ACES and Why They Matter in Healthcare

IHS Trauma Informed Care & Historical Trauma Informed Care Webinar Series: Part I in 3 Part Series for Healthcare Providers

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Introduction

• IHS has partnered with the University of New Mexico School of Medicine Division of Community Behavioral Health to
• Present an integrated approach to Historical Trauma, Trauma, and Trauma Informed Care in health and behavioral health settings
  • A series of webinars
  • Monthly case consultations
• Today’s webinar is a repeat of Part I in a 3 part series for healthcare providers
Objectives

• As a result of having participated in this webinar, participants will be able to:

  • Review the neurobiological effects of acute, toxic, and chronic stress.
  • Summarize 5 consequences of adverse childhood experiences on physical and behavioral health.
  • Discuss three healthcare behaviors that can arise as a result of adverse childhood experiences, and helpful ways to work with these behaviors.
Polling Question

• What is your primary professional affiliation?

1. MD/DO, Nurse practitioner, Physicians Assistant
2. Nurse
3. Medical assistant
4. Psychiatrist
5. Psychologist
6. Social worker (LCSW, LISW)
7. Other therapist (LPCC, etc.)
8. Supervisor/administrator
9. Front Desk Staff
10. Community health representative
11. Peer support worker
Trauma, historical trauma, Trauma-informed paradigm
What Is Trauma?

“trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or threatening and that has lasting adverse effects on the individual’s functioning and physical, social, emotional, or spiritual well-being”

Trauma Informed Paradigm

“What happened to this person?”
“What’s strong with you?”

**Historical trauma informed:**
“What tribal traumatic events happened over time?”
“What kind of school did you and family members attend?”

Standard Paradigm

“What’s wrong with this person?”
“What’s wrong with you?”

NOT asking about collective tribal history
NOT asking about boarding school history or other tribal-specific experiences and culture
Impact of Trauma on American Indian and Alaska Native Communities

• AI/AN between 2-3 times more likely to meet PTSD criteria compared to US adult population

• 2.5 times greater risk than the national average of experiencing physical, emotional, and/or sexual abuse

• AI/AN youth have the highest rates of emotional or physical neglect across all populations

• Up to 74% of AI/AN youth have experienced at least one traumatic event during childhood

• 12-16% of AI/AN homes experience alcohol and/or drug abuse (national average is 4-6%)

• Unresolved grief and historical trauma can become ingrained in the identity of individuals and communities

Slide courtesy of Christopher Morris
Gone & Trimble, 2012; DS Bigfoot, 2008; Brave Heart & DeBruyn, 1998; Copeland et al., 2007; National Center for Children in Poverty, 2007; Beals et al., 2013
Historical Trauma and Unresolved Grief

• **Historical trauma** - Cumulative emotional and psychological wounding from massive group trauma across generations, including lifespan

• **Historical trauma response** (HTR) is a constellation of features in reaction to massive group trauma, includes **historical unresolved grief** (similar to Child of Survivors Complex re: Jewish Holocaust survivors and descendants, Japanese American internment camp survivors and descendants), depression, PTSD
Types of Trauma

• Single event
  • E.g. being in a car crash, natural disaster, sexual assault, medical procedure

• Multiple events, over time
  • E.g. incest, war, racism, micro-aggressions, multiple medical procedures
  • Can lead to Complex Trauma

• Vicarious or secondary trauma

• Multigenerational including historical trauma
Caveats

• What is traumatic to 1 person may not be to another
• Trauma affects a person’s neurobiology in ways that are long lasting or permanent
• Trauma can lead to adverse health and behavioral health outcomes
• Not everyone who has experienced trauma develops PTSD or adverse health outcomes
• Cumulative trauma has cumulative effects
• There are effective treatments for trauma
Culture and Trauma

Culture determines acceptable responses to trauma and shapes the expression of distress

• Culture affects what qualifies as a legitimate health concern and which symptoms warrant help

• Culture can provide a source of strength, unique coping strategies, and specific resources.

• Cultural assessment is essential for appropriate diagnosis and care
Stress, neurobiology, and epigenetics
Healthy and Toxic Stress

• Healthy stress
  • Stress is part of healthy development
  • Helps us to grow and change
  • Moderate degree, short lived
  • Occurs in the context of stable, supportive relationships

• Toxic stress
  • Level or chronicity of stress that overwhelms coping systems (both biological and supportive relationships)
Three Levels of Stress Response

Positive
Brief increases in heart rate, mild elevations in stress hormone levels.

Tolerable
Serious, temporary stress responses, buffered by supportive relationships.

Toxic
Prolonged activation of stress response systems in the absence of protective relationships.
Acute Stress

• Our bodies are designed to deal with acute stress
• Fight/flight/freeze reaction is initiated
• This stress response system increases our ability to survive danger
• Once stress is over systems return to normal (homeostasis) via negative feedback loops
Acute Stress Response

• Autonomic nervous system (ANS) activated:
  • Release of adrenaline (epinephrine)
  • Increased sympathetic tone causes dry mouth, increased HR, RR, BP, increased muscle tone
  • Digestion is inhibited

• Hypothalamic-pituitary-adrenal (HPA) axis HPA axis activated:
  • CRH and AVP released from hypothalamus, bind to anterior pituitary, releases ACTH, acts on adrenals to release glucocorticoid (cortisol)
  • Cortisol promotes mobilization of stored glucose (for energy), decreases immune function (decreases inflammation)

• Endorphins released = decreased sense of pain
• Oxytocin increased
Defense Cascade:
Fight, Flight, or Freeze

Stressor: physical, emotional

Arousal: need to respond

- fight
- flight
- freeze
Freeze Response

• Attentive immobility

• Usually lasts for only a few seconds

• Allows person to assess the danger and decide whether to fight or flee

• Often begins with freeze (assess the situation, hide from predator, then respond)

• Includes opioid-mediated analgesia, lower HR

• Increased occurrence in people with trauma histories when person is exposed to a cue associated with a previously negative event

• Can lead to immobility, dissociation
Dissociation

- Our mind’s “safety valve”
- When overstimulated, we shut down, or dissociate thoughts from feelings/body from thoughts
- Can manifest as:
  - Fainting
  - Emotional numbing
  - Amnesia
  - Conversion into physical symptoms
  - Fragmentation of sense of self
- Can lead to dissociative disorders (DSM 5)
HPA Feedback Loop

- hypothalamus
- pituitary gland
- adrenal cortex

- corticotrophin-releasing factor (CRH)
- adrenocorticotrophic hormone (ACTH)
- corticosteroids (e.g. cortisol)

Increased blood glucose, depressed immune system, broken down to cholesterol
Chronic Stress

- Our bodies are not designed to deal with stress that doesn’t go away
- Same systems are activated as in acute stress, but are activated over and over
- This has adverse effects
  - Initial high levels of cortisol then blunted corticosteroid release
  - Brain changes (high levels of cortisol are toxic)
  - Epigenetic changes
- These adverse effects lead to increased risk of physical and psychiatric illness
Function of cortisol in stress

Normal Brain Development

• The brain isn’t structurally complete at birth
• It is designed to develop based upon cues from the environment
  • Brain growth requires
    • Interaction with loving, predictable people
    • A healthy physical environment
• Children haven’t yet developed fully the ability to regulate arousal
• They require help from adults

How Trauma Interferes With Normal Brain Development

• Trauma interferes with normal biological maturation
  • Adversely effects neurodevelopment
    • Structurally
    • Neuroendocrine systems
    • Immune system
    • Epigenetics

• Traumatized parents often have difficulty helping their children’s brain development

Neurobiological Effects of Early Stress

- Early stress has lasting effects on HPA axis and norepinephrine
  - Long-term changes in glucocorticoid response to stress
  - Decreased genetic expression of cortisol receptors in the hippocampus and increased expression of CRF in the hypothalamus
  - Inhibited hippocampal neurogenesis
  - Decreased expression of alpha-2 noradrenergic receptors in the locus coeruleus
  - Also affects serotonin and GABA
Structural Brain Changes with Early Life Stress

• The earlier the stress/abuse and the longer it lasts, the more likely a person will have:
  • Decreased cerebral volume
  • Decreased corpus callosum size
  • Decreased hippocampal volume (adults)
  • Abnormalities in the amygdala
Corticofugal System

Anterior cingulate cortex
Affect, selective attention and social interactions

Dorsolateral prefrontal cortex
Motivation/executive function

Brodmann area 9

Brodmann area 10

Amygdala
Emotional stress and learning

Hippocampus
Learning and memory
Adverse Cognitive Effects of Early Life Stress

- Glucocorticoids are increased during the stress response
- Glucocorticoids can impair neural plasticity = damage the brain
  - Brain regions that take a long time to mature are particularly susceptible
- Increased the HPA axis stress response
  - reaction even when no stress present
Clinical Effects Of Stress Induced Neurobiological Changes

- Decreased ability to put experience into words
  - Problems with declarative memory
- Decreased ability to think through a situation
  - Especially when emotionally aroused
  - =problems with executive functioning
- Memory problems
  - Difficulty with time frame
  - Difficulty sequencing (what came first, when, what came next)
- Instead, people experience strong emotions, sounds, smells, impressions (often nonverbal)
  - can result in emotional outbursts
Overarousal and Underarousal

• Hypervigilence or underarousal are adaptive in times of danger
  • Fight, flight, or freeze

• These same behaviors are maladaptive in school, work, medical settings
  • Overreactions
    • Triggered by sights, smells, tone of voice
  • Lack of reaction/passivity
Anhedonia and Reward Seeking Behavior

• Early life stress can lead to anhedonia and compensatory increased reward seeking behavior
  • substance use, promiscuity

• May be related to abnormalities in dopamine system
  • decreased DA response to reward stimulating cues

• Increased smoking may be self medication for anhedonia
  • nicotine stimulates dopamine
Addicted to Stress?

• Some evidence that chronic exposure to stress may cause chronically elevated endogenous opiates

• When stress is relieved, people feel worse rather than better (opiate withdrawal?)

• Results in paradoxical behavior
  • people seek out stressful or re-traumatizing situations to increase their endorphins
State Dependent Memories

• Traumatic memory is deeply imprinted
  • especially fearful memories

• These memories tend to be state dependent
  • Increased during times of emotional arousal

• Results in: Stress responses out of proportion to the current stimulus
What is Epigenetics?

- Functional changes in genes without altering their DNA sequence
- Is the way gene expression is influenced by experience/environment
- Controls which genes are expressed, & how much/when
- Usually transient/ reversible
- Some of these changes can be stabilized and inherited (animal models)
- Can be transmitted to offspring (from one generation to another)
Epigenetics and Stress/Trauma

• Stress and trauma trigger epigenetic changes

• Studies show that childhood abuse causes increased or decreased methylation in certain genes (e.g., involved in immune function, glucocorticoid receptors, stress response, neurotransmitter activity)

• PTSD is associated with suppressed cortisol levels (due to hypersensitivity of the glucocorticoid receptor & enhanced negative feedback) (HPA axis abnormalities)

http://learn.genetics.utah.edu/content/epigenetics/inheritance/; Voisey et.al., 2014;; Zannas et.al., 2015)
Intergenerational Transmission

• Children of trauma survivors are at increased risk for mental and physical illnesses

• Parental PTSD leads to alterations in the HPA axis function of children

• This is mediated by developmental programming of glucocorticoid signaling via epigenetic modifications

• Stress during mother’s pregnancy can affect epigenetics in the fetus

• Some epigenetic changes prior to pregnancy (and paternal epigenetic changes) can be passed on to children

Yehuda 2014
Aces & Why trauma matters in primary care
Why Trauma Matters in Primary Care

• 59% of men and women experience at least one adverse childhood experience (ACE) in their lifetime

• 9% experience 5 or more ACEs

• 49% of children have experienced at least 1 ACE

• Trauma impacts health, behavioral health, family, work, school

• If we identify trauma we can help patients get treatment

• Their lives can be changed
ACE (Adverse Childhood Experience) Study

• Looked at the relationship between childhood abuse and neglect and later-life health and well-being

• Original ACE study done from 1995-1997 at Kaiser Permanente in S California in collaboration with US CDC

• Surveyed 17,000+ HMO members who completed a confidential survey given to them when they came for their physical exam
  • 70% Caucasian
  • 70% college educated
The three types of ACEs include:

**ABUSE**
- Physical
- Emotional
- Sexual

**NEGLECT**
- Physical
- Emotional

**HOUSEHOLD DYSFUNCTION**
- Mental Illness
- Incarcerated Relative
- Mother treated violently
- Substance Abuse
- Divorce

**FIGURE 1:** Types of Adverse Childhood Experiences
Image courtesy of the Robert Wood Johnson Foundation
How Common are ACES?

ACE Study

- **ZERO** 36%
- **ONE** 26%
- **TWO** 16%
- **THREE** 9.5%
- **FOUR OR MORE** 12.5%
Odds of Heart Disease With Increasing Aces

http://developingchild.harvard.edu/resources/five-numbers-to-remember-about-early-childhood-development/
ACE AND POPULATION ATTRIBUTABLE RISKS

- Current depression: 54%
- Disability days: 52%
- Domestic violence: 52%
- Promiscuity: 48%
- IV drug abuse: 78%
- Alcoholism: 65%
- Life dissatisfaction: 67%
- Suicide attempt: 50%
- Hopelessness: 58%
BEHAVIOR

Lack of physical activity
Smoking
Alcoholism
Drug use
Missed work

PHYSICAL & MENTAL HEALTH

Severe obesity
Diabetes
Depression
Suicide attempts
STDs

Heart disease
Cancer
Stroke
COPD
Broken bones

http://www.npr.org/assets/imp/2015/02/20/aces-2_cutsom.jpg
Premature Death

People with 6+ ACEs died nearly 20 years earlier than those with ACE of 0
Chronic Disease

- Headaches 2x higher with ACE>5
- COPD 2.6 x higher with ACE>5 (only partially mediated by higher rates of smoking)
- Ischemic heart disease 3.5x risk in ACE of 7
- Autoimmune disease (>2 ACEs 100% increased risk for rheumatic diseases)
- Stroke
- Diabetes
- Hepatitis 2.5x increase in ACE>4
Health Risk Behaviors

• Substance use
  • Adult alcohol use increased 2-4x with ACES>1
  • Increased risk of alcohol use by age 14
  • Drug use
  • Obesity
  • Smoking

• Other
  • Disability
  • Unemployment
  • Lower educational attainment
  • Lower income

• Rx drug use 40% increased in ACE>5
Mental Health

• Depression 4.5x increase ACE>4
• Suicidality 12x increase ACE>4
• Impaired memory of childhood (declarative memory)
• Hallucinations
• Anxiety
Reproductive Health/Sexual Behavior

• Teen pregnancy
• Early onset of sexual activity
• Unintended pregnancy
• Fetal death
• STDs
Victimization and Perpetration

Intimate partner violence

–risk of IPV (victim and perpetration) increased 3.5 times for women and 3.8 times for men in those who had all 3 forms of experiencing abuse or witnessing DV in childhood
Adverse Health Outcomes with ACEs

- Alcoholism and alcohol abuse
- Chronic obstructive pulmonary disease
- Depression
- Fetal death
- Health-related quality of life
- Illicit drug use
- Ischemic heart disease
- Liver disease
- Poor work performance
- Financial stress
- Risk for intimate partner violence

- Multiple sexual partners
- Sexually transmitted diseases
- Smoking
- Suicide attempts
- Unintended pregnancies
- Early initiation of smoking
- Early initiation of sexual activity
- Adolescent pregnancy
- Risk for sexual violence
- Poor academic achievement
Health Disparities in AI/AN

• AI/AN have lower life expectancy

• Reservation-based AI/AN have higher rates of death from:
  • Tuberculosis 750% higher
  • Alcoholism 524% higher
  • Diabetes 293% higher
  • Unintentional injuries 153% higher
  • Homicide 103.3% higher
  • Suicide 66% higher

Brockie et al., 2013
American Indian Health Disparities

Figure 4

AIANs fare worse than Whites across many health measures.

Among Nonelderly Adults Ages 18-64

<table>
<thead>
<tr>
<th></th>
<th>AIAN</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports Fair or Poor Health Status</td>
<td>20%*</td>
<td>9%</td>
</tr>
<tr>
<td>Reports a Physical Limitation</td>
<td>41%*</td>
<td>31%</td>
</tr>
<tr>
<td>Share Who are Obese</td>
<td>37%*</td>
<td>28%</td>
</tr>
<tr>
<td>Share Who Smoke</td>
<td>34%*</td>
<td>20%</td>
</tr>
<tr>
<td>Reports Currently Having Asthma</td>
<td>17%*</td>
<td>9%</td>
</tr>
<tr>
<td>Told By Doctor They Have Diabetes</td>
<td>14%*</td>
<td>7%</td>
</tr>
<tr>
<td>Substance Use Disorder in Past Year Among Ages 12 or Older</td>
<td>12%*</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Indicates statistically significant difference from White population at the p<0.05 level.

NOTE: Whites and AIANs are non-Hispanic.


ACE Scores Among AI/AN children compared with non Hispanic white children

**AI/AN**
- 2+ ACEs: 40.3%
- 3+ ACEs: 26.8%
- 4+ ACEs: 16.8%
- 5+ ACEs: 9.9%

**NHW**
- 21%
- 11.5%
- 6.2%
- 3.3%

Once adjusted for sociodemographic variables, the differences between the 2 populations went away
Mechanisms by which Adverse Childhood Experiences influence health and well-being throughout the lifespan.
Creating Cultures of Trauma Informed Care (CCTIC)

Trauma and Social Location

Adverse Childhood Experiences
- Early Death
- Disease, Disability, and Social Problems
- Adoption of Health-risk Behaviours
- Social, Emotional, & Cognitive Impairment
- Adverse Childhood Experiences

Historical Trauma/Embodiment
- Early Death
- Burden of disease, distress, criminalization, stigmatization
- Coping
- Allostatic Load, Disrupted Neurological Development
- Complex Trauma/ACE
- Race/Social Conditions/Local Context
- Generational Embodiment/Historical Trauma

Microaggressions, implicit bias, epigenetics

*http://www.cdc.gov/violenceprevention/acestudy/pyramid.html

RYSE 2015
Ask about ACEs in Primary Care

• Excellent tool for estimating risk for many major health problems
• Can be helpful preventively
• Can help providers avoid re-traumatizing patients through medical procedures
• Some providers are uncomfortable asking about childhood adversity
  • No standard protocol for what to do with the results
  • Afraid patient will have negative emotional reactions
Effects of Childhood Abuse on Healthcare Behaviors-Avoiding Healthcare

• Avoidance of care
  • Decreased access of pap smears and mammography (childhood sexual abuse)
  • Delay in seeking treatment
  • Missed appointments
  • Multiple rescheduled appointments
  • Decreased adherence to treatment
  • Reluctance to ask questions/raise issues
Effects of Childhood Abuse on Healthcare Behaviors-Overutilization of Care

- Asking for unnecessary tests or procedures
- Excessive need for reassurance/anxiety
- Can be combined with underutilization of care
Effects of Childhood Abuse on Healthcare Behaviors-Trauma Reactions

- Trauma reactions while receiving medical care
  - Pain response
  - Unusual body awareness/sensations
  - Emotional response
  - Behavior
  - Over disclosure of personal information
How to Respond to Angry Patients (fight response)

- Calm, slow voice
- Calm physical setting
- Maintain safety for yourself and patient
- Listen
- Reflect back to patient
- Don’t defend/argue
- Minimize power differential
How to Respond to Scared Patients (flight response)

• Reassurance
• Provide information
• Relaxation
• Grounding
• Provide safe degree of physical space
  • Touch versus move back
How to Respond to Dissociated Patients (freeze response)

• Reassurance about safety
• Check for comprehension/engagement
• Relaxation
• Grounding
Treatment of Trauma

• Make systems trauma informed
• Trauma-Specific Treatment
• Traditional or culturally-based healing
• Increase attachment/social/community support
Refer to Therapy?

• Many patients don’t want to go to behavioral health
  • Stigma
  • Lack of confidentiality
  • Time
  • Money
  • Availability

• Not all patients with trauma histories need to go to therapy
Role of Healthcare Providers in Treatment of Trauma

• Healthcare providers have a key role
  • Avoid re-traumatizing patient
  • Corrective emotional experiences
  • Encourage increased community/social support
  • Good health care

• Offer therapy referral
  • Know what therapy does/doesn’t do
  • Know the alternatives
Upcoming Webinars and Case Consultations for Healthcare Providers

• Part II: Trauma, Attachment & DSM 5 Diagnoses
  October 17 2:30 pm MST

• Part III: Vicarious Trauma & Burnout in Healthcare Providers & How a Trauma Informed System Can Help
  November 15 1-2 pm MST

• Monthly case consultations 10:00-11:00 MST
  • Oct 18, Nov 15, Dec 13, 2017
  • Jan 17, Feb 14 2018
Websites

ACES Connection  http://www.acesconnection.com/

ACES Too High  www.acestoohigh.com

Child Trauma Academy  http://childtrauma.org/nmt-model/

International Society for Traumatic Stress Studies (ISTSS)
www.istss.org

The National Council for Behavioral Health
https://www.thenationalcouncil.org/topics/trauma-informed-care/

National Child Traumatic Stress Network (NCTSN)
http://www.nctsn.org/
Websites-continued

PTSD: National Center for PTSD (US Department of Veterans Affairs)

https://www.ptsd.va.gov/

SAMHSA National Center for Trauma-Informed Care and Alternatives to Seclusion and Restraint (NCTIC)

https://www.samhsa.gov/nctic

SAMHSA National Child Traumatic Stress Initiative (NCTSI)

https://www.samhsa.gov/child-trauma

TF-CBTWeb  https://tfcbt.musc.edu/
References


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- (Herman, J. (1997). Trauma and recovery: The aftermath of violence from domestic abuse to political terror. New York: Basic Books.)


- Natalie J. Sachs-Ericsson, Nicole C. Rushing, Ian H. Stanley, and Julia Sheffler In my end is my beginning: developmental trajectories of adverse childhood experiences to late-life suicide, Aging & Mental Health Vol. 20, Iss. 2, 2016

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• Yehuda, et al., (2005) *J of Clinical Endocrinology & Metabolism*, 90 (7)
• Walters et al., (2011) *Du Bois Review: Social Science Research on Race*, 8(1)
Relevant Recent HT Publications


References-Brave Heart


References-Brave Heart-continued


References—Brave Heart continued


References-Brave Heart continued


References-Brave Heart continued


• US Senate Miscellaneous Document, #1, 40th Congress, 2nd Session, 1868, [1319]
References-Brave Heart continued


