Adverse Childhood Experiences:
“ACEs” - What they are & why we should care

OBJECTIVES:
1. ACEs change our brain
2. We pass this change along to the next generation
3. This is preventable

(Reminder – Thumbs up)
Timeline of Events

Technology & Science  Health & Development

1995 – 1997

ACE Study
“What Happened to You?”

https://www.cdc.gov/violenceprevention/acestudy
American Journal of Preventive Medicine, 1998, Volume 14
ACE Score: Common Language

1. Emotional Neglect
2. Emotional Abuse
3. Physical Neglect
4. Physical Abuse
5. Sexual Abuse
6. Mother Treated Violently
7. Parent Separation/Divorce
8. Household Substance Abuse
9. Household Mental Illness
10. Incarcerated Family Member

One Count for each type
ACEs Impact Adults *50 Years Later*

As ACE scores go up...

- Cancer
- Fractures
- Diabetes
- Liver disease
- Lung disease
- Heart disease

ACEs: Common among general population (2/3 have 1) Leading Determinant of Health & Social Well Being
ACEs: Accumulate & Tend to occur in groups

4 ACEs More Likely to:

• 2x - Smoke
• 7x - Become Alcoholic
• 10x - Inject Street Drugs
• 12x - Attempt Suicide
• 32x – Behavioral Problems in School

Center for Disease Control
Carrion, Victor, PhD; Stanford University (2014)
6 or more ACEs:

- Live 20 years Less
- Males: 46x more likely to become an injection drug user

Fisher, 2014, Neurofeedback in the Treatment of Developmental Trauma
A condition, not an event
Exposure to one type of violence doubles risk of others. For instance:

Past year assault correlated with
- 2.7 x greater likelihood of sexual victimization
- 2.9 x greater likelihood of caregiver maltreatment

1 in 6 children experienced 6 or more types of victimization

No safe haven

David Finkelhor, Recent Findings from the National Surveys of Children's Exposure to Violence. Lecture January 27th, 2016
The predictive value of classic ACEs are not all equally as strong

Most predictive of adverse outcomes for children:

- Poverty
- Exposure to violence
- Social isolation
- Peer victimization

David Finkelhor, *Recent Findings from the National Surveys of Children’s Exposure to Violence.* Lecture January 27th, 2016
ACEs:
Study Confirms Link Between Juvenile Offenders ACE rates much higher than CDC’s ACE Study

• Top 3 most prevalent ACEs are same for males/females
  - Family violence
  - Parental separation or divorce
  - Household member incarceration

• 2/3 of the juvenile offenders reported these ACEs


https://acestoohigh.com/2014/08/20/florida-study-confirms-link-between-juvenile-offenders-aces-rates-much-higher-than-cdc-s-ace-study/
The impact of TRAUMA is more global on children than adults.

Developmental trauma changes brains.
Toxic stress reduces brain volume by as much as 20%
Type and Timing of Adversity Matters

Nurturance at age 4 predicts brain volume at age 14

Physical abuse correlates with later drug and alcohol abuse

Changes the brain

affecting the **visual cortex** through the fusiform gyrus which is involved in facial recognition

and

reducing cortical thickness, resulting in thinning in the portion of the **somatosensory cortex** that represents the genital area.
Witnessing intimate partner violence reduces the visual-limbic pathway by 20% in gray matter volume. Determining emotional and memory response to things we see.

Martin Teicher, 25th Annual International Trauma Conference, Boston MA, 2014
Family Violence

Witnessing family violence toward siblings

- Comparable to the effect sizes of experiencing sexual abuse
- Negative effects are far greater than witnessing violence toward mothers or fathers

Exposure to parental verbal abuse

- Changes white matter pathways related to language processing = lowered verbal IQ.
- Psychiatric effects comparable to extra-familial sexual abuse.
  - Depression, anger, somatic symptoms, dissociation, personality disorders

Toxic Stress—strong, prolonged, frequent

Chronic, threatening circumstances elicit a persistent fear response.
Wired for Fear and Anger

**Amygdala** (fear, rage, shame) volume increases: changes are permanent.

**Hippocampus** (memory, reward, inhibition) volume reduces: changes can be altered.

You can’t talk to an amygdala.
Why do symptoms seem to worsen over time?

**Kindling:** chronic stimulation of the limbic system and the HPA axis leads to activation of the sympathetic nervous system with less and less provocation, generalizing to ever widening circumstances.

– Even when the threat has passed, the effects may continue.

– What are the implications for learning/building positive relationships/successful job performance?
Delayed Manifestations

The traumatized state is set in childhood.

The hippocampus begins to reduce in adolescence, not in childhood. Major depression begins in puberty and may carry forward throughout life.

There may be a silent period with consequences unfolding later.

Childhood maltreatment is a major risk factor for psychiatric disorders.
Intergenerational Transmission of Trauma

Maternal stress in infancy changed **genetic expression** & showed up at age 15 in behavioral problems.
Epigenetics

Genes are the hardware. The epigenome is the software operating system.

Chemical signatures are written on top of the gene through exposure to toxic stress. The stress switches genes “on” or “off” making them expressed or silent.

Toxic stress can shorten alleles, which are then associated with alcoholism, cancer, dementia, diabetes, heart disease…

A mother’s stress can alter gene expression in her own DNA, which she could then pass down to her child.—Kerry Ressler, in The Anatomy of Fear, by Martha McKenzie, Emory Medicine Magazine, Spring 2014
RESILIENCE

The ability to adapt to adverse experiences and regain strength, health, or success.

Resilience and recovery are NOT the same as “without injury.”

- Developmental damage shows up in brain scans, even when individuals are not symptomatic.

- Neural plasticity does make recovery and adaptation possible.
Adult Disease: A Developmental Disorder?

Birth

Death

Adverse Childhood Experiences

Social, Emotional, & Cognitive Impairment

Adoption of Health-risk Behaviors

Disease, Disability and social problems

Early Death
Smart Investment

13.7% per annum

www.heckmanequation.org
The Perry Preschool program monitored control groups over 4 decades.

**Figure 1**
Major Findings: High/Scope Perry Preschool Study at 40

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Program group</th>
<th>No-program group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrested 5+ times by 40</td>
<td>36%</td>
<td>55%</td>
</tr>
<tr>
<td>Earned $20K+ at 40</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Graduated high school</td>
<td>77%</td>
<td>60%</td>
</tr>
<tr>
<td>Basic achievement at 14</td>
<td>15%</td>
<td>49%</td>
</tr>
<tr>
<td>Homework at 15</td>
<td>15%</td>
<td>38%</td>
</tr>
<tr>
<td>IQ 90+ at 5</td>
<td>28%</td>
<td>67%</td>
</tr>
</tbody>
</table>

PROTECTIVE FACTORS

When present & robust, the likelihood of abuse & neglect diminish.

1. Parent Resilience
2. Knowledge of Parenting & Child Development
3. Social & Emotional Competence of Children
4. Social Connections
5. Concrete Support in Times of Need
Towards a Trauma Informed Community

- What makes trauma, trauma?
- Being TI – Recognizing it is common, focus on what happened to you
- Understanding the vulnerabilities/triggers of survivors
- Avoiding re-traumatization

Systems Thinking Trauma Lens

1. Ecological systems—children grow up in families
2. Inter-generational – empower adults in children’s lives
3. Life course - Start early
4. Nurturing Care – safety, nutrition, etc.

www.CSSP.org 2017

https://www.slideshare.net/DeniceColson/links-between-childhood-trauma-and-adult-disease-becoming-trauma-informed
SAMHSA
EFFECT OF Trauma-Oriented Evaluations on Doctor Office Visits

Benefits of Incorporating a Trauma-oriented Approach

- Biomedical evaluation: 11% reduction in DOVs (Doctor Office Visits) in subsequent year. (Control group, 700 patient sample)
- Biopsychosocial evaluation: 35% reduction in DOVs in subsequent year. (Trauma-oriented approach, >120,000 patient sample)
Our Community’s Reactions: Frederick County

• **Public Awareness**
  From 2 to 20 to 1400 in one year

• **Systems Response**
  Increased Collaboration across institutions
  Local Health Improvement Plan
  Interagency Early Childhood Committee
  Mount St. Mary’s University

• **Next Steps**
Nothing you do for children is ever wasted.

"Safety and security don't just happen. They are the result of collective consensus and public investment. We owe our children, the most vulnerable citizens in our society, a life free of violence and fear."

--Nelson Mandela
Resources: Research


PEDIATRICS. 2012, The Lifelong Effects of Early Childhood Adversity and Toxic Stress; Jack P. Shonkoff, MD, Andrew S. Garner, MD, PhD, etc.

David Finkelhor, Recent Findings from the National Surveys of Children’s Exposure to Violence. Lecture January 27th, 2016


Martin Teicher, 25th Annual International Trauma Conference, Boston MA, 2014


Creating Trauma Informed Provider Organizations, Georgetown University Center for Child and Human Development, retrieved from http://gucchdtacenter.georgetown.edu/data/issues/2015/0215_article.html

EMDR: an evidence based treatment for trauma victims, Victims and Offenders, 4:391–397, 2009, Copyright © Taylor & Francis Group, LLC ISSN: 1556-4886 print/1556-4991 online, DOI: 10.1080/15564880903227495 (pdf)


Resources: URLs

• TED TALK: https://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime

• Centers for Disease Control: https://www.cdc.gov/violenceprevention/acestudy/

• Take the survey: http://www.npr.org/sections/health-shots/2015/03/02/387007941/take-the-ace-quiz-and-learn-what-it-does-and-doesnt-mean

• ACEs networks: http://www.acesconnection.com/

• National Child Traumatic Stress Network: http://www.nctsn.org/


• CANarratives.org
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