violence John O'Connell High School



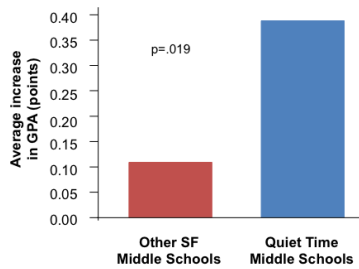
Source: School Data

Substantial Drop in Suspension Rate compared to SF Middle School Average



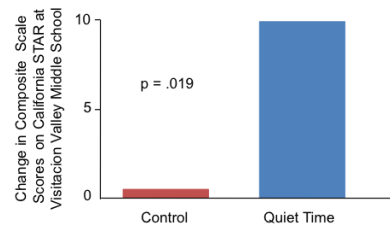
*Suspension calculated as total number of incidents divided by total school enrollment
Source: SFUSD Middle School Accountability Report Cards published 2010-11

Increase in GPA Fall 2007-2009



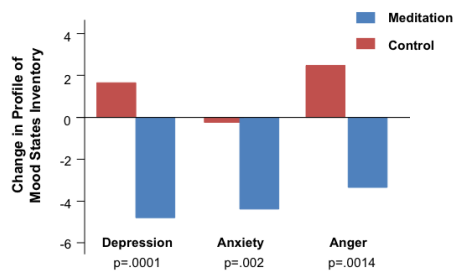
Source: SFUSD

Increased Composite STAR Test Scores 2006-2007, in First Year of Implementation of Quiet Time for Below Basic and Far Below Basic Students



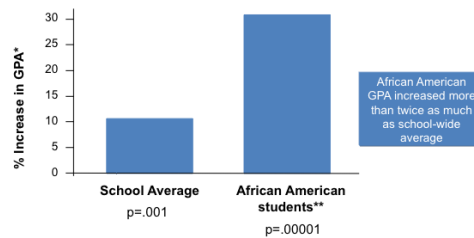
Source: Education 131: 556 - 565, 2011.

Decreased Psychological Distress in Administrators and Teachers, over 4 Month Period



Source: Psychological tests - randomized control study

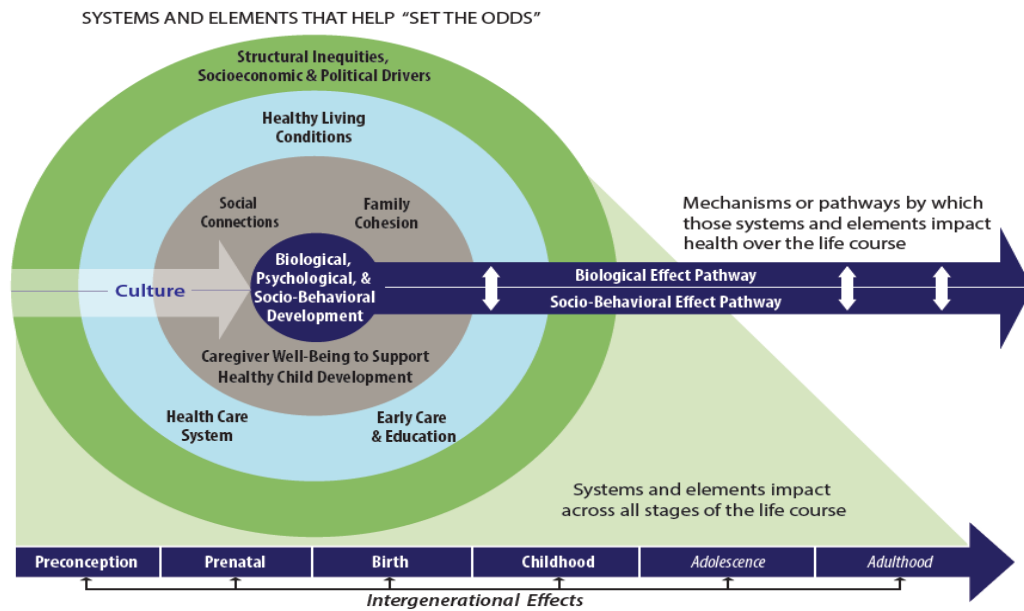
African American Achievement Gap Reduced after First Year of Quiet Time Program



* Between Fall 2007 & 2008 at Visitation Valley Middle School
** African American GPA started 30% lower than school average in Fall 2007
Source: SFUSD

Longer-term, we need to begin building systems that allow for more easily sharing data that will allow for iteratively improving quality and integration of care across institutions like education, healthcare, childcare, welfare, and juvenile justice. xxxii, xxxiii, xxxiv

Finally, the NASEM Report elaborates a conceptual framework that recognizes that individual and familial outcomes are nested in and influenced by neighborhood, community, and structural factors that “set the odds” of either adverse or enhanced health and developmental trajectories.



NASEM report *Vibrant and Healthy Kids: Aligning Science, Practice, and Policy to Advance Health Equity*, 2019^{xxxv}

A true public health response to ACEs and toxic stress involves intervention at all levels and includes the following key principles, as noted in the report^{xxxvi}:

- Intervene early. In most cases, early intervention programs are easier to implement, more effective, and less costly.
- Support caregivers. This includes both primary caregivers and caregivers in systems who frequently interact with children and their families (such as those in our educational system).
- Reform health care system services to promote healthy development. Redesign the content of preconception, prenatal, postpartum, and pediatric care while ensuring ongoing access, quality, and coordination.
- Create supportive and stable early living conditions:
 - Reduce child poverty and address economic and food security,
 - Provide stable and safe housing, and
 - Eliminate exposure to environmental toxicants.
- Maximize the potential of early care and education to promote health outcomes.
 - Research shows that early care and education (ECE) affects children’s physical, emotional, and mental health. To maximize the potential of ECE to promote improved health outcomes, **the committee recommends a comprehensive approach to school readiness that explicitly incorporates health outcomes, developing and strengthening curricula that focus on key competencies of educators**, and improving the quality of ECE programs and expanding access to comprehensive high-quality and affordable ECE programs.
- Implement initiatives across systems to support children, families, other caregivers, and communities. Ensure trauma-informed systems, build a diverse and supported workforce, and align strategies that work across sectors.

- No single sector can mitigate the early-life drivers of health inequities. The complex, interconnected root causes of health disparities call for coordination across multiple sectors and a systems approach. For this reason, **the committee provides recommendations for sectors to collaborate and align their work.** Child- and family- serving sectors specifically should enhance detection of early-life adversity, improve response systems, and **develop trauma-informed approaches,** among other systems level efforts outlined in the report.
- **Integrate and coordinate resources across the education, social services, and health care systems, and make them available to translate science to action.**

Schools and our educators are a critical part of an ecological and public health response to ACEs and Toxic Stress. As noted by authors in the recent commentary published in the journal *Pediatrics* on ACEs and educational engagement, “Both the World Health Organization and the Centers for Disease Control and Prevention recognize that schools are not only places to transmit academic knowledge but also a place for vulnerable children to connect with supportive adults and peers outside of their families. Supportive relationships with peers, teachers and coaches as well as school connectedness and belonging have been shown to protect against depression, substance use, and other risky health behaviors. These positive connections also promote academic success.”^{xxxvii}

There are initial steps being taken in my home state and across the country by passionate advocates, healthcare providers, community leaders, government officials, educators and others to more systematically address ACEs and Toxic Stress. Early movers are not only focused on solutions for their communities, but also in creating models, best practices and protocols that can easily be replicated or tailored nationally and globally.

California has been a leader in advancing health and health equity for our communities. We are currently taking historic strides to battle ACEs and Toxic Stress with programs across sectors including healthcare and education.

The role of California Surgeon General was created explicitly marshal the insights and energy of the medical professionals, public health experts, public servants and everyday Californians to address the upstream factors including toxic stress and early social determinants of health that are the root causes of many of the most harmful and persistent health challenges facing Californians.

Specifically, California is preparing to implement ACEs screening among 88,000 primary care providers serving Medicaid patients in California starting in January of 2020, and we are also creating a State-wide, data-driven quality improvement collaborative and related infrastructure for sharing best practices, challenges, and iterating upon initial successes. By deploying a well-formulated public health approach to prevention, screening, and intervention, our objective is to cut the burden of ACEs and toxic stress in half in the next generation.

In support of this effort, the Governor Newsom’s signed budget includes:

- \$40.8M to reimburse providers for performing Adverse Childhood Experiences (ACES) screenings of children and adults on Medi-caid
- \$50M to train primary care providers on how to screen for ACEs and respond with trauma-informed care
- Investments in evidence-based interventions including >\$130M for Home Visiting Programs

In addition, California seeks to build a multidisciplinary network of systems that provides doses of buffering relationships, environments, and treatment to kids and their caregivers through as many touchpoints as possible. In order to truly combat ACEs and Toxic Stress, there must be a trauma-informed and a trauma-sensitive workforce in our schools, after-school programs, doctors' offices, hospitals, faith groups, justice system, welfare agencies, and throughout our communities.

For example, in education, California has allocated:

- **\$195m to the early learning and care workforce in education/training grants**
- \$50m in After School Education and Safety Programs
- \$31.4m (\$124.9m ongoing) to increase access to State Preschool for 10,000 income-eligible children in community based organizations
- And \$5m investment in developing a Master Plan for Early Learning and Care

Collaborating across sectors creates accountable communities and builds more effective collective and equitable action. Services need to be focused on supporting the family, while also enhancing the quality and quantity of the buffering care systems throughout society.

Conclusion

The science is clear. Adverse Childhood Experiences are a public health crisis that require a coordinated public health response. This involves public education, routine screening to enable early detection and early intervention, and cross-sector coordinated care.

The opportunity ahead of us is about a true intersection of healthcare and education. This collaboration is vital to look at how health and education programs, when paired together, can truly have an impact on the individual child, their families and the broader community.

As we embark on the ambitious effort to reduce ACEs and toxic stress on a national scale, important considerations include workforce training, continual quality improvement, dissemination of best practices, data reporting and utilization, and rigorous research and evaluation.

Breakthrough improvements in the health and well-being of communities exposed to ACEs and experiencing toxic stress are possible with coordinated clinical, research and public health efforts to prevent and heal the impacts of ACEs and toxic stress.

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