



## FORUM SESSION

# Early Childhood Adversity, Toxic Stress, and Brain Development: Implications for Practice and Policy

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Medical professionals are well aware that social context—economic security, education, the home environment, the community, and access to health care—can strongly affect health. Less education, for example, is strongly associated with poorer health. A positive or negative social context can promote or impede the human development process and contribute to life course<sup>1</sup> wellness or poorer health. Researchers are working to understand the relationship between early adversity, childhood stress, and brain development. On the basis of research findings, they are calling for major changes in the way early childhood professionals in health care, home visiting, early education, child welfare, and child care approach and interact with patients and their families or caregivers. Clinicians, program administrators, and policymakers have found problems with the funding and structure of programs that support their work with children and families, leading to programmatic underperformance and wasted effort as well as dollars. With greater attention to the emerging science, it is hoped that the ability to intervene more effectively—even preventatively—will be realized.

## EMERGING BRAIN SCIENCE

Certainly some stress is actually beneficial and is a part of healthy development. But toxic stress—when the body's stress response systems are activated and stay activated for prolonged periods of time—is damaging, especially for infants and young children. Stress can cause the heart rate to go up, elevate blood pressure and blood sugar, and activate stress hormones and immune systems. Research shows that, in infants and young children, prolonged exposure to toxic stress disrupts developing brain circuitry, thereby changing brain structure and function.

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Protective adult relationships promote healthy brain development by buffering toxic stress and building resilience. The absence of these protective relationships—and exposure to chronic neglect, recurrent abuse, violence, or serious mental illness—paired with prolonged activation of the stress response undermines typical development and shapes the trajectory of the life course. Extensive documentation establishes a strong link between early childhood adversity and a variety of adult chronic diseases.<sup>2</sup>

New work on the relationship between brain development and stress is helping to illuminate that early childhood adversity and toxic stress contribute to adult health risks and diseases like obesity, heart disease, alcohol and substance abuse, depression, and various cancers, as well as premature death.<sup>3</sup> Healthy brain development and proper growth of the pre-frontal cortex, in particular, is critically important as it allows for maturation of executive function. This refers to the capacity of mature individuals to think and to assess choices, to see the consequences of one's actions, and to take responsibility for making decisions. When growth of the pre-frontal cortex is stunted in early childhood due to toxic stress, the consequences can be troubling, even severe. While poor brain development can lead to functional problems across the lifespan, research findings also demonstrate that it is possible to ameliorate the negative impacts and even to build resilience in a proactive, preventive manner.

Some of this documentation comes from the Adverse Childhood Experiences (ACE) Study, which looked at over 17,000 middle-class members of Kaiser Permanente in San Diego. Begun in 1995 as a partnership between Kaiser and the Centers for Disease Control and Prevention, the ACE study collected extensive information about childhood experiences like abuse, neglect, and family dysfunction and assessed the association between this childhood adversity and adult well-being.<sup>4</sup> An individual's ACE score (on a scale of 0 to 10) is based on the number of ACE categories an individual experiences before age 18<sup>5</sup> and is used as a rough measure of the amount of stress experiences during childhood. As ACE scores increase, the risk of health conditions like depression, alcohol abuse, substance abuse, and heart disease, among others, increases in a "strong graded relationship."<sup>6</sup> The prevalence of ACEs was high with 64 percent of study participants reporting one or more ACEs.

How to translate, infuse, align, and accelerate the emerging developmental science with the medical, behavioral health, child welfare, and other social services systems to promote well-being for children

and families has become the preoccupation of growing numbers of researchers, providers, advocates, philanthropists, and local, state, and federal policymakers. They describe it as using an “ecobiodevelopmental” or “neurobiopsychosocial” framework to inform practice and policy to reduce intergenerational transmission of poor health and poor well-being. There is consensus that the multiple systems working with highly stressed children and families need to reduce the use of “deep end services” like emergency department care and extended residential treatment and shift to a “front end prevention” orientation, but the best ways to do that are still emerging. Understanding how to engage authentically with individuals and families, especially in building resilience, is seen as crucial. Financial realignment as well as the collection of and ability to share data on children and families served by multiple systems are seen as critical but challenging steps.

Some progress is being made on the data front; close to half of the states have added a set of ACE questions to the Behavioral Risk Factor Surveillance System to better understand state-specific prevalence, and several cities, including Philadelphia, are conducting ACE studies.<sup>7</sup> At the federal level, in July 2013, leaders of the Administration for Children and Families, the Centers for Medicare & Medicaid Services, and the Substance Abuse and Mental Health Services Administration (all part of the U.S. Department of Health and Human Services) sent a letter to their state partners “to encourage the integrated use of trauma-focused screening, functional assessments and evidence-based practices (EBP) in child-serving settings for the purpose of improving child well-being.”<sup>8</sup> The letter highlights the role of the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefit in Medicaid and the interplay between child trauma and psychotropic medications, especially among children and youth in foster care, among other topics.

## SPEAKERS

This Forum session looked both at the emerging science of brain development and the manner in which current practice and policy is at odds with the evidence base on what works best to promote healthy brain growth and to mitigate the effects of toxic stress and adversity. **Andrew S. Garner, MD, PhD, FAAP**, associate clinical professor of pediatrics at Case Western Reserve University School of Medicine and chair of the American Academy of Pediatrics’ Leadership Workgroup on Early Brain and Child Development, provided an

overview of the science of brain development and how toxic stress undermines typical brain development. **Susan N. Dreyfus**, president and chief executive officer of the Alliance for Children and Families and Families International, and former secretary for the Washington State Department of Social and Health Services, shared her experience working to align the science with economic security, behavioral health, child welfare, and other systems in Washington state, as well as in Wisconsin and among Alliance members. **Clare Anderson, MSW, LICSW**, policy fellow with Chapin Hall at the University of Chicago and former deputy commissioner of the Administration on Children, Youth, and Families at the U.S. Department of Health and Human Services, discussed her experience working to infuse the science at the federal policy level.

### KEY QUESTIONS

- What does emerging brain science tell us about the effect of toxic stress on development, not only in childhood, but across the life course?
- What is known about internal and external factors that can protect young children's development against the effects of toxic stress?
- How are state and local organizations using this science to change program policies and practice?
- How might medical and social services providers use this information to reduce toxic stress in young children and help them build resilience? What techniques should be used?
- How can this brain development science and ACE research be aligned with federal policy and fiscal levers?

### FOR ADDITIONAL INFORMATION

See the Center on the Developing Child at Harvard University, <http://developingchild.harvard.edu/>

### ENDNOTES

1. For more on the term "life course," see Elizabeth D. Hutchinson, "A Life Course Perspective," chap. 1 of *Dimensions of Human Behavior: The Changing Life Course*, 4th ed. (Sage Publications, 2010), [www.sagepub.com/upm-data/36521\\_CLC\\_Chapter1.pdf](http://www.sagepub.com/upm-data/36521_CLC_Chapter1.pdf).

2. Jack P. Shonkoff, Andrew S. Garner, and the Committees, "The Lifelong Effects of Early Childhood Adversity and Toxic Stress," *Pediatrics*, 129, no. 1 (January 2012): pp. e232-e246, <http://pediatrics.aappublications.org/content/early/2011/12/21/peds.2011-2663.full.pdf>; and American Academy of Pediatrics Policy Statement from the Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption and Dependent Care; and Section on Developmental and Behavioral Pediatrics, "Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health," *Pediatrics*, 129, no. 1 (January 2012): p. e225, <http://pediatrics.aappublications.org/content/129/1/e224.full.pdf>.
3. Vincent J. Felitti *et al.*, "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study," *American Journal of Preventive Medicine*, 14, no. 4 (May 1998): pp. 245-258, [www.ajpmonline.org/article/S0749-3797\(98\)00017-8/fulltext](http://www.ajpmonline.org/article/S0749-3797(98)00017-8/fulltext); and David W. Brown *et al.*, "Adverse Childhood Experiences and the Risk of Premature Mortality," *American Journal of Preventive Medicine*, 37, no. 5 (November 2009): pp. 389-396.
4. "Adverse Childhood Experiences Study," [www.cdc.gov/ace/](http://www.cdc.gov/ace/).
5. The ten categories are emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, exposure to domestic violence, household substance abuse, household mental illness, and parental separation or divorce.
6. Felitti *et al.*, "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults."
7. Institute for Safe Families, "Philadelphia ACE Task Force," [www.instituteforsafefamilies.org/philadelphia-ace-task-force](http://www.instituteforsafefamilies.org/philadelphia-ace-task-force).
8. George H. Sheldon, Pamela S. Hyde, and Marilyn Tavenner, letter to State Medicaid Directors and CMS Regional Administrators, July 11, 2013, <http://medicaid.gov/Federal-Policy-Guidance/Downloads/SMD-13-07-11.pdf>.