CHAPTER 7

ACES: Screening for Adverse Childhood Experiences

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It is easier to build strong children than to repair broken men.[1]

FREDRICK DOUGLAS, 1855.

Adverse childhood experiences (ACEs) are associated with a multitude of nonnormative traumatic events that affect the development and epigenetics of a child.[1a–c] The Chapter on Resilience provides that, "psychological trauma is an intense emotional experience that overwhelms a person's ability to cope. It may be a single event or repetitive ongoing insults such as child abuse, neglect or poverty." (See Chapter on Resilience in this publication). Adverse outcomes including obesity, poor lifestyle choices (i.e., physical inactivity, substance abuse, and smoking), cardiovascular disease, diabetes, mental illness, and even some cancers (Table 7.1) are associated with these traumatic incidents. There is a graded relationship to developing these adverse outcomes in accordance with the number, frequency, and type of trauma experienced during the early developmental periods of life.[2] The 1998 ACE study by Felitti and Anda focused on childhood exposure to three areas of abuse, two categories of neglect, and five types of household dysfunction (Table 7.2). This study has triggered a movement into how healthcare, community, and even families interact to improve the development and outcomes of the next generation (See section on 15)[2a–b].

Understanding the basic tenets of ACEs is the foundation to fully implement a process that can lessen the likelihood, or possibly eliminate the effects, of traumatic events through all stages of development (Fig. 7.1) to improve the emotional and physical well-being of the adolescent[2c].

Although ACE is a relatively new term, a 1989 study suggested the connection between early childhood adversities and mental health.[3] This study followed over 3000 9–11-year-old children in the mid-1960s from the Isle of Wight for 25 years to assess for psychiatric conditions and educational disturbances. Children who were from a low social status, experienced stressful early life events, or family discord had a higher incidence of adverse psychological outcomes.[3] The findings from this study and many others before the sentinel ACE study initiated the interest into the communal effort required to raise healthy, productive, and integral members of society giving credence to the African proverb, "it takes a village to raise a child."

In 1998, Felitti through his keen recognition of the pattern of sexual abuse in his obese patients sparked the development of the current ACE questionnaire and his subsequent study that has provided a foundation for understanding how early trauma increases the risk of adverse health outcomes. This study not only unveiled the connections of these traumatic experiences to adverse life outcomes, but also illuminated the commonality of these nonnormative experiences. Of the over 17,000 participants, more than one in five reported having experienced either physical or sexual abuse, and growing up in a home that included marital discord, mental illness, and/or a substance use disorder (Fig. 7.2) was also very prominent.[3a] Considering the commonality of these experiences in this study, it is extremely disturbing as children should not have to endure these atrocities, however the increased risk of adverse outcomes due to the number and frequency of these events is even more alarming (Fig. 7.3). Multiple studies have shown that participants who experienced one or more ACE categories when compared to those who had no ACEs have an increased risk of behavioral and mental health problems noting an amplification of risk with each additional ACE category.[2,4,5] A 2018 study that incorporated teachers' assessments of children from 10 elementary schools in Spokane, WA found that 13% of their students had three or more ACEs. When compared to students with no known ACEs, this group was found to have three to six times the rate of academic failure, poor health, severe attendance problems, and behavior problems.[6]

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TABLE 7.1
Adverse Outcomes Associated With Adverse Childhood Experiences (*not exhaustive*)

Adolescent Pregnancy	Fetal Death	Poor Work Performance
Alcoholism and alcohol abuse	Financial stress	Multiple sexual partners
Cancer	Health-related quality of life	Risk for intimate partner violence
Chronic obstructive pulmonary disease	Illicit drug use	Risk for sexual violence
Depression	Ischemic heart disease	Sexually transmitted diseases
Diabetes	Liver disease	Smoking
Early initiation of sexual activity	Obesity	Suicide attempts
Early initiation of smoking	Poor academic achievement	Unintended pregnancies

TABLE 7.2
Content Covered in the Adverse Childhood Experience Questionnaire

Abuse	Neglect	Household Dysfunction
Physical	Emotional	Divorce or separation
Sexual	Physical	Mother treated violently
Psychological		Substance abuse
		Mentally ill or suicidal
		Imprisonment

The studies that have explored the level of ACE categories within discrete cohorts suggests that more children than not fall victim to these events. Despite the common occurrence of these experiences, the risk of adverse outcomes based on the number of ACEs is not 100% correlated. Resilience, in terms of a material, is the ability for something to maintain its elasticity, it will bend, but it will not break and it will resume its shape (Merriam-Webster). Numerous studies support the ability for many faced with various adversities or traumas to be resilient and successful.[7–10] The experience will not overwhelm them to the point that recovery is not possible. It is therefore important to recognize that what one person perceives as a traumatic event may not be the same for another person[10a].

The tools available to effectively screen for ACEs (Table 7.3) and provide community resources (Table 7.4) based on need offer a mechanism to assist those affected at various levels of life interactions. Screening in healthcare, school, church, or community center settings could enable the appropriate assessment, follow-up, and resilience building necessary to influence change on a greater scale. Several entities have different versions of the original ACE questionnaire (see appendix) that were specific to certain age ranges or groups. The Centers for Disease Control and Prevention (CDC) provides access to two publicly available screening tools, The Family Health History Questionnaire (FHH) and the Health Appraisal Questionnaire (HA). These tools collect a wide range of past and current health and environmental information. The areas covered by the FHH include categories covering child abuse, physical abuse, or sexual abuse, as well as exposure to various forms of household dysfunction such as criminal behavior, violent treatment of a mother or stepmother, mental illness, or substance abuse. Coupling this survey with the HA, which collects information about current health concerns from perceived to diagnosed conditions related to obesity, mental illness, cardiovascular disease, diabetes, alcohol and drug use, and sexual activity can serve as a comprehensive approach to understanding the patient holistically. These two screening tools served as the foundation to Felitti's 1998 study correlating childhood exposures and adverse outcomes (Felitti, 1998).

Since 1984, the CDC has collected various information on chronic health conditions, injury, use of preventive health services, and access to care through the Behavioral Risk Factor Surveillance System (BRFSS). In 2008, questions related to several of the ACE categories, or simply the ACE module, were included in the BRFSS data collection. Arkansas, Louisiana, New Mexico, Tennessee, and Washington were the first five states to use the ACE module in 2009, with Pennsylvania and Wisconsin added in 2010. By 2014, 32 states plus the

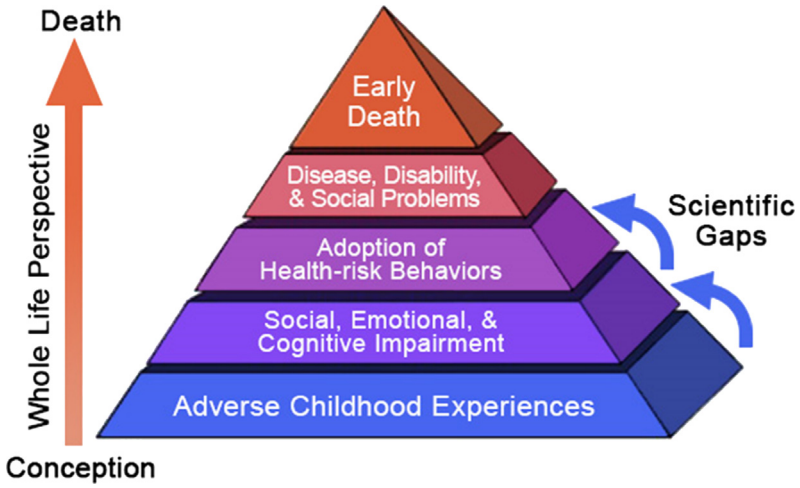

FIG. 7.1 ACE as the foundation for development. Substance Abuse and Mental Health Services Administration (SAMHSA), Center for the Application of Prevention Technologies, Practicing Effective Prevention, Prevention and Behavioral Health, Adverse Childhood Experiences.

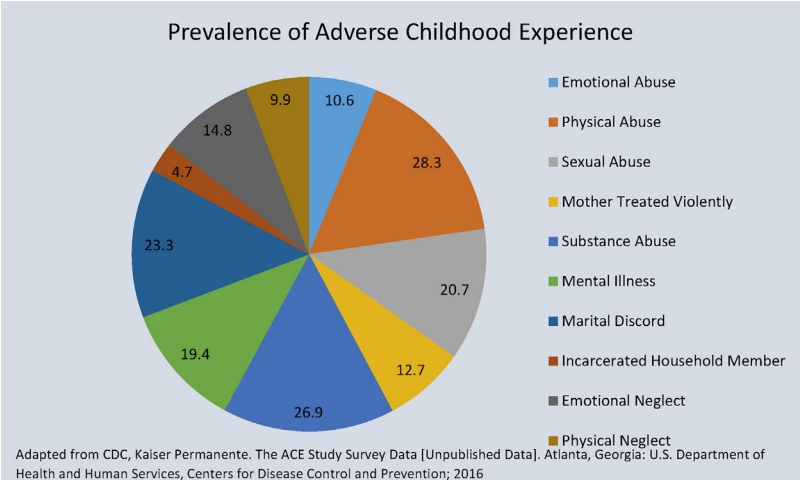

FIG. 7.2 Categories of adverse childhood exposures (CDC, 2016). (Adapted from CDC, Kaiser Permanente. The ACE Study Survey Data [Unpublished Data]. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2016.)

District of Columbia included the module at least once during the annual BRFSS surveying cycles.[11] The conclusion from these surveys supported the initial findings from the 1998 study, with again having one in five respondents experiencing at least one ACE and around one in eight experiencing four or more ACEs.[11] These findings along with the other data collected through the BRFSS survey further confirm the poor outcomes linked to these exposures[12,13,13a]. However, despite the far-reaching ability of the BRFSS data collection to understand the common occurrences of select ACE events, the participants were not representative of minority populations [14].

The sentinel ACE study covered a large cohort of participants, with a predominant composition of White, non-Hispanic, middle-class, and 55–65-year-old respondents. Considering this and other studies that mainly reported findings from a similar demographic, several subsequent studies included additional questions related to likely experiences of urban, low

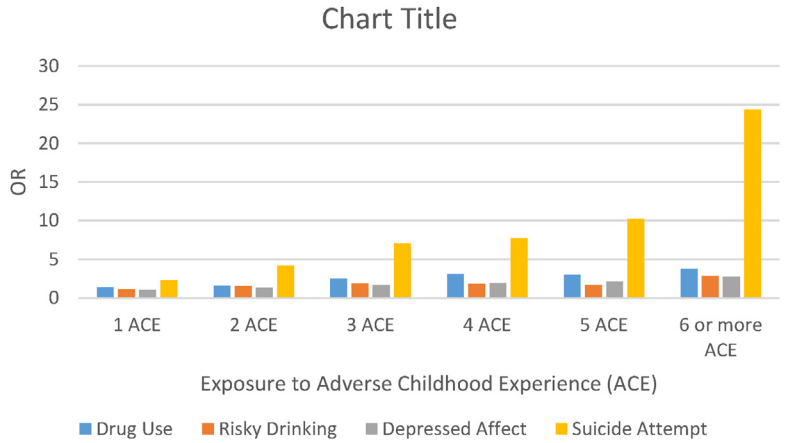

FIG. 7.3 Example of a dose-response by ACE level with selected adult mental health outcomes. (Adapted from Merrick MT et al. Unpacking the impact of adverse childhood experiences on adult mental health. 2017)

socioeconomic populations and surveyed these respective areas. The various expanded ACE surveys included the death of a parent, witness or victim of community violence, socioeconomic hardship, peer adversities, and discriminatory experiences (Finkelhor, 2012).[14] Findings from the inclusion of these areas and others present the complexity related to these traumatic events and the lifelong damage that can occur. It also highlights some areas more specific to underserved populations that need consideration when screening children or adults[14,15](Finkelhor, 2012). The Philadelphia ACE Survey (PHLACES) uncovered a greater level of both conventional ACE and expanded ACE occurrences within its sample with a larger proportion of minority respondents than the aforementioned studies. Different from the 1998 ACE study, close to half of the respondents reported between one and three ACE events, and half affirmed one to two of the expanded ACE events [14]. The findings from this and other studies solidify the need for inclusion across a multitude of factors. The differences in environment including access to food and healthcare, socioeconomic status, gender, and race warrant the understanding that experiences with nonnormative traumatic events are more expansive than the original 10 areas provided by Felitti and Anda.

The American Academy of Pediatrics recognizes the lifelong adverse effects of physical, environmental, and household trauma and recommends developing innovative evidence-based strategies that will decrease or eliminate these negative outcomes.[16] The recommendations go further to support training all physicians, regardless of specialty or level of practice, about the interconnection of childhood traumas with adverse health outcomes and unhealthy social practices. Several states and clinics have adopted various methods to ensure that a multidisciplinary approach to caring for and supporting child development meets or exceeds these recommendations. In 2011, Washington was the first state to enact a law to commit to addressing ACEs and recognized two organizations that would assist with implementing TIC (trauma informed care) in the state. In 2014, Vermont successfully adopted into law a state-led healthcare program, Blueprint for Health, to study the impact of incorporating ACE-informed medical practices into the community and other health teams within its purview [16a].

Although there is clear support to increase awareness and facilitate action around decreasing or eliminating ACEs, the best methods by which to do so are, as of yet, undetermined. However, it is safe to say that whatever the algorithmic recommendation, there has to be room for individualization. In that vein, several resources (Table 7.5) have been successful at multiple levels of contact through healthcare, community, government, and religious entities.

One such method of approaching the scourge of ACEs is that of TIC. SAMHSA recommends the use of a trauma-informed approach that outlines the following:

1. *Realizes* the widespread impact of trauma and understands potential paths for recovery;
2. *Recognizes* the signs and symptoms of trauma in clients, families, staff, and others involved with the system;
3. *Responds* by fully integrating knowledge about trauma into policies, procedures, and practices; and
4. Seeks to actively resist *retraumatization*.

TABLE 7.3
Available Screening Tools

Title	Group	Setting	Access
ACE Questionnaire	Adults	Healthcare/Judicial/ Community	https://acestoohigh.com/got-your-ace-score/—Felitti and Anda
ACE Family History	Adults	Healthcare/Judicial/ Community	https://www.cdc.gov/violenceprevention/acestudy/about.html—CDC, Felitti and Anda
ACE Health Questionnaire	Adults	Healthcare/Judicial/ Community	https://www.cdc.gov/violenceprevention/acestudy/about.html—CDC, Felitti and Anda
Center for Youth Wellness	Child/Teen	Healthcare	https://centerforyouthwellness.org/cyw-aceq/—Nadine Burke Harris, MD
Bright Future™ Intake Form	Child/Teen	Healthcare	https://www.brightfutures.org/mentalhealth/pdf/professionals/ped_intake_form.pdf
Child Stress Disorders Checklist—Short Form	Child/Teen	Healthcare/Judicial/ Community	https://www.nctsn.org/treatments-and-practices/screening-and-assessments/trauma-screening—Glenn Saxe, MD NCTSN[a]
Elsie Allen Health Center Survey	Child/Teen	Healthcare/Judicial/ Community	https://acestoohigh.files.wordpress.com/2015/10/acesquestions.pdf
Maltreatment and Abuse Chronology of Exposure Scale (MACE)	Child/Teen/ Adult	Healthcare/Judicial/ Community	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4340880/#pone.0117423.s011
Philadelphia Urban ACE Study	Adult	Healthcare/Judicial/ Community	http://www.instituteforsafefamilies.org/sites/default/files/isfFiles/Philadelphia%20Urban%20ACE%20Report%202013.pdf
Whole Child Assessment	Child/Teen	Healthcare/Judicial/ Community	https://www.acesconnection.com/g/resource-center/fileSendAction/fcType/0/fcOid/445474934934941772/filePointer/468559927008283106/fodoid/468559927008283100/WholeChildAssessmentEnglishJune2017.pdf
Childhood Trauma Questionnaire	Child/Teen/ Adult	Healthcare/Judicial/ Community	http://www.midss.org/sites/default/files/trauma.pdf—Pennebaker and Sussman
Juvenile Victimization Toolkit	Child/Teen/ Adult	Healthcare/Judicial/ Community	http://www.unh.edu/ccrc/jvq/available_versions.html—Hamby et al. 2017[16b]
Traumatic Antecedents Questionnaire	Child/Teen/ Adult	Healthcare/Judicial/ Community	http://www.traumacenter.org/products/pdf_files/Traumatic%20Antecedents%20Questionnaire-Final%20Version%202016.pdf—van der Kolk et al., 2016

[a] NCTSN—National Child Traumatic Stress Network.

The expectation through the implementation of this generalizable approach is that the providers will be able to better care for those that have experienced traumatic events because they themselves operate in an environment that understands the impact trauma can have on people. Several programs and studies support the concept of instituting a trauma-informed approach that requires the providers are trained to recognize and engage in inquiries that utilize the thought of "What happened to you?" as opposed to "What's wrong with you?" The premise of understanding ACE-related adversities in someone sets the stage for a more trusting relationship whether in a healthcare, judicial, religious, or community setting[17,18] (Leitch, 2017). This understanding is evident through the provider, the policies and procedures of the system, and the readiness to

TABLE 7.4
Common Community Resources

https://www.childwelfare.gov	Schools
https://www.bbbs.org/	Libraries
https://www.thehotline.org/	Local Health Departments
https://www.womenshelters.org/	Health Clinics
https://www.nctsn.org/resources/building-community-resilience-children-and-families	Community Centers
Food Pantries	Churches

TABLE 7.5
Intervention Resources

Baltimore: A Trauma and Resilience Informed City for Children and Families	http://fittcenter.umaryland.edu/Portals/0/OverallTraumaResilientInformedCityBaltimoreBSCreport.FINAL.pdf
Center on the Developing Child	https://developingchild.harvard.edu/
Washington Family Policy Council Research Findings	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3483862/pdf/wpic40_325.pdf
Substance Abuse Mental Health Services Administration	https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences
Arizona State University PBS	http://www.asset.asu.edu/strongkids/
Strengthening Families	https://cssp.org/our-work/project/strengthening-families/
RWJF ACEs	https://www.rwjf.org/en/library/collections/aces.html
Theory of Liberation	https://rysecenter.org/our-approach/
ACEs Response Toolkit	https://www.iowaaces360.org/resiliency-toolkit.html
Building Community Resilience Collaborative	https://publichealth.gwu.edu/departments/redstone-center/resilient-communities

provide the care needed to address the effects of ACEs in individuals and families. It is a whole systems approach that can foster not only healing, but also resilience building (Leitch, 2017).

Although the TIC approach is a widely adaptable framework, other models do exist. The development of the Building Community Resilience (BCR) model occurred through the guidance of key stakeholders with various roles under the child health systems (i.e., healthcare providers, school-based agency leaders, and those that work directly with child health systems) across 10 US urban centers. The premise of this model focuses on the shared responsibility of the larger community, the need to work together and understand the impact trauma has at an individual and community level, and ensure the resources are available to be resilient.[19] The model encompasses four components (adapted from Ref. [19]):

1. Shared understanding of childhood adversity
2. Assess system readiness to respond and build supports
3. Create a cross-sector community-based network
4. Engage parents, families, and community residents

Test sites for this model include Cincinnati, OH, Dallas, TX, the State of Oregon, Washington, DC, and the Alive and Well Communities in Missouri and Kansas.

Another approach to addressing ACEs is available through the Prevention Institute, a national organization with a long-standing history of working to improve communities through a public health perspective. Their initiative, Urban Networks to Increase Thriving Youths (UNITY), promotes the development of a framework

to ameliorate the effects of ACEs through sociocultural (people), economic (opportunities), and built environment (place) interventions. It defines the symptoms of community trauma as issues brought on by limited employment and intergenerational poverty, dilapidated surroundings, the use of unhealthy building materials, disrupted social relations, and social tolerance for violence among others. Individual and community level trauma can be supported through methods that support these areas. The focus of the framework includes rebuilding relationships, promoting activities to support the uplifting of the community in safe public spaces, training, and encouraging the use of nonviolent conflict resolution along with building trust that serves to heal the community, as well as promoting economic empowerment and workforce development.[20] It is a common belief that people resort to unsafe behaviors such as crime out of necessity; creating a community that can address these needs is an underlying theme to mitigating traumatic experiences.

The ability for these approaches and many others to be successful is inclusive of one central theme, the need for everyone to be informed, trained, and ready to participate in these efforts. Utilizing multidisciplinary interventions early can be successful in mitigating both the acute and long-term sequelae of ACE events [1,20a–b].

The responsibility of screening and the linkage of services from that screening means that healthcare, political, judicial, religious, community, governmental, and nongovernmental systems bear this burden along with the individuals and communities that are suffering. Although there are several resources available to help in this process of training, increasing awareness, and implementing programs that would be beneficial, the available evidence of which method best treats/mitigates the effects of trauma has yet to be determined. However, the understanding of the relationship between adverse childhood experiences and the protective factors that support the growth and development of an afflicted person and community is clear.[19,21–25] While there is no easy path to eliminating adverse childhood experiences, there are tools and resources available to assist with decreasing the acute and chronic outcomes from these exposures. Action is required now to advance this process so that the past, current, and future generations can thrive.

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