

## Adverse Childhood Experiences and Long-Term Sequelae

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## Disclosures

I have no relevant relationships with ineligible companies to disclose within the past 24 months.

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### Objectives

1

Define adverse childhood experiences (ACE) and discuss various types of ACEs.

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Examine violence in the household as an ACE and discuss subtleties of detection and management.

3

Explore scoring of ACEs and expected long-term sequelae.

4

Briefly examine trauma-informed care with an ACEs "lens" and how to identify ACEs sequelae in adults.

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### What are Adverse Childhood Experiences?

- Adverse Childhood Experiences (ACEs) are potentially traumatic events experienced in childhood that have long-reaching consequences to adulthood (CDC).
- Three major categories: (CDC KP)
  - Abuse
  - Household challenges
  - Neglect
- Some sources identify both forms of ACEs (Adverse childhood events and Adverse community environments)

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### Adverse Childhood Experiences

**ACEs =** Adverse Childhood Experiences

The 3 types of ACEs include

ABUSE	NEGLECT	HOUSEHOLD DYSFUNCTION	
Physical Abuse	Physical Neglect	Mental Illness	Incarcerated Relative
Emotional Abuse	Emotional Neglect	Abuse toward Parent	Substance Abuse
Sexual Abuse		Divorce	

• <https://advokids.org/adverse-childhood-experience-study-aces/>

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### Adverse Community Environments

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<https://www.ncsl.org/research/health/adverse-childhood-experiences-aces.aspx>

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### (Brief) History of ACEs

- Original study: Kaiser Permanente California, 199—1997.
- Over 17,000 members were given confidential surveys about their life experiences and medical history
- Two waves of data were collected

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### (Brief) History of ACEs

Early Adversity has Lasting Impacts

- Major Findings from the original study (CDC ACE):
  - Almost two-thirds of the original study population reported at least one ACE
  - More than 1 in 5 study participants reported 3 or more ACEs.
- Graded dose response
  - More ACEs = more negative health and well being outcomes

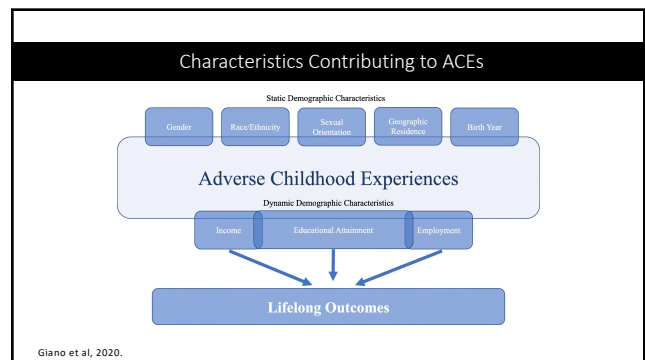
<https://www.cdc.gov/violenceprevention/aces/about.html>

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### Epidemiology

- Giano et al (2020) studied the BRFSS database maintained by the CDC.
- Findings from their analysis of data include:
  - Majority of participants had at least one ACE (57.8%)
  - The most common type of ACE was emotional abuse (33.5%), followed by parental separation / divorce (28.2%).
  - Gender: females had a higher ACE score compared to males (1.64 to 1.46)
    - Females also had higher prevalence of exposure to four specific categories: sexual, IPV, household substance abuse, household mental illness)
  - Age: 25-34 year old age group had the highest ACE scores.
  - Individuals identifying as multiracial, Black/African American, Hispanic all had significantly higher ACE scores by comparison to their White counterparts.
  - Bisexual individuals listed emotional abuse 58% of the time, the highest percentage category across all other demographic variables
    - Bisexual individuals also had the highest prevalence of adversity in seven out of the eight measured categories.
  - Lower household income and lack of a college degree both contributed to higher ACE scores overall.

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### Epidemiology

- At least 5 out of 10 of the leading causes of death in the United States are associated with ACEs (CDC VS)
- Females and several racial / ethnic minority groups were at a greater risk of experiencing 4 or more ACEs.
- Preventing or reducing ACEs could:
  - Prevent 21 million cases of depression
  - 1.9 million cases of heart disease
  - 2.5 million cases of obesity

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### New(er) ACEs: Bullying

- Bullying: repeated intention acts of aggression imposed on an individual who is perceived to lack power, and the presence of three characteristics:
  - Imbalance of power
  - Intentional harm doing
  - Acts carried out repeatedly over time (Baiden et al)
- Between 10-50% of school age children are known to experience bullying behaviors (Baiden)
- Significant reports of emotional dysregulation, school disengagement, depression, loneliness reported in all categories.
- Sequelae appear to be most severe for bully-victims (those who not only engage in bullying behaviors, but also are bullied themselves).
- Forster noted a significant correlation between the presence of ACEs and involvement in bullying, whether that was as a victim-perpetrator (63%), perpetrator only (40%), or victim only (38%).

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### Risks for Developing ACEs

- Engaging in romantic and/or sexual relationships early
- Not having a trusting / open relationship with parental figures
- Young caregivers or single parents
- Lower income families, lower education level families
- Challenges surrounding childcare, especially children with special needs
- Children with few or no friends OR friends who engage in aggressive and delinquent behavior
- Violent communities
- Communities with high unemployment, high poverty levels
- Communities without activities for youth
- Unstable housing / high rates of moving
- Communities where food insecurity is common
- Communities with low community engagement / neighborhood responsibility.

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### Protective Factors for Developing ACEs

- Positive friendships and peer networks
- Doing well in school
- High education level in parents
- Modeling non-violent conflict resolution from parents
- Families that engage in activities together
- Children who have caring non-caregiver adults who act as role models and support figures.
- Caregivers with steady employment
- Access to economic help for families
- Access to medical and mental healthcare
- Safe, stable housing
- High-quality preschool
- Communities that feel connected / have neighborhood responsibility
- Communities with lower or no tolerance for violence
- Access to safe and engaging after school activities

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### Community / Gang Violence and ACEs

- ECV: exposure to community violence (Lee)
  - Including: witnessing of and/or direct victimization by an array of community violence events
  - Gang violence, physical assaults, rape, adverse community conditions
- Prevalence rates nationally as high as 38%
- Association with behavioral modification: externalizing, aggressive behavior; aggressive social cognition; delinquency and truancy.
- Correlation with substance abuse and other high risk behaviors when interventions are not provided.

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### Scoring System

ACEs scoring is generally on a cumulative scale of 0-10

- Numbers are added when the user feels that they have experienced the described item in their childhood

The published scoring system has repeatedly demonstrated a strong dose-relationship to public health measures



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### Scoring System (each positive answer = 1 point)

- Did a parent or other adult in the household often or very often...
  - Swear at you, insult you, put you down, or humiliate you?
  - Act in a way that made you afraid that you might be physically hurt?
- Did a parent or other adult in the household often or very often...
  - Push, grab, slap, or throw something at you?
  - Ever hit you so hard they left marks or you were injured?
- Did an adult or person more than five years older than you ever...
  - Touch or fondle you or have you touch their body in a sexual way?
  - Attempt or actually have oral, anal, or vaginal intercourse with you?
- Did you often or very often feel that...
  - No one in your family loved you or thought you were important or special?
  - Your family didn't look out for each other, feel close to each other, or support each other?
- Did you often or very often feel that...
  - You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
  - Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
- Were your parents ever separated or divorced?
- Was your mother or stepmother ever...
  - Often or very often pushed, grabbed, slapped, or had something thrown at her?
  - Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
  - Ever repeatedly hit at least a few minutes or threatened with a knife or gun?
- Did you live with anyone who was a problem drinker, or alcoholic or who used street drugs?
- Was a household member depressed or mentally ill, or did a household member attempt suicide?
- Did a household member go to prison?

<https://ccsme.org/wp-content/uploads/2017/01/ACE-Chart-and-ACE-Score-Questions-Feb-2011.pdf>

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### Strengths and Limitations of Scoring


- Demonstrated correlation with negative adult outcomes over multiple studies and a long period of time
- Some researchers argue: (AJPM)
  - The scoring tool doesn't recognize the frequency, intensity, or chronicity of exposure
    - Ex: one person may score a 1 on the ACEs scoring sheet after being physically abused, but that abuse may have been daily, severe, and over many years. Another person may also score a 1 after being emotionally abused three times by a boyfriend of their mother, a condition that is resolved after the boyfriend leaves the household.
  - Does not measure or recognize potential gender disparities in exposure and experience

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### Takeaways from Limitations

- Screening tool is robust and useful in multiple situations BUT should not be used:
  - To demonstrate the “worthiness” of access to resources
  - To estimate the likely severity of sequelae or number of sequelae
  - As a routine *screening* tool.

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### Future Directions of Scoring

- Is there potential in studying whether there is a *quantitative* relationship between ACEs and future sequelae?
  - No current studies pending to my knowledge
- Is there a connection between length of exposure, relative severity of trauma, or number of exposures and the severity or number of expected complications in adulthood?

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### Functional Changes to Brain Anatomy

- Amygdala (Herzog)
- Hippocampus
- Anterior cingulate cortex (ACC)
- These areas are generally related to stress and emotion processing, and also have a high concentration of glucocorticoid receptors.
- Alteration to these structures produces dysregulation to stress sensitivity and emotion later in life.

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### Alterations Related to Type of Abuse

- Body of research supports changes in structural volume and areas targeted are related to *type* of abuse:
  - Parental verbal abuse: arcuate fasciculus (area connecting Wernicke’s and Broca’s areas)
  - Witnessing domestic violence: inferior longitudinal fasciculus (area connecting visual and limbic systems)
  - Childhood sexual abuse: thinning of the somatosensory genital field
  - Emotional abuse: thinning in regions associated with self-awareness and self-evaluation.

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### Epigenetic Changes

- Interesting research indicates that epigenetic changes partially predispose children to greater complications as a result of exposure to violence or ACEs.
- However, it is also worth noting that exposure to supportive environments and people can help promote resilience even in children who are genetically predisposed to developing mental disorders.

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### ACEs and Long Term Risks (Hughes)

- Associations were variable depending on the ACE score and the category of risk.
- Weak or modest risk:
  - Physical inactivity
  - Obesity
  - Diabetes
- Moderate risk:
  - Smoking
  - Heavy alcohol use
  - Poor self-related health
  - Cancer
  - Heart disease
  - Respiratory disease
- Strong risk:
  - Sexual risk taking
  - Mental ill health
  - Problematic alcohol use
- Strongest risk:
  - Problematic drug use
  - Interpersonal and self-directed violence

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### Risk-Taking Behaviors

- Each category of ACEs was associated with increased sexual risk-taking behavior in women (Hillis).
  - Early onset of intercourse
  - Multiple sexual partners
  - Self-perceived risk of HIV / AIDS.
- As the frequency of exposure and number of separate ACEs rose, risk-taking behavior risks also rose
- Also associated with: heavy drinking, binge drinking, smoking, drug use.
  - Equally dose dependent relationship: more than 4 ACEs increased odds of global risk taking behaviors. (Campbell)

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### Depression / Anxiety / PTSD

- Correlation between women experiencing ACEs and lifetime prevalence of depressive symptoms (Chapman)
- Particularly strong, dose-dependent relationship between emotional abuse and development of depression in both genders.
- As with other ACEs, the prevalence of exposure and time frame of exposure, and also the number of separate forms of exposure, all matter when evaluating future health.

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### Lancet Study (Hughes)

- Lancet review found strongest correlation between experiencing ACEs and likelihood of experiencing or perpetrating violence as an adult (whether intimate partner violence or self-directed).
- Other correlations were strong: risk-taking behavior, problem drug/alcohol use, mental ill health.
- Moderate: poor self-rated health, heavy alcohol use, smoking.

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### Important Intervention in ACEs

- Research indicates that positive self-esteem models may improve long term sequelae in ACEs (Kim)
  - Poor self-concepts increase depressive symptoms and long-term sequelae
- Strengthening community relationships and parent-child relationships is valuable in decreasing impact of ACEs (Lee)

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### Basic Tenets of TIC (mention other talk?)

- **Safety:** physical and emotional
- **Trustworthiness and transparency:** no secrets, no surprises
- **Peer support:** trained peer support and role models / mentors. Therapy and support groups.
- **Collaboration and mutuality:** between clinicians and patients, staff and patients, organizational communication and "warm handoffs"
- **Empowerment, voice, and choice:** patient is empowered to use their voice, be involved in their care, make decisions for themselves after thoroughly understanding the options.
- **Cultural, historical, and gender issues:** organization and individuals are informed about the historical, cultural, and gender framework that informs their patients.

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### How to Implement It

- Psychological First Aid
- Answer questions about what survivors may experience
- Normalize their distress by affirming that this is a normal reaction to an abnormal circumstances
- Help them learn healthy coping mechanisms
- Help them be aware of possible symptoms
- Provide a positive experience and a safe shelter.

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### Dos and Donts of TIC

**RECOMMENDED**

- That sounds...
- That feels like...
- How did that feel?
- How did that make you feel?
- Tell me more about...
- Tell me everything about...
- Can you tell me more about...

**RECOMMENDED**

- Don't assume, ask openly and curiously
- How can I support you?
- What would feel good to you right now?
- Would you like to hear about some of our resources?
- No matter what happens, I'm here to support you however I can.

**AVOIDED**

That must have...  
You must be / feeling...  
Here's what we should do next...  
We need to / You need to...  
We must / you must...  
He/she must be a really terrible person!  
That's not a good way to treat anybody!

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### Take Home Points

- Early detection and intervention is absolutely essential for improved morbidity and mortality.
- ACEs are highly correlated with multiple adult physical and mental health conditions.
- ACEs are most often dose-dependent: the more you have, are exposed to, or for longer, the more likely you are to develop sequelae.
- Improving parenting skills, relationships between family members, and community resources are protective factors.

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### Thank You And Questions

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### Works Cited

1. Anda, R.F., Porter, L.E., Brown, D.W. (2020 August 3). Inside the adverse childhood experience score: strengths, limitations, and misapplications. *American Journal of Preventive Medicine*, 59(2), 293-295.
2. Bairden, P., LaBrens, C.A., Okino, L., Thrasher, S., A.B., G. (2020). The toxic duo: bullying involvement and adverse childhood experiences as factors associated with school disengagement among children. *Children and Youth Services Review*, 119.
3. Campbell, J.A., Walker, R.J., Egede, L.E. (2016). Associations between adverse childhood experiences, high risk behaviors, and morbidity in adulthood. *American Journal of Preventive Medicine*, 50(3).
4. CDC. (2019 November). Adverse childhood experiences (ACEs). *CDC VitalSigns*.
5. CDC. (2021 April 6). About the CDC-Kaiser ACE study. <https://www.cdc.gov/ajpc/conceptmap/pages/about.html>.
6. Chapman, D.P., Whitfield, C.L., Felitti, V.J., Dube, S.R., Edwards, V.J., Anda, R.F. (2004). Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders*, 82.
7. Cheong, E.V., Sinnott, C., Dahly, D., Kearney, P.M. (2017). Adverse childhood experiences (ACEs) and later life depression: perceived social support as a potential protective factor. *BMC*.
8. Forster, M., Gower, A.L., McMorris, B.J., Borowsky, L.W. (2020). Adverse childhood experiences and school-based victimization and perpetration. *Journal of Interpersonal Violence*, 35(3-4), 662-681.
9. Giano, Z., Wheeler, D.L., Hubach, R.D. (2020). The frequencies and disparities of adverse childhood experiences in the U.S. *BMC Public Health*, 20.
10. Herzog, J.I., Schmah, C. (2018). Adverse childhood experiences and the consequences on neurobiological, psychosocial, and somatic conditions across the lifespan. *Frontiers in Psychiatry*, 9.
11. Hillis, S.D., Anda, R.F., Felitti, V.J., Marchbanks, P.A. Adverse childhood experiences and sexual risk behaviors in women: a retrospective cohort study. *Family Planning Perspectives*, 33(5).
12. Hughes, K., Bellis, M.A., Hardcastle, K.A., Sethi, D., Butchart, A., Mikton, C., Jones, L., Dunne, M.P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health*, 2.
13. Kim, J., Lee, H., Park, A. Patterns of adverse childhood experiences and depressive symptoms: self-esteem as a mediating mechanism. *Social Psychiatry and Psychiatric Epidemiology*, 57(2).
14. Lee, E., Larkin, H., Esaki, N. (2017). Exposure to community violence as a new adverse childhood experience category: promising results and future considerations. *Families in Society: The Journal of Contemporary Social Services*, 98(1).

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- Always love to hear from people – please consider me a resource for the future!

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