Trauma-Informed Practice: Incorporating the Science of Toxic Stress, Early Brain Development, and Adverse Childhood Experiences into Public Health Practice

Tennessee Public Health Association
2017 Annual Conference
Cool Springs, Tennessee
September 14, 2017
Introduction

Imagine if scientists discovered a toxic substance that increased risk of...

- Substance Abuse
- Mental Health
- Delinquency
- Domestic Violence
- Child Welfare
- Obesity
- Smoking
- Drinking
- Poor Health
- Court Involvement

www.floridatrauma.org/Trauma
Introduction

It would be comparable to hazards like lead paint, tobacco smoke, and mercury.
Introduction

We would do everything in our power to contain it and keep it far away from children.

Right?
We now know that trauma and toxic stress in childhood...

...leads to a multitude of societal problems:

- Physical Health Problems
- Mental Health Problems
- Crime & Delinquency
- Addictions
- Poor Parenting Capacity
- Academic & School Problems

[www.floridatrauma.org/Trauma](http://www.floridatrauma.org/Trauma)
Life Course Perspective

1 Lu and Halfon, 2003
Critical Periods

- Experiences during critical periods can result in irreversible changes

- **The Brain is not structurally complete at birth.**
  - Synaptic connections, myelination, and glial and circulatory support systems all develop after birth

- Experiences determine brain structure
  - “Use it or Lose it” – neural connections are “hardwired” when used repeatedly; synapses not used are pruned away; experience determines the structural growth of the brain
  - Brain is 90% complete by age 4
Critical Periods

- Birth – 2 years; critical window for hardwiring the brain for social-emotional development.

- Attachment comes from a nurturing relationship with a caregiver that is consistent and caring.

- Social-Emotional development is based on secure attachment and becomes the foundation for self-identity, self-regulation, compassion and empathy, and later cognitive development.
Interaction as Serve and Return
We are not born with the skills that enable us to make plans, control impulses, and stay focused. We are born with the potential to develop these capacities...

Nurturing and stable relationships with caring adults are essential to healthy human development. Early, secure attachments contribute to the growth of a broad range of competencies, including love of learning, sense of one’s self, positive social skills, successful relationships at later ages, and an understanding of emotions, commitment, morality, and other aspects of human relationships.”

Emotional well-being and social competence provide a strong foundation for emerging cognitive abilities, and together they are the bricks and mortar the comprise the foundation of human development.

The emotional and physical health, social skills, and cognitive-linguistic abilities that emerge in the early years are all important pre-requisites for success in school and later in the workplace and community.”

Harvard Center for the Developing Child
The Plasticity of Brain Architecture

*Decreases Over Time*

- Early plasticity makes the young brain *both* more vulnerable to harm and more capable of recovery.

- The timetable of brain plasticity varies: it is narrow for basic sensory abilities, wider for language, and broadest for cognitive and social-emotional skills.

- Brain circuits consolidate with increasing age, making them more difficult to rewire.

- At all ages it is more efficient – biologically and economically – to prevent later difficulty than to try to remedy problems that emerge.
In building capabilities, skill builds upon skill; weak social-emotional pathways (attachment) provide a weak foundation for other skills, including cognitive and executive function.
Critical Periods

- Early Adversity impacts brain development
  - Permanently alters brain structure and function
  - Lack of stimulation results in pruning away of circuits
  - Lack of social-emotional hardwiring provides weak foundation for later cognitive abilities
  - Repetitive setting off a stress-survival response results in enlargement of the amygdala, smaller hippocampus, and smaller brain

Institute of Medicine, 2000
Critical Periods

The Two Year window – results of extreme deprivation of stimulation in Romanian Orphans
Life Course Perspective

Critical Periods

Interaction with Environment

1 Lu and Halfon, 2003
Interactions with the stressors in our environment and negative experiences depress the trajectory:

*Stress “gets under our skin”*
Epigenetics

THE DNA SEQUENCE is not the only code stored in the chromosomes. So-called epigenetic phenomena of several kinds can act like volume knobs to amplify or mute the effect of genes. Epigenetic information is encoded as chemical attachments to the DNA or to the histone proteins that control its shape within the chromosomes. Among their many functions, the epigenetic volume controls muffle parasitic genetic elements, called transposons, that riddle the genome.

1 Chemical changes to a chromosome can force some parts of it to condense into a tight, inaccessible mass or can recruit repressor proteins. In both cases, the genes on that part of the DNA temporarily stop working.

2 Chromosomes are made of chromatin, a melange of DNA, proteins and other chemicals. Inside a chromosome, the double helix loops around spools of eight histone proteins to form a rosary-like chain of nucleosomes.

3 Genes can also be suppressed by methyl tags that stick directly to the DNA, usually at places where a C base is followed by an A. Whether DNA methylation turns down genes independently or only in combination with histone tags is still a mystery.

4 An intricate histone code—written in chemical tags stuck to the histones’ tails (above)—governs gene expression at will. Acetyl tags usually amplify nearby genes, whereas acetyl-removing enzymes mute them. But the rest of the code remains to be deciphered.

5 Transposons, also called jumping genes, can clone themselves and then infiltrate the copies into distant sections of the genome, sometimes disabling or hyperactivating genes. One major function of DNA methylation seems to be the suppression of transposons, which make up almost half the human genome.

Gibbs WW. The Unseen Genome: Beyond DNA. Scientific American 2003

Slide from Dr. Michael Lu, 2006
Epigenetics

- Changes in DNA (methylation, histone modification) affecting function without a change in sequence
- Environmental triggers
- Can lead to gene silencing
- Can be passed on through generations

Agouti mice from same genetic strain.

2 groups:
(1) Mothers fed normal diet while pregnant
(2) Mothers fed extra folic acid during pregnancy (methyl groups)

www.pbs.org/wgbh/nova/body/epigenetic-mice.html

Dr. Randy Jirtle
Duke University
When women smoked daily during pregnancy, researchers identified 6,073 places where their babies’ DNA was methylated differently than the DNA of non-smokers.

Many of the differences were found on or near a collection of genes related to lung and nervous system development, smoking-related cancers, and birth defects such as cleft lip and palate.

- more methylation in sustained smoking than any smoking
- some changes persisted in older children

Epigenetics

Environmental Stressors:
- Hormonal (glucocorticoids)
- Nutritional
- Toxins

Toxic Stress

Re-activation of stress response

Epigenetic modifications

Potentially reversible

Behavior changes

Altered brain structure and function

Altered Gene Transcription

Passed on to next generation
Life Course Perspective

Critical Periods

Interaction with Environment

Optimal Outcome

Cumulative Effects over time

Risk Factors

Protective Factors

1 Lu and Halfon, 2003
Cumulative effects of negative experiences depress the trajectory.

- Poor Nutrition
- Stress
- Abuse
- Tobacco, Alcohol, Drugs
- Poverty
- Lack of Access to Health Care
- Exposure to Toxins

Cumulative Effects of Environment and Experiences

- ADVERSE CHILDHOOD EXPERIENCES
- CHILD ABUSE
- FAMILY DYSFUNCTION

Poor Outcome

Puberty

Pregnancy
The Adverse Childhood Experiences Study -- the Largest Public Health Study You Never Heard Of

Posted: 10/08/2012 9:02 am EDT | Updated: 12/08/2012 5:12 am EST

"Adverse childhood experiences" has become a buzzword in social services, public health, education, juvenile justice, mental health, pediatrics, criminal justice, medical research and even business. The ACE Study - the CDC's Adverse Childhood Experiences Study -- has recently been featured in the New York Times, This American Life, and Salon.com. Many people say that just as you should know your cholesterol score, so you should know your ACE score. But what is this study? And do you know your own ACE score?
Adverse Childhood Experiences (ACE Study)

- Public/Private Partnership
- Started in 1985 – Ongoing
- 1995 CDC Partnership - Ongoing
- Largest of kind – 17,000

Changed Nation's Views on Children's Behavioral Health

Dr. Vincent J. Felitti, MD
Internist, Kaiser Permanente

Dr. Robert F. Anda MD (plus MS in Epidemiology)
Centers for Disease Control (CDC) & Prevention
The Adverse Childhood Experiences

When you were growing up, during your first 18 years of life, did you experience:

- Physical abuse
- Emotional abuse
- Sexual abuse
- Physical Neglect
- Emotional Neglect
- Domestic violence (mother treated violently)
- Substance abuse in home
- Mental illness in parent
- Lost parent due to separation or divorce
- Household member in jail

Did you live with anyone who was depressed, mentally ill, or suicidal?

Did you ever see your mother hit, slapped, kicked, punched, or beat up?

Did a parent or adult in the home ever swear at you, insult you, or put you down?

[never, once, more than once, don't know, refused to answer]
Adverse Childhood Experiences (ACE) Score

Average age 57; 75% had some college; 85% white

<table>
<thead>
<tr>
<th>ACE score</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>36.4%</td>
</tr>
<tr>
<td>1</td>
<td>26.2%</td>
</tr>
<tr>
<td>2</td>
<td>15.8%</td>
</tr>
<tr>
<td>3</td>
<td>9.5%</td>
</tr>
<tr>
<td>4</td>
<td>6.0%</td>
</tr>
<tr>
<td>5</td>
<td>3.5%</td>
</tr>
<tr>
<td>6</td>
<td>1.6%</td>
</tr>
<tr>
<td>7 or more</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

64% reported experiencing one or more
37% reported experiencing two or more
One ACE $\rightarrow$ 87% chance of having more than one
CHILDREN’S EXPOSURE TO VIOLENCE – NATIONAL SURVEY (2009)

60% of American Children were exposed to violence, crime, or abuse in their homes, schools, and communities.

Almost 40% of American children were direct victims of TWO or more violent acts, and one in 10 were victims of violence five or more times.

Almost 1 in 10 American children saw one family member assault another family member, and more than 25% had been exposed to family violence during their lifetime.

Exposure to one type of violence increased the likelihood that a child would be exposed to other types of violence and exposed multiple times.

ACEs Impact Multiple Outcomes

- Smoking
- Alcoholism
- Promiscuity
- High Perceived Risk of HIV
- Poor Perceived Health
- Multiple Somatic Symptoms
- Sexually Transmitted Diseases
- Smoking
- Alcoholism
- Promiscuity
- High Perceived Risk of HIV
- Poor Perceived Health
- Multiple Somatic Symptoms
- Sexually Transmitted Diseases

- Relationship Problems
- High perceived stress
- Obesity
- Illicit Drugs
- IV Drugs
- Cancer Liver Disease
- Skeletal Fractures
- Chronic Lung Disease
- Ischemic Heart Disease

- Married to an Alcoholic
- Difficulty in job performance
- General Health and Social Functioning
- Depression
- Sleep Disturbances
- Memory Disturbances
- Panic Reactions
- Poor Anger Control

- Poor Self-Rated Health
- Hallucinations
- Anxiety
- Early Age of First Intercourse

- Prevalent Diseases
- Sexual Health
- Teen Paternity Fetal Death
- Unintended Pregnancy
- Sexual Dissatisfaction
ACE Score and Teen Sexual Behaviors

Hillis S et al, 2001
Relationship Between ACE Score and Early Initiation of Smoking Cigarettes

Anda et al., 1999, JAMA

![Bar chart showing the relationship between ACE score and regular smoking by age 14.](chart.png)
ACEs and the Age at Initiation of Illicit Drugs

Dube et al., 2003, Pediatrics
ACE Score and Intravenous Drug Use

N = 8,022
p<0.001

Dube, 2003, Pediatrics
ACE Score and Attempting Suicide During Adolescence

Dube et al., *JAMA*, 2001
ACEs Chronic Depression as an Adult

Chapman D et al, Journal of Affective Disorders, 2004
ACEs and Obesity

Adapted from Anda RF et al., 2006. Eur Arch Psychiatry Clin Neurosci 256: 174-186.
ACE Score and Impaired Worker Performance

Prevalence of Impaired Performance (%)

- Absenteeism (>2 days/month)
- Serious Financial Problems
- Serious Job Problems

Ace Score
- 0
- 1
- 2
- 3
- 4 or more

Anda RF et. al., The Permanente Journal, 2004
Seeking to Cope

- The risk factors/behaviors underlying these adult diseases are actually effective coping devices.

- What is viewed as a problem by the health care provider is actually a solution to bad experiences for the patient.

- Dismissing these coping devices as “bad habits,” “bad choices”, or “self destructive behavior” misses their source of origin [trauma]
The ACE Study is evidence that....

ADVERSE CHILDHOOD EXPERIENCES are the most basic and long lasting cause of:

- health risk behaviors,
- mental illness,
- social malfunction,
- disease, disability, death, and healthcare costs

Dr. Vincent Felitti, 2011
ADVERSE CHILDHOOD EXPERIENCES AND ADULT DISEASE:

- 54% of depression
- 52% of domestic violence
- 58% of suicide attempts
- 39% of ever smoking
- 26% of current smoking
- 65% of alcoholism
- 50% of drug abuse
- 78% of IV drug abuse
- 52% of disability days
- 48% of promiscuity (>50 partners)

are attributable to ACE’s.

Dr. V. Felitti. 2011
Leading Causes of Death in U.S. and increased risk with ACE ≥ 4

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ischemic Heart Disease</td>
<td>220%</td>
</tr>
<tr>
<td>2</td>
<td>Cancer</td>
<td>190%</td>
</tr>
<tr>
<td>3</td>
<td>COPD</td>
<td>260%</td>
</tr>
<tr>
<td>5</td>
<td>Stroke</td>
<td>240%</td>
</tr>
<tr>
<td>6</td>
<td>Alzheimer’s</td>
<td>420%</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes</td>
<td>160%</td>
</tr>
<tr>
<td>10</td>
<td>Suicidality</td>
<td>1,220%</td>
</tr>
</tbody>
</table>
ACEs and Early Death

- Compared childhood trauma and mortality
- Identified 1,539 deaths within the cohort between 1995 and 2006
- People with 6 or more ACE’s died nearly 20 years earlier than those without ACE’s - 60.6 yrs versus 79.1

(the ACE of “neglect” was not included in research design)
Telomere Length and Aging

What We Lose With Age

As cells divide over time...

telomeres shorten, and eventually cell division stops

The Nobel Prize in Physiology or Medicine 2009

The Nobel Prize in Physiology or Medicine 2009 was awarded jointly to Elizabeth H. Blackburn, Carol W. Greider and Jack W. Szostak "for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase".

Photo: U. Morgen
Elizabeth H.
Blackburn
Prize share: 1/3

Photo: U. Morgen
Carol W. Greider
Prize share: 1/3

Photo: U. Morgen
Jack W. Szostak
Prize share: 1/3
Telomeres are unique DNA – not part of a gene. Acts like a physical buffer, not a template for replication like other DNA.

Shorter telomeres are associated with more chronic disease.

Telomerase can slow, prevent, or reverse the shortening that comes with cell division.

Telomere length is transmitted to the next generation.
Shortening of Telomeres:

- Adverse Childhood Experiences
- Caregiving (chronic stress)
- Smoking
- Obesity
- Poor nutrition
- Isolation
- Stressful occupations
- Unsafe neighborhoods
- Exposure to violence, trauma
- Depression

Lengthening of Telomeres:

- Exercise
- Healthy diet
- Meditation/Yoga/mindfulness
- Social contact
- Challenge mentality/Optimism
- Social stress reduction
- Having a purpose
- Safe neighborhoods
- Green space

“Biology is not destiny; there are many things we can do to maintain our telomeres throughout our own lifetime.”

Source: Blackburn E, Epel E. *The Telomere Effect*. 2017
Telomeres and Population Health

“Like the thoughts we think and the food we eat, the factors beyond our skin – our relationships and the neighborhoods we live in– affect our telomeres. Communities where people do not trust one another, and where they fear violence, are damaging to telomere health. But neighborhoods that feel safe and look beautiful– with leafy trees and green parks– are related to longer telomeres, no matter what the income and education levels of their residents.”

Source: Blackburn E, Epel E. The Telomere Effect. 2017
Life Course Perspective
Environment and Experiences Influence Health

Cumulative effects of negative experiences depress the trajectory:

*The “weathering effect”*

-May be due, at least in part, to telomere shortening and decreased telomerase-

Poor Nutrition
Stress
Abuse, Violence
Tobacco, Alcohol, Drugs
Poverty
Lack of Access to Health Care
Exposure to Toxins

Poor Outcome

Puberty
Pregnancy
## ACE Prevalence Across the US Adults - BRFSS

<table>
<thead>
<tr>
<th>State</th>
<th>% of adults with &gt; 1</th>
<th>% of adults with &gt; 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>61%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Iowa</td>
<td>55%</td>
<td>14%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>55%</td>
<td>13%</td>
</tr>
<tr>
<td>Montana</td>
<td>61%</td>
<td>17%</td>
</tr>
<tr>
<td>Vermont</td>
<td>57%</td>
<td>13%</td>
</tr>
<tr>
<td>Washington</td>
<td>62%</td>
<td>17%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>56%</td>
<td>14%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>63%</td>
<td>17.5% (1 in 6)</td>
</tr>
</tbody>
</table>
Number of ACES by Race/Ethnicity

Percentage of adults aged ≥18 years reporting adverse childhood experiences (ACEs), by number of ACEs reported and race—Behavioral Risk Factor Surveillance System (BRFSS), five states, 2009. MMWR Dec 17, 2010 AK, LA, TN NM, WA

“For us, one of the most compelling results of the research is that trauma doesn’t discriminate.”
Suzanne Mineck, Mid Iowa Health Foundation, source: the Community Resilience Cookbook

“There is no biologic basis for racial differences.” Dr. Kim Wyche-Ethridge

47% of children in the US have had at least one ACE

In TN, 54.9% of children have at least one ACE; 27.5% have two or more

## National and Kentucky Prevalence of Adverse Childhood Experiences

<table>
<thead>
<tr>
<th>Adverse Child or Family Experiences</th>
<th>Kentucky Prevalence</th>
<th>National Prevalence</th>
<th>State Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child had ≥ 1 Adverse Child/Family Experience</td>
<td>55.3%</td>
<td>47.9%</td>
<td>40.6% (CT) – 57.5% (AZ)</td>
</tr>
<tr>
<td>Child had ≥ 2 Adverse Child/Family Experiences</td>
<td>30.0%</td>
<td>22.6%</td>
<td>16.3% (NJ) – 32.9% (OK)</td>
</tr>
<tr>
<td>Extreme economic hardship</td>
<td>29.6%</td>
<td>25.7%</td>
<td>20.1% (MD) – 34.3% (AZ)</td>
</tr>
<tr>
<td>Family discord leading to divorce or separation</td>
<td>28.9%</td>
<td>20.1%</td>
<td>15.2% (DC) – 29.5% (OK)</td>
</tr>
<tr>
<td>Having lived with someone who had an alcohol or drug problem</td>
<td>14.4%</td>
<td>10.7%</td>
<td>6.4% (NY) – 18.5% (MT)</td>
</tr>
<tr>
<td>Having been a victim or witness of neighborhood violence</td>
<td>9.3%</td>
<td>8.6%</td>
<td>5.2% (NJ) – 16.6% (DC)</td>
</tr>
<tr>
<td>Having lived with someone who was mentally ill or suicidal</td>
<td>11.1%</td>
<td>8.6%</td>
<td>5.4% (CA) – 14.1% (MT)</td>
</tr>
<tr>
<td>Witnessing domestic violence in the home</td>
<td>9.7%</td>
<td>7.3%</td>
<td>5.0% (CT) – 11.1% (OK)</td>
</tr>
<tr>
<td>Parent served time in jail</td>
<td>13.2%</td>
<td>6.9%</td>
<td>3.2% (NJ) – 13.2% (KY)</td>
</tr>
<tr>
<td>Treated or judged unfairly due to race/ethnicity</td>
<td>3.7%</td>
<td>4.1%</td>
<td>1.8% (VT) – 6.5% (AZ)</td>
</tr>
<tr>
<td>Death of parent</td>
<td>4.2%</td>
<td>3.1%</td>
<td>1.4% (CT) – 7.1% (DC)</td>
</tr>
</tbody>
</table>

Source: 2011/2012 National Survey of Children’s Health
Available at http://www.childhealthdata.org/home

Children ages 0-17
## Exhibit 3

### Prevalence of Adverse Childhood Experiences (ACEs) Among Children Age 0–17, By Eleven Child And Risk Factors, By Number Of ACEs, 2011–12

<table>
<thead>
<tr>
<th>Category of children</th>
<th>Study population (%)</th>
<th>Prevalence of ACEs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 ACE</td>
</tr>
<tr>
<td>All</td>
<td>100.0</td>
<td>25.3</td>
</tr>
<tr>
<td>In fair or poor overall health</td>
<td>3.2</td>
<td>31.8</td>
</tr>
<tr>
<td>With special health care needs</td>
<td>19.8</td>
<td>25.9</td>
</tr>
<tr>
<td>With special health care needs and EBD</td>
<td>7.2</td>
<td>23.7</td>
</tr>
<tr>
<td>At high or moderate risk for developmental, behavioral, or social delays</td>
<td>26.2</td>
<td>26.9</td>
</tr>
<tr>
<td>With asthma</td>
<td>8.8</td>
<td>27.3</td>
</tr>
<tr>
<td>With ADHD</td>
<td>7.9</td>
<td>24.8</td>
</tr>
<tr>
<td>With autism spectrum disorder</td>
<td>1.8</td>
<td>27.1</td>
</tr>
<tr>
<td>Who are overweight or obese</td>
<td>31.3</td>
<td>25.5</td>
</tr>
<tr>
<td>With a behavior problem</td>
<td>3.2</td>
<td>23.6</td>
</tr>
<tr>
<td>Who bully</td>
<td>2.2</td>
<td>23.0</td>
</tr>
</tbody>
</table>

**Source** Authors’ analysis of data from the 2011–12 National Survey of Children’s Health. **Notes** AOR is adjusted for age, sex, race/ethnicity). EBD is emotional, behavioral, or developmental problems. ADHD is attention deficit hyperactivity disorder (ADHD). Prevalence variation remains ($p < 0.05$), after adjustment for child-level characteristics across states using multivariable logistic regression.
“ACE Study”

Mechanisms by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan

http://www.cdc.gov/nccdphp/ace/
Science Tells Us that Early Life Experiences Are Built Into Our Bodies

Research on the biology of stress illustrates how threat:
- raises heart rate, blood pressure, and stress hormone levels, which can
- impair brain architecture, immune status, metabolic systems, and cardiovascular function.
Body’s Response to Stress
(Hypothalamic-Pituitary Axis)

- Increased Heart Rate
- Rapid Breathing
- Increased Blood flow to muscles
- Anxious, on edge
Allostasis:
Maintain Stability through Change

Allostastic Load

Brain Structures

“The Alarm Center”
“the Gas Pedal”

“the Brake”
Memory and Learning
Three Levels of Stress

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.
Multiple Traumatic Events – Toxic Stress

Terror
Fear
Alarm
Vigilance
Calm

Event #1
Event #2
Event #3
Traumatic Stress

- Merely anticipating a stressful even has almost the same effect on the brain and body as experiencing the stressful event.
- Traumatic stress is the physical and emotional response of a child or adult to events that are perceived to threaten the life or physical integrity of the child or adult, or someone critically important to the child or adult (such as a parent or sibling).
- This out-of-control physiologic response that overwhelms the capacity to cope is the hallmark of stress that becomes traumatic and damaging.
- Effects multiply when the trauma continues.
- Varies with person’s age, developmental status, prior experiences, support systems, relationship to victim, witness or experiencing the violence
Toxic Stress
Institutionalization and Neglect of Young Children Disrupts Their Body Chemistry

Source: Gunnar & Fisher (2006)
Poor Children Experience Elevated Stress

Overnight levels in rural 9-year-old white children

The Brain Architecture of Anxiety and Fear
The Brain Architecture of Memory and Learning
Cognitive, Emotional, and Social Capacities Are Inextricably Intertwined Within the Architecture of the Brain
Life Course Perspective

Critical Periods

Interaction with Environment

Reproductive Potential

Risk Factors

Protective Factors

Cumulative Effects over time

Risk-Protective Balance

Optimal Outcome

Poor Outcome

1 Lu and Halfon, 2003
How Risk Reduction and Health Promotion Strategies influence Health Development

FIGURE 4: This figure illustrates how risk reduction strategies can mitigate the influence of risk factors on the developmental trajectory, and how health promotion strategies can simultaneously support and optimize the developmental trajectory. In the absence of effective risk reduction and health promotion, the developmental trajectory will be sub-optimal (dotted curve). From Halfon, N., M. Inkelas, and M. Hochstein. 2000. The Health Development Organization: An Organizational Approach to Achieving Child Health Development. The Milbank Quarterly 78(3):447-497.
Life Course Trajectory: A Balance of Risk and Protective Factors

Risk Factors
- Child
- Family
- School
- Community

Protective Factors
- Child
- Family
- School
- Community

Outcome
- Positive resilience
- School Readiness

Negative vulnerability
- Child Abuse
Life Course Trajectory: A Balance of Risk and Protective Factors

Secure Relationships

- Strong social-emotional pathways
- Trusting relationships with caring adults
- Ability to explore their environment without fear; curiosity
- Cognition, problem solving
- Tolerate disappointments
- Able to form close friendships, networks of support

Poor Relationships

- Behavior problems
- Speech/Language delays
- Alienation, Inability to form relationships
- Lack of trust, compassion, empathy and remorse
- Poor coping & problem solving skills
- Chronic illness
- Aggression, Violence, Anti-social behavior
Life Course Trajectory: A Balance of Risk and Protective Factors

**Executive Function**
- Ability to problem solve
- Self-control
- Self confidence
- Able to calm self
- Follows directions
- Persists on task
- Able to manage their tempers when provoked
- Able to delay gratification
- Able to plan

**“Amygdala Hijack”**
- Impaired memory, esp. “working” and contextual memory
- Inability to concentrate
- Harder to follow directions
- Hard to sit still
- Constantly on edge
- Easily provoked
- Impulsive

**Responses to chronic/toxic stress**

Has a supportive, caring adult

Lack of a supportive, caring adult
Study finds ADHD and trauma often go hand in hand

Children with attention-deficit/hyperactivity disorder experienced more adversities than those without ADHD

by Carla Kemp • Senior Editor

VANCOUVER, BRITISH COLUMBIA – When children struggle with focusing on tasks, staying organized, controlling their behavior and sitting still, they may be evaluated for attention-deficit/hyperactivity disorder (ADHD). Clinicians, however, shouldn't stop there, according to a study to be presented Tuesday, May 6, at the Pediatric Academic Societies (PAS) annual meeting in Vancouver, British Columbia, Canada.

Researchers found that many children with ADHD also face challenges such as poverty, divorce, neighborhood violence and substance abuse among family members.

“Our findings suggest that children with ADHD experience significantly higher rates of trauma than those without ADHD,” said lead author Nicole M. Brown, M.D., M.P.H., M.H.S., FAAP. “Providers may focus on ADHD as the primary diagnosis and overlook the possible presence of a trauma history, which may impact treatment.”

Dr. Brown and her colleagues analyzed data from the 2011 National Survey of Children’s Health. They identified 65,680 children ages 6-17 years whose parents answered questions regarding ADHD diagnosis, severity and medication use as well as nine adverse childhood experiences (ACEs): poverty, divorce, death of a parent/guardian, domestic violence, neighborhood violence, substance abuse, incarceration, familial mental illness and discrimination.

About 12% of the children were diagnosed with ADHD. Their parents reported a higher prevalence of all of the adverse events than parents of children without ADHD.

Parents of children with ADHD also reported a higher number of adverse childhood experiences compared to children without ADHD: 17% of children with ADHD had four or more ACEs compared to 6% of children without ADHD.

Children dealing with four or more adverse experiences were almost three times more likely to use ADHD medications compared to children with three or fewer adverse experiences. Children with four or more adverse experiences also were more likely to have a parent rate their ADHD as moderate to severe compared to children with three or fewer ACEs.

“Knowledge about the prevalence and types of adverse experiences among children diagnosed with ADHD may guide efforts to address trauma in this population and improve ADHD screening, diagnostic accuracy and management,” said Dr. Brown, assistant professor of pediatrics, Division of General Pediatrics, The Children’s Hospital at Montefiore, Albert Einstein College of Medicine, New York.

“Pediatric providers should consider screening for adverse childhood experiences in children who they suspect may have ADHD and/or those who carry the diagnosis, and initiate evidence-based treatment/intervention plans for children who screen positive for ACEs,” she concluded.

To view the study abstract, go to http://www.abstracts2view.com/pas/view.php?nu=PAS14L1_4670.7.
Direct Link Between ADHD and Premature Death

Nancy A. Melville | February 26, 2015

Individuals with attention-deficit/hyperactivity disorder (ADHD) are more than twice as likely to die prematurely compared with their counterparts without the disorder, new research shows.

The study, which is the first to demonstrate a direct association between ADHD and increased mortality, included nearly 2 million people and had a 32-year follow-up period.

"I did expect to see an increase in mortality with ADHD, but it was a surprise to see the difference was this large, and I think most clinicians will also be surprised by the magnitude of increased mortality," lead author Søren Dalsgaard, MD, PhD, told Medscape Medical News.

The study was published online February 26 in the Lancet.

Mortality Highest in Undiagnosed Adults

According to investigators, many mental disorders are associated with increased mortality. However, little is known about whether this association also applies to ADHD.

For the study, investigators with the National Centre for Register-based Research, at Aarhus University, in Denmark, evaluated data on 1.9 million individuals in Danish national registers from their first birthday through 2013. Among the cohort, 32,061 had been diagnosed with ADHD.

The researchers found a mortality rate of 5.85 per 10,000 person-years among children and adults with ADHD, compared with a rate of 2.21 among those without ADHD.

After adjusting for a range of factors, including age, sex, family history of psychiatric disorders, and employment status, people with ADHD were found to have a mortality rate ratio (MRR) that was more than twice as high as individuals without ADHD (MRR, 2.07; 95% confidence interval [CI], 1.70 - 2.50; P < .0001).
Intergenerational Cycle of Toxic Stress

ADVERSE CHILDHOOD EXPERIENCES

<table>
<thead>
<tr>
<th>FAMILY DYSFXN</th>
<th>CHILD ABUSE/N</th>
</tr>
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</table>

DV
MH-D
Subs Abuse
Separation
Jail

TOXIC STRESS

- Altered Brain Structure
- Altered Brain Function
- High circulating stress hormones

ADULT

Fight, Flight, Freeze
 PLUS: - can’t sit still
- memory problems
- speech delay
- poor relationships
- lack of empathy
- behavior problems
- always on edge

PLUS risky behavior
PLUS: - depression
- suicide
- victim of DV
- IV drug use
- difficulty at work
- financial difficulty
- chronic diseases
- unplanned pregnancy

Pregnant/Parenting woman with SUD

SEI or NAS Infant

ADOLESCENT

Fight, Flight, Freeze
 PLUS: - teen smoking
- teen pregnancy
- drug use
- alcohol use
- hallucinations
- juvenile delinquency
- gangs
- fighting
- out of control

ADHD
Bullying
Learning Disability
Speech Delays
Behavior Disorder
Drug Endangered Child

Substance Exposed Infants/Neonatal Abstinence
“Drug Endangered Children”

Emotional Problems:
- Attachment Disorders
- Anxiety
- Depression
- Complex emotions

Cognitive Problems
- Difficulty talking and listening
- Difficulty Paying Attention
- Difficulty Remembering
- Trouble reading
- Do not learn from mistakes or experiences
- Do not pick up on social cues

Behavioral Problems:
- Interpersonal Problems
- Inappropriate sexual behaviors
- Impulsive, low threshold for stimulation
- Eating disorders

Moriarty L, 2014 National Conference on Drug Endangered Children
Breaking the Inter-generational Cycle

**ADVERSE CHILDHOOD EXPERIENCES**

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**TOXIC STRESS**
- Altered Brain Structure
- Altered Brain Function
- High circulating stress hormones

**WITH TX & RECOVERY SUPPORTS AFTER DELIVERY:**
Mothers can bond with baby; Long term recovery and brain healing for mom

**Pregnant/Parenting woman with SUD**

**ADULT**
Fight, Flight, Freeze
PLUS risky behavior
PLUS:
- depression
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**CHILD**
Fight, Flight, Freeze
PLUS:
- can’t sit still
- memory problems
- speech delay
- poor relationships
- lack of empathy
- behavior problems
- always on edge

**Breaking the cycle**

**12- 24 months**

**SEI or NAS Infant**

**WITH TX & RECOVERY SUPPORTS AFTER DELIVERY:**
Mothers can bond with baby; Long term recovery and brain healing for mom

**Pregnant/Parenting woman with SUD**

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**Breaking the cycle**

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The Life Course Perspective

DYNAMIC

Critical Periods

Interaction with Environment

Cumulative Effects over time

Dynamic Process

ACEs ARE NOT DESTINY

Slide from K. Johnson, MME lecture, APHA 2015
ACEs Are Not Destiny

Relationships can bring Healing
Trauma can be Treated
Epigenetics can be Altered
Telomeres can Grow
Prevention is Possible
Levers for Interventions

- Trauma-informed Practices and Trauma Treatments
  
  *Every family-serving agency should have all staff trained in recognizing and understanding the impact of trauma on children across their developmental stages thru adulthood.*

- Build Resilience and Protective Factors
  
  *The capabilities that underlie resilience can be strengthened at any age*
Why is understanding ACEs and Trauma important?

- When we are uninformed about trauma, we can inadvertently re-traumatize.
- Whether or not a given event evokes a trauma response, particularly with children, greatly depends on the response of caregivers.
- Each service provider a child/adolescent comes into contact with after a trauma event can either hinder, harm or help stimulate healing.

Instead of saying “what is wrong with you?”
Ask “what happened to you?”  
(Bloom, 2002)
Trauma Informed Care Principles

Realizes
the widespread impact of trauma and
understands potential paths for
recovery

Recognizes
the signs and symptoms of trauma
in clients, families, staff, and others

Responds
by fully integrating knowledge about
trauma into policies, procedures, and
practices

Resists
re-traumatization by fully integrating
knowledge about trauma into
policies, procedures, and practices

Source: Substance Abuse Mental Health Services Administration, National Center for
Trauma-Informed Care (http://www.samhsa.gov/nctic/trauma-interventions)

Instead of saying “what is wrong with you?”
Ask “what happened to you?”

(Bloom, 2002)
Needed: Assess Attributes, Elements, Requirements, Measures, Methods and Outcomes of Trauma (or Resilience) Informed Trainings and Initiatives (by population and setting)

**High Risk Trauma-Specific Interventions Recognize:**

1. The survivor's need to be **respected, informed, connected, and hopeful** regarding their own recovery

2. The **interrelation between trauma and symptoms of trauma** such as substance abuse, eating disorders, depression, and anxiety

3. The need to **work in a collaborative way with survivors, family and friends of the survivor, and other human services agencies** in a manner that will empower survivors and consumers

**Known Trauma-Specific Interventions**

- Addiction and Trauma Recovery Integration Model (ATRIUM)
- Essence of Being Real
- Risking Connection®
- Sanctuary Model®
- Seeking Safety
- Trauma, Addiction, Mental Health, and Recovery (TAMAR)
- Trauma Affect Regulation: Guide for Education and Therapy (TARGET)
- Trauma Recovery and Empowerment Model (TREM and M-TREM)

**Example parenting and family socioemotional well being “programs”:**
- Triple P
- Circle of Security
- Family Foundations
- TraumaSmart
- Psychologic First Aid
Medicaid Directors Guidance Letter from Federal CMS Promotes Screening, Assessment, Referrals and Interventions to Address Interpersonal Trauma (July, 2013)

July 11, 2013

Dear State Director,

We deeply appreciate the work you do to help vulnerable children, youth and families. At the federal level, we strive to collaborate and provide resources to support you and your colleagues in this critical work. This guidance letter is intended to encourage the integrated use of trauma-focused screening, functional assessments and evidence-based practices (EBPs) in child-serving settings for the purpose of improving child well-being. The Department of Health and Human Services’ (HHS) Administration for Children and Families (ACF), Centers for Medicare & Medicaid Services (CMS) and Substance Abuse and Mental Health Services Administration (SAMHSA) are engaged in an ongoing partnership to address complex, interpersonal trauma and improve social-emotional health among children known to child welfare systems. We look to state and tribal governments to further this important work.

I. Background

Complex trauma is a common yet serious concern for children, especially those referred to child welfare services. Rates of trauma exposure are approximately 90 percent among children in
Life Course Perspective

Critical Periods

Interaction with Environment

Cumulative Effects over time

Risk-Protective Balance

Dynamic Process

1 Lu and Halfon, 2003
Life Course Trajectory: A Balance of Risk and Protective Factors

Protective Factors
- Child
- Family
- Community
- School

Risk Factors
- Child
- Family
- Community
- School

Outcome
- Positive resilience
- School Readiness

Positive vulnerability
- Child Abuse

+ Family Skills and Support
-
Building Resilience

The foundation of resilience is the combination of

(1) **Supportive relationships**- every child needs a consistent, nurturing adult to care about them, accept them unconditionally, and encourage them to be their best.

(2) **Adaptive skill building**- the ability to learn to face challenges and build a sense of accomplishment and confidence

(3) Experiencing a **feeling of belonging** and making a contribution

*The capabilities that underlie resilience can be strengthened at any age*

Adapted from Harvard Center for the Developing Child. Resilience Key Concepts
Building Resilience

Adaptive Skill Building:

AAP 5R’s of building healthy brains

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Routines</th>
<th>Reward</th>
<th>Rhymes</th>
<th>Reading</th>
</tr>
</thead>
</table>

Unpredictable environment – random, episodic story structure (Payne, 1996)

<table>
<thead>
<tr>
<th>Never learn to plan/see things in sequence/persist on task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot predict/delay gratification</td>
</tr>
<tr>
<td>Cannot identify cause $\rightarrow$ effect $\rightarrow$ consequence</td>
</tr>
<tr>
<td>No impulse control, self regulation</td>
</tr>
<tr>
<td>Tendency to delinquency, risky behaviors</td>
</tr>
</tbody>
</table>
- Unconditional love and acceptance
- Sense of Belonging
- Sense of accomplishment
- Making a difference

- **Self-actualization:**
  - achieving one’s full potential, including creative activities

- Psychological needs:
  - Sense of Belonging
  - Unconditional love and acceptance

- Basic needs:
  - Safety needs:
    - security, safety
  - Physiological needs:
    - food, water, warmth, rest
Ecological Approaches to Mitigating Toxic Stress

**Individual**
- Consistent caring
- Positive Parenting
- Family meals together
- Reading
- Positive language
- Promote safety
- Nutrition
- Physical Activity
- Social connections
- Practice mindfulness, mediation/prayer, yoga
- Help others
Ecological Approaches to Mitigating Toxic Stress

Interpersonal/Relational

- Home visiting
- Trauma-Informed medical care
- Parent Cafés
- Celebrating Families
- Circle of Security
- Parent-Child Centers
- Support groups
Building Resilience - Relational

Home visiting

• Builds Relationships
• Strengths-based, building parent skills
• Nurturing and Attachment
• Positive parenting, early brain development
• Builds self sufficiency in parents – education, goal setting, anger management, planning, resourcing
• TWO GENERATION APPROACH

IMPROVED OUTCOMES

❖ 31% less Prematurity
❖ 33% less LBW
❖ 55% less VLBW
❖ 50% less Pregnancy Induced Hypertension
❖ 50% less ER Usage
❖ 40% less Child Abuse and Neglect
❖ 26% improved/increased Education

“We don’t lift these families out of poverty, we help them build the skills they need to face their adversity.”

Supportive relationships; Adaptive Skill Building; Feeling of belonging
Building Resilience - Relational
Office Based Interventions addressing ACEs

- American Academy of Pediatrics Tools
  - Early Brain and Child Development Initiative (EBCD)
    “aims to change how pediatricians and their communities view the early child development period, and how they care for and invest in young children”
  - Connected Kids – Safe, Strong, Secure – violence prevention
  - Medical Home for Children Exposed to Violence
  - Trauma Guide  [www.aap.org/traumaguide](http://www.aap.org/traumaguide)
    - Trauma toolbox for Primary Care
    - Helping Foster and Adoptive Families Cope with Trauma: A guide for pediatricians
  - Mental Health Toolkit
  - The Resilience Project
  - Center for Healthy, Resilient Children
Pediatric Well-Child Visits and addressing trauma/ACEs

THE DYADIC RELATIONSHIP AS A “VITAL SIGN”

- “Since the last time I saw your child, has anything really scary or upsetting happened to your child or anyone in your family?” (Cohen et al 2008)
- “Has anything bad, sad or scary happen to you or your child recently?”
- “Did anything bad, sad or scary happen to you as a child?”

SCREEN  COUNSEL  REFER

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>CENTRAL CAUSE</th>
<th>SYMPTOM(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>Stimulation of reticular activating system</td>
<td>1. Difficulty falling asleep&lt;br&gt;2. Difficulty staying asleep&lt;br&gt;3. Nightmares</td>
</tr>
<tr>
<td>Eating</td>
<td>Inhibition of satiety center, anxiety</td>
<td>1. Rapid eating&lt;br&gt;2. Lack of satiety&lt;br&gt;3. Food hoarding&lt;br&gt;4. Loss of appetite</td>
</tr>
<tr>
<td>Toileting</td>
<td>Increased sympathetic tone, increased catecholamines</td>
<td>1. Constipation&lt;br&gt;2. Encopresis&lt;br&gt;3. Enuresis&lt;br&gt;4. Regression of toileting skills</td>
</tr>
</tbody>
</table>

AAP, 2013, Helping Foster and Adoptive Families Cope with Trauma
Summary of Trauma Signs By Age

Babies
• Clingy to flat affect with no joy; prolonged, uncontrollable crying; doesn’t explore; no preferred caregiver; failure to thrive

Toddlers
• Biting, kicking, tantrums, unprovoked aggression; disinterested in toys; indiscriminate preferences of caregivers; no appetite.

Preschool
• Repetitive play about violent event; sleep troubles or nightmares; hyper vigilance; skill regression.

School Age
• Grades drop; preoccupied with the trauma; poor self-esteem; bedwetting or thumb sucking may reappear
Office Based Interventions addressing ACEs

Dr. Nadine Burke Harris
Center for Youth Wellness
www.centerforyouthwellness.org

- Screen – Counsel – Refer
  - ACE 0-3 with no symptoms – counsel
  - ACE 0-3 with symptoms, or ACE >4, Refer for treatment
- Patient-Centered Medical Home Model
  - Multidisciplinary team
  - Address social determinants
  - Specific counseling – exercise, mindfulness, other stress reduction
  - Treatment models to address trauma
- Improvements: school performance and attendance, diabetes control, asthma control
### Trauma-Specific Anticipatory Guidance

<table>
<thead>
<tr>
<th>WHAT YOU WILL SEE</th>
<th>WHY IT OCCURS</th>
<th>HOW FAMILY CAN RESPOND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatized children will respond more quickly and more forcefully than other</td>
<td>Areas of the brain responsible for recognizing and responding to threats are</td>
<td>Do not take these behaviors personally.</td>
</tr>
<tr>
<td>children to anything they think is a threat.</td>
<td>turned on. This is called hypertrophied.</td>
<td>Helping the child understand your facial expression or the tone of your voice will help</td>
</tr>
<tr>
<td></td>
<td>Brain does not recognize that this new situation does not contain the same</td>
<td>lessen the chance of the child’s behavior escalating in situations that otherwise do not</td>
</tr>
<tr>
<td></td>
<td>threats.</td>
<td>seem threatening.</td>
</tr>
<tr>
<td>Traumatized children are more likely to misread facial and non-verbal cues and</td>
<td>Responding with aggression will trigger the child’s brain back into threat</td>
<td>Avoid yelling and aggression.</td>
</tr>
<tr>
<td>think there is a threat where none is intended.</td>
<td>mode.</td>
<td>Lower the tone and intensity of your voice.</td>
</tr>
<tr>
<td></td>
<td>Logic centers shut down; fight, flight, or hide response takes over.</td>
<td>Come down to the child’s eye level, gently take hold of the child’s hand, and use simple, direct words. Give directions without using strong emotions.</td>
</tr>
<tr>
<td>Traumatized children need to be redirected or behavior may start to escalate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children don’t always know how to say what they are feeling. It can be hard for</td>
<td>Emotion and language centers are not well connected. Memory centers that hold</td>
<td>Tell the child it is okay to feel the way she feels and to show emotion.</td>
</tr>
<tr>
<td>them to find words. Often they are not told that how they feel is okay.</td>
<td>words are blocked.</td>
<td>Give the child words to label her emotions.</td>
</tr>
</tbody>
</table>

AAP, 2013, Helping Foster and Adoptive Families Cope with Trauma
Child Trauma Treatments

- CPP- Child Parent Psychotherapy
- PCIT – Parent-Child Interaction Therapy
- TF-CBT – Trauma-focused Cognitive Behavioral Therapy
- CBITS – Cognitive Behavioral Intervention for trauma in Schools
- ARC – Attachment, self-Regulation,and Competency

Parenting Interventions:
- Nurturing Parenting
- Circle of Security – Parenting
- Triple P
- Celebrating Families!

Trauma Treatments, Adult

- Brief Psychodynamic Therapy
- Cognitive Processing therapy
- Seeking Safety
- Sanctuary Model
- Trauma-Affect Regulation: Guide for Education and therapy [TARGET]
- Trauma Recovery and Empowerment Model (TREM)


http://www.samhsa.gov/nctic/trauma-interventions
Office Based Interventions addressing ACEs

Dr. Vincent Felitti, Kaiser health plan: Internal Medicine

Questionaire, followed by “I see on the questionaire that…. Can you tell me how that has affected you later in life and how often you think about those experiences now?”

Other Examples of Questions to open up the conversation:

• “How well do you remember your childhood?”
• “Are there things that happened to you when you were a child that shouldn’t have happened to you or anyone?”
• “Would you like your children to grow up as you did?”
• “Sometimes we feel guilty about things that happened to us in the past. Are you feeling any sense of guilt or shame?”

http://www.avahealth.org/aces_best_practices/
ACEs just don’t predict substance abuse disorders. Whether you are talking about obesity, addiction to cigarettes, alcohol or opioids, the cause is the same... It’s the trauma of childhood that causes the neurobiological changes.

Addiction doc says:
*Its not the drugs. It’s the ACEs—Adverse childhood experiences*

Of the 1200 patients with addiction he has treated, 1100 had 3 or more ACEs.

“ACEs just don’t predict substance abuse disorders. Whether you are talking about obesity, addiction to cigarettes, alcohol or opioids, the cause is the same... It’s the trauma of childhood that causes the neurobiological changes.”
Ecological Approaches to Mitigating Toxic Stress

**ORGANIZATIONAL**
- Head Start, Trauma Smart
- Compassionate Schools
- Trauma-informed Family Court
- Early Childhood Court
- Law Enforcement
Washington State determined that 13 out of every 30 students will have toxic stress from 3 or more traumatic experiences.
“It all boils down to this: Kids who are experiencing the toxic stress of severe and chronic trauma just can’t learn... It’s physiologically impossible.”

In trauma-sensitive schools, teachers don’t punish a kid for “bad” behavior—they don’t want to traumatize an already traumatized child. They dig deeper to help a child feel safe. Once a child feels safe, she or he can move out of stress mode, and learn again.
Trauma-Sensitive Schools- Trauma-informed classrooms (Compassionate Schools)

- “Children with toxic stress live much of their lives in **fight, flight, or fright (freeze) mode. They respond to the world as a place of constant danger.** With their brains overloaded with stress hormones and unable to function appropriately, they can’t focus on school work. They fall behind in school or fail to develop healthy relationships with peers or create problems with teachers and principals because they are unable to trust adults. Some kids do all three.

- With despair, guilt, and frustration pecking away at their psyches, they often find solace in food, alcohol, tobacco, methamphetamines, inappropriate sex, high risk sports, and/or work and overachievement. **They don’t regard these coping methods as problems. They see them as solutions to escape from depression, anxiety, anger, fear, and shame.**"
The “Handle With Care” Model:

If a law enforcement officer encounters a child during a call, that child’s information is forwarded to the school before the school bell rings the next day. The school implements individual, class and whole school trauma-sensitive curricula so that traumatized children are “Handled With Care”. If a child needs more intervention, on-site trauma-focused mental healthcare is available at the school.

www.handlewithcarewv.com
TLPI’s groundbreaking publication, *Helping Traumatized Children Learn: A Report and Policy Agenda*, describes the impact of trauma on learning and proposes a policy agenda. Nearly 100,000 copies have been distributed or sold. Download or purchase a copy.

TLPI’s follow-up publication, *Helping Traumatized Children Learn II: Creating and Advocating for Trauma-Sensitive Schools*, offers a guide to a process for creating trauma-sensitive schools and a policy agenda to provide the support schools need to achieve this goal. Download or purchase a copy.

The Trauma and Policy Learning Initiative is a partnership between Massachusetts Advocates for Children and Harvard Law School.
The Goal

The goal of a trauma-responsive, developmentally-informed court is to change the trajectory for children and families who have experienced trauma — "...improving the long-term health and well-being of children and families and disrupting intergenerational cycles of adversity."

(Shawn C. Marsh, Ph.D. and Carly B. Dierkhising, MA, Juvenile and Family Justice Today, Summer 2013)

CHANGING THE TRAJECTORY
UTHSC Center for Health in Justice Involved Youth Making Strides in Effort to Help Community's Youth

Dr. Altha Stewart spoke of how trauma and violence breed more of the same. "What happens to us as a result of our environment changes us," she said. "Children's brains change when they are exposed to violence." She's talking change that affects personality, sometimes for life in the absence of intervention.

"People are learning about this (the effect of trauma on children), and looking for ways to resolve the problem," she said.

The goal of the center is to raise awareness for better mental health services in the community for young people and their families, and to coordinate delivery of those services to ensure the community's youth have a chance to succeed.

The center aims to create a trauma-informed culture that focuses on preventing violence and trauma to children, providing help to children exposed to violence, offering peaceful options for resolving conflict, and creating a climate that supports children and fosters collaboration among service providers.

"We are trying to plan and roll out strategies so the entire community knows they have a role to play," Dr. Stewart has said. "We need to change the culture of understanding and begin to encourage people to see alternatives to violence. Starting with children and helping them learn to resolve conflict without violence will be the first step."
Ecological Approaches to Mitigating Toxic Stress

COMMUNITY

- Community Resilience Cookbook
- Essentials for Childhood (CDC)
- Strengthening Families (CSSP)
- Futures without Violence
Community Approaches to Mitigating Toxic Stress

National Center for the Science of the Developing Child: Resilience game

Health Federation of Philadelphia National Summit on ACEs 2013

www.floridatrauma.org

www.cdc.gov

Futures without Violence
Ecological Approaches to Mitigating Toxic Stress

**POLICY**

- Building Community Resilience Model (GWU)
- HOPE: Health Outreach from Positive Experiences Framework (CSSP)
- Self-Healing Communities Model (Washington State Family Policy Council)
- Prioritizing Possibilities for Child and Family Health (Bethell et al)
“Nothing About Us Without Us”

Too often conversations about ACEs and life course occur in the absence of the people most affected by the research and policies: the families themselves. For solutions to be viable, families must be included as key stakeholders and partners in the development of programs and policies to address ACEs and promote resilience..... For approaches to be viable, they must be relevant to a given family, they must be perceived as doable, and the family must have the resources to put the recommendations into practice.

ACEs Resource Packet. Childhealthdata.org/docs/default-source/cahmi/aces-resource-packet
Childhood Adversity

Poor Adult Outcomes

Toxic Stress
- Epigenetic Modifications
- Disruptions in Brain Architecture
- Telomere shortening

Behavioral Allostasis
- Maladaptive behaviors
- Non-communicable Diseases
- Shortened life span

Improve caregiver/community capacity to prevent or minimize toxic stress (e.g., efforts to promote the safe, stable and nurturing relationships that turn off the physiologic stress response)

Improve caregiver/community capacity to promote healthy, adaptive coping skills (e.g., efforts to encourage rudimentary but foundational SE, language, and cognitive skills)
By 2030, 90% of the morbidity in high income countries will be due to **Non-Communicable Diseases**

Most NCDs are attributed to **unhealthy behaviors** (overeating, smoking, alcohol, promiscuity, and abuse of psychoactive drugs)

Most of these unhealthy behaviors are driven by **Adverse Childhood Experiences**

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Slide adapted from Dr. Andrew Garner
The Public Health Approach to Addressing ACEs and Trauma

- **Primary Prevention (Universal)**
  - Raise awareness; reduce stigma; **trauma-aware**
  - Build protective factors for all – every family faces adversity

- **Secondary Prevention (Targeting at risk)**
  - Routine screening for early detection, anticipatory guidance, early intervention: **Trauma-Informed systems**
  - Reducing the dose of adversity; avoid re-traumatizing
  - Build Adaptive skills: Parenting programs, home visiting programs

- **Tertiary Prevention (Treating those affected)**
  - **Trauma-Specific Treatment**
  - Mental health, social work, two generation interventions
  - Evidence-based treatments (TF-CBT, CPP, PCIT, etc.)
## What Public Health Professionals can do about ACEs

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<thead>
<tr>
<th>Essential Public Health Function</th>
<th>Examples to address ACEs and Resilience</th>
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<tr>
<td>Inform and Educate</td>
<td>Home visiting, Reach Out and Read, Parent Cafés, Strengthening Families; two-generation approaches</td>
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<td>Mobilize Community Partners</td>
<td>Head Start/Trauma Smart; Compassionate Schools; “Handle with Care”; Trauma-Informed Family/ Early Childhood Court; Trauma-informed medical providers</td>
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<td>Provide Leadership for policy</td>
<td>Trauma-informed systems; linkages of family support programs across agencies; address social determinants like housing, poverty, transportation; promote multi-agency approaches to school readiness/social-emotional learning</td>
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<td>Link MCH Populations to services</td>
<td>Co-location of mental health services in schools; medical home approaches; perinatal depression screening and treatment; care coordination/ navigation for trauma interventions; Nurturing Parenting, Circle of Security</td>
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<td>Assure a competent and trauma-informed workforce.</td>
<td>Trainings for agencies: Trauma-Informed Care (SAMHSA); National Child Traumatic Stress Network; Connect the Dots/Social-emotional learning approaches</td>
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“To reduce inequities in [child] health, we need to reduce the gap between what we know and what we do. We must challenge our practices and traditions, develop new solutions and have strength and courage to change how we practice.”

Take Home Messages

- Exposure to violence/trauma is the single most prevalent risk factor for children today, affecting long-term health outcomes.
- Adversity is necessary for life and learning; toxic stress disrupts life and learning.
- **Relationships are necessary for Resilience.** The capabilities for Resilience can be built at any age.
- The lifelong toll of unaddressed Adverse Childhood Experiences is a [*perhaps THE*] major cause of death and disability in adults.
- **ACEs are NOT destiny;** healing trauma and building resilience can change the life course trajectory.
- Knowing what we know, we can do better in preventing, mitigating, and treating toxic stress.