

SINGLE GREATEST UNRECOGNIZED PUBLIC HEALTH CRISIS IN AMERICA

PAT BRUNO, MS, M.D., FAAP, CHILD ABUSE PEDIATRICIAN
GEISINGER MEDICAL CENTER
JANET WEIS CHILDREN'S HOSPITAL
DANVILLE, PENNSYLVANIA

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Disclosures

I do NOT intend to discuss any unapproved or investigational uses for commercial products or devices

I have nothing to disclose

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Objectives

- To make everyone aware of the single most unrecognized public health crisis in America
- To distinguish healthy stress from toxic stress
- To learn about the ACES (Adverse Childhood Experiences) and their ramifications
- To learn about the value of screening for ACES
- To learn about the prevention of ACES
- TO START A MOVEMENT

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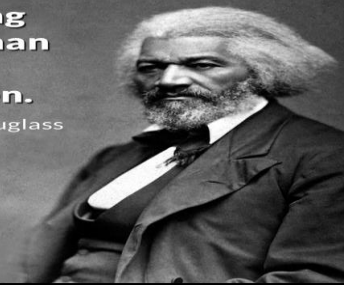
National Survey of Children's Health 2016

- 69% of kids with behavioral problems have ACEs
- 45.7% of kids at risk for developmental delays have ACEs
- 67% of children ages 6-17 who bully, pick on, or exclude other children – or are themselves bullied, picked on, or excluded – have ACEs
- Children ages 3-5 who have had 2 or more ACEs are over 4 times more likely to have 3 out of 6 social and emotional challenges – e.g. have trouble calming themselves down, be easily distracted, and have a hard time making and keeping friends
- More than 3 out of 4 children ages 3-5 who have been expelled from preschool also had ACEs

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It is easier to build strong children than to repair broken men.
- Frederick Douglass



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“Turning Gold Into Lead”
Vincent Felitti, MD (2001)



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Case Example: Trevor and Misty

- MISTY: 43 years old, 5'8" and 98lbs, incoherent, angry and defiant, appeared to be illiterate
- Incarcerated for possession of meth and being under the influence and charged with child endangerment and neglect
- CW investigation revealed history of domestic violence, three older children (unable to locate); Misty's father and step-mother and Trevor's Paternal Grandmother unwilling to help, support or care for Trevor
- CW recommended inpatient drug treatment for Misty and out of home care for Trevor

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Case Example: Trevor and Misty

- TREVOR: age 3.5 years, physically on track but appears to have developmental delays (not speaking, not potty trained), fearful and withdrawn, prefers to play alone
- Three prior child welfare reports of suspected child neglect and parental substance abuse (Unfounded; services offered)
- Removed due to mother being under influence of meth and possession of meth and paraphernalia - child endangerment and neglect
- Trevor witnessed Mom being handcuffed, screaming, and placed into police car
 - Trevor was taken to sheriff's station, where he remained for 6 hours before transported to emergency shelter
 - Trevor placed in foster home 3 weeks later - no contact with Mom for almost 6 weeks

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How do we feel about Misty

- o Sad
- o Want to help her
- o Where are her parents or siblings? Where's her support?
- o Confused
- o How come they didn't take the child away before now?
- o Disgusted
- o Mad
- o *%!#*%!#!!!!
- o Could care less about what happens to her - what about the kid?

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History

Mid 90s CDC and Kaiser-Permanente discovery of an exposure that increases the risk of 7/10 (heart disease, cancer, chronic lower respiratory disease, stroke, diabetes, suicide) of the leading causes of death in America

In high doses this exposure affects brain development, immune system, hormonal system and how DNA is read and transcribed

In high doses there is 3 times the incidence of heart disease and lung cancer

In high doses it decreases life expectancy by 20 years

Yet, most doctors today are not trained in the routine screening and treatment of this exposure

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Exposure is Childhood Trauma

Threats that are so severe and pervasive that they change our physiology


Physical, sexual and emotional abuse; physical and emotional neglect; history of substance abuse in the family; history of incarceration within a family; history of domestic violence within a family; history of mental illness within a family; history of divorce or separation within a family

How does exposure to adversity affect the developing brains and bodies of children?

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Defining Adversity or Stress 


- How do you define/**measure** adversity?
- **Huge individual variability**
 - **Perception** of adversity or stress (subjective)
 - **Reaction** to adversity or stress (objective)
- **National Scientific Council on the Developing Child (Dr. Jack Shonkoff and colleagues)**
 - **Positive Stress**
 - **Tolerable Stress**
 - **Toxic Stress**

Based on the **REACTION** (objective physiologic responses)

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Defining Adversity or Stress



- **Positive Stress**
 - Brief, infrequent, mild to moderate intensity
 - Most normative childhood stress
 - Inability of the 15 month old to express their desires
 - The 2 year old who stumbles while running
 - Beginning school or daycare
 - The big project in middle school
 - **Social-emotional buffers** allow a return to **baseline**
(responding to non-verbal clues, consolation, reassurance, assistance in planning)
 - **Builds motivation and resiliency**
 - Positive Stress is **NOT** the **ABSENCE** of stress

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Defining Adversity or Stress



- **Toxic Stress**
 - Long lasting, frequent, or strong intensity
 - More extreme precipitants of childhood stress (**ACEs**)
 - Physical, sexual, emotional abuse
 - Physical, emotional neglect
 - Household dysfunction
 - **Insufficient social-emotional buffering**
(Deficient levels of emotion coaching, re-processing, reassurance and support)
 - Potentially permanent changes and long-term effects
 - **Epigenetics** (there are life long / intergenerational changes in how the genetic program is turned **ON** or **OFF**)
 - **Brain architecture** (the mediators of stress impact upon the mechanisms of brain development / **connectivity**)

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Biology of Traumatic Experiences

Activation of the neuro-endocrine-immune (NEI) network

NEI network is comprised of the autonomic nervous system (sympathetic and parasympathetic), the hypothalamic-pituitary-adrenal (HPA) axis, and the immune system

Starts when neurons in the amygdala – the part of the brain responsible for emotions and fear – are activated

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Biology of Traumatic Experiences

- Hormonal changes
 - Altered stress reactions – HPA axis, cortisol metabolism
 - Early puberty in sexually abused females
- Changes in brain development and structure
- Telomere shortening
- Epigenetic changes – altered methylation
- Increased inflammatory mediators such as interleukins
- Long term changes in cortisol, adrenaline and other hormones

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Biology of Traumatic Experiences

Affects Nucleus Accumbens – pleasure and reward center implicated in substance dependence

Inhibits the prefrontal cortex which is necessary for impulse control and executive function

Affects the Amygdala which is the fear response center

From adaptive or life saving to maladaptive or health damaging

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ACE STUDY

Researchers felt that traumatic life experiences in childhood and adolescence were far more common than generally recognized

These traumatic experiences were interrelated and associated decades later with health, mental health and behavioral problems

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ACE STUDY

Researchers came to recognize that the earliest years of infancy and childhood are not lost, but like a child's footprints in wet cement, are often life long

8 categories of adverse experiences were initially studied

17000 middle-class Americans were enrolled (80% white, 10% black); 70% College Education

50% men/50% women (average age 57)

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Adverse Childhood Experiences Score

Number of categories of adverse childhood experiences are summed ...

ACE score	Prevalence
0	33%
1	25%
2	15%
3	10%
4	6%
5 or more*	11%



- Two out of three experienced at least one *category* of ACE.
- If any one ACE is present, there is an 87% chance at *least* one other category of ACE is present, and 50% chance of 3 or >.
- Women are 50% more likely than men to have a Score >5.

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Prevalence of Adverse Childhood Experiences

Abuse, by Category	
Psychological (by parents)	11%
Physical (by parents)	28%
Sexual (anyone)	22%
Neglect, by Category	
Emotional	15%
Physical	10%
Household Dysfunction, by Category	
Alcoholism or drug use in home	27%
Loss of biological parent < age 18	23%
Depression or mental illness in home	17%
Mother treated violently	13%
Inprisoned household member	5%

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ACE STUDY

- Compared to persons with an ACE score of 0, those with a score of 4 or more were:
 - 2X as likely to smoke cigarettes
 - 12X more likely to have attempted suicide
 - 7X more likely to experience alcoholism
 - 10X more likely to have injected street drugs
 - 50X more likely to have learning/behavior problems

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ACE STUDY

- An ACE Score of 6 or more raised the risk of injecting street drugs to 4,600% compared to an ACE Score of 0
- 260% more likely to have COPD
- 250% higher risk for contracting STD
- 240% more likely to contract hepatitis
- 460% more likely to be suffering from depression

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ACE STUDY

- 1220% increase in attempted suicides
- ACE Score of 6 or more shortened life expectancy by 20 years
- As the ACE Score increased, the number of concurrent or co-morbid conditions increased
- Dose Response relationship between ACES and adverse health outcomes

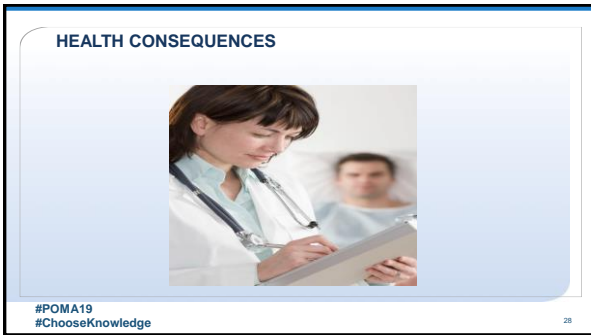
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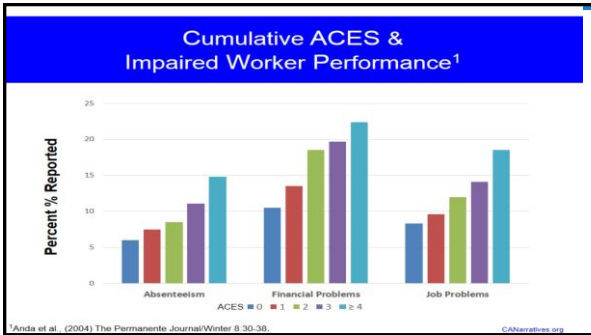
Misty's Story: What CW Did Not Know

- Military family; 23 moves in 16 years
- Childhood traumas included: intergenerational family alcoholism and mental illness; family violence; emotional, verbal, physical, and sexual abuse
- Isolation - no family connections or positive role models
- Adolescence - promiscuity, alcohol and substance use and deviant behavior
- 15-17 years: rape, miscarriage, forced termination of second pregnancy
- 18-30 years: 3 children; dysfunctional marriage; emotional, verbal, physical, and sexual abuse; family violence and animal abuse
- Age 27: Misty's mom murdered by her domestic partner
- Divorced at 31; alcohol and substance abuse; homelessness and eating out of dumpsters; rapes and prostitution; panhandling and shoplifting; drug manufacturing, sales and distribution; mail and bank fraud; and more trauma

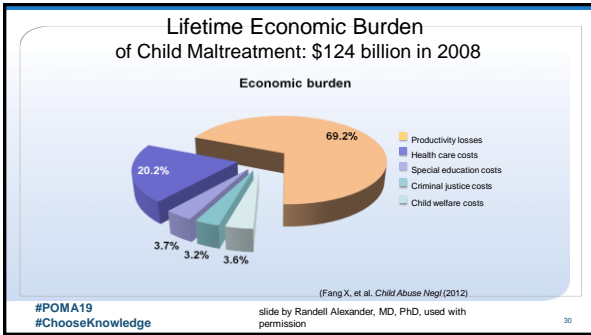
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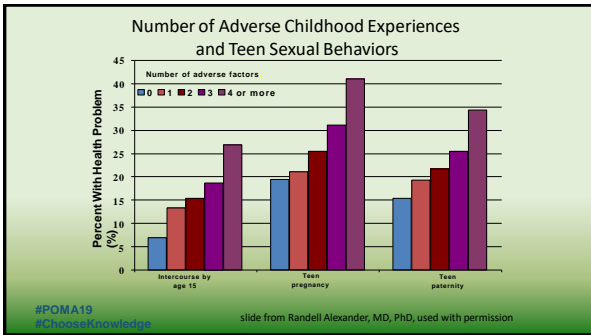
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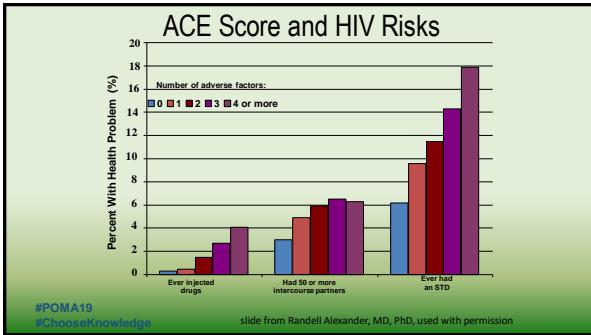
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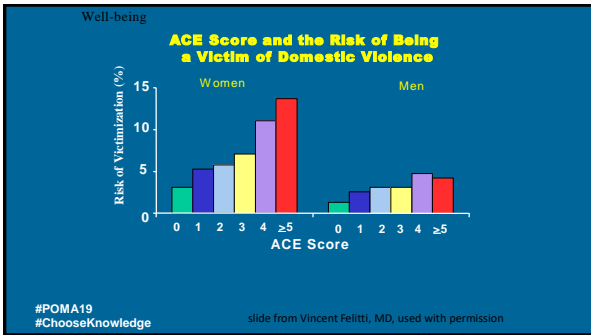
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Adverse Childhood Experiences in Women and the Risk of:

ACE Score	Intimate Partner Violence*	Being Raped*
0	1.0	1.0
1	1.9	2.0
2	2.1	2.8
3	2.7	4.2
4	4.5	5.3
>5	5.1	8.9

*Adjusted Odds Ratio

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Addiction

Traditional concept is that addiction is due to the characteristics intrinsic in the molecular structure of the substance

However, addiction also correlates with characteristics that are intrinsic to adverse childhood experiences

For example: as the ACE score increases, the percentage of those smoking increases in a stepwise progression..... at an ACE score of 0 approximately 6% smoked; ACE score of 4, 13%; ACE score of 6 or more, 17%

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Addiction

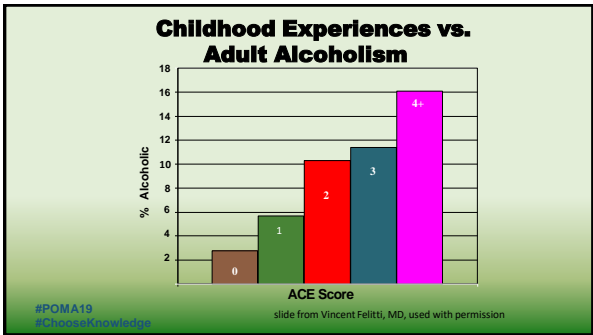
There is no question that nicotine has psychoactive properties – potent antianxiety and antidepressant qualities; appetite suppressant; anger suppressant

Perhaps nicotine is being used as a coping mechanism

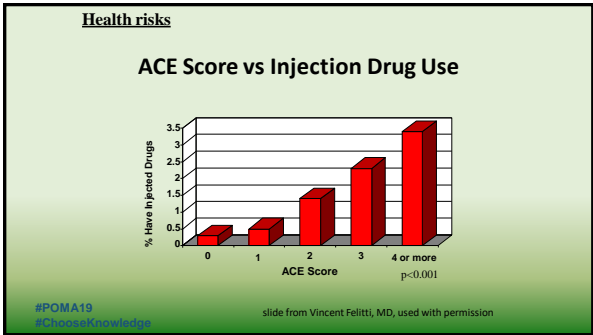
Consider ACEs and adult alcoholism

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Addiction

ACE score of 6 or more increased the likelihood of IV drug use by 4600% compared to an ACE score of 0

The estimate of the Population Attributable Risk (that portion of a condition attributable to specific risk factors) of ACEs for selected outcomes in women.....Alcoholism (65%); Drug Abuse (50%); IV Drug Use (78%)

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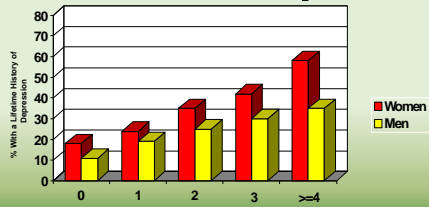
Depression

Most say depression is a disease
Many say depression is of genetic origin
Some say depression is due to a chemical imbalance
What if depression was not a disease but a reaction to adverse childhood experiences

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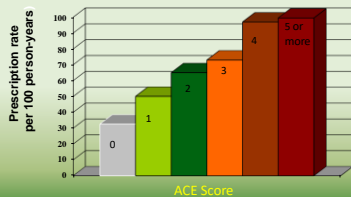
Childhood Experiences Underlie Chronic Depression



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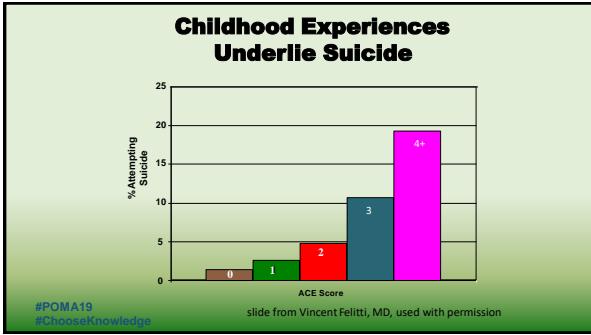
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ACE Score and Rates of Antidepressant Prescriptions approximately 50 years later



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Biomedical Disease

ACE score of 6 or more increased the occurrence of COPD by 260% compared to an ACE score of 0. Some of that is due to smoking. However, not every smoker gets COPD; not everyone with COPD was a smoker. Why?

Coronary Artery Disease (CAD). Certain risk factors increase the chances of having CAD such as diabetes, smoking, family history, increased cholesterol. 15% of the time none of those risk factors for CAD are present but patient has CAD. Why?

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Biomedical Disease

Without conventional risk factors being present emotional abuse increased the risk of CAD 1.7X; physical abuse 1.5X; sexual abuse 1.4X; domestic violence 1.4X; mental illness 1.4X; substance abuse 1.3X; emotional neglect 1.3X.

Core explanation is that major chronic stress and dysregulation of the HPA axis causes release of proinflammatory cytokines. This, in turn, is a major mechanism for certain diseases that were seen previously as hardcore biomedical entities

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Biomedical Disease

Primary pulmonary fibrosis e.g. was thought to be a structural disease. It is clear now that some cases are related to chronic stress with release of proinflammatory cytokines causing closure of microvasculature and scarification of tissues they supplied

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ACE STUDY FINDINGS


- As ACE score goes up, so does risk for:
 - Smoking
 - Organic disease
 - Adult alcoholism
 - Depression and suicide attempts
 - Having 50+ lifetime sexual partners
 - STD's and Rape (from 5% to 33%)
 - Hallucinations
 - Domestic Violence
 - Addictions
 - Dying early
 - Job problems and lost time from work

Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, Koss MP, & Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences Study. American Journal of Preventive Medicine. 1998;14:245-258.

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ACE STUDY



- Researchers found startling information in that child abuse in a very middle-class population is.....
Remarkably common
Largely unrecognized and
50 years later will be impacting the person's physical and behavioral health

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ACE Study

- ACEs are strong predictors of later social functioning, well being, health risks, disease, medical costs and death.
- ACEs are thus the basis for much of adult medicine and on many major public health and social problems.
- ACEs are interrelated, not solitary. This combination makes ACEs the leading determinant of the health, social and economic well being of our nation.

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ACE STUDY

- 2 major mechanisms to go from ACE to disease later in life:
Coping mechanisms such as smoking, promiscuity, drinking, drugs, overeating and their consequences

The effects of chronic, major unrelieved stress over time

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Linking Childhood Experiences and Adult Outcomes

Childhood Experience	Adult Outcome
■ Parent Engagement, Quality Childcare, Play	■ Healthy Lifestyles, Academic Success, Economic Stability
■ ACEs, Poverty, Violence	■ Poor Health, Academic Failure, Economic Hardship

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What does untreated trauma look like?

MISTY:

ADD Symptoms	Substance, Alcohol & Tobacco Abuse
Depression	Poor Coping Skills
Anxiety	Memory Lapses
Migraines	Nightmares & Flashbacks
Heart Palpitations	Poor Social Skills
Acid Reflux	Domestic Violence
Ulcers	Sexual Dysfunction
Gall Stones	Re-Victimization
Asthma	Poor Self Esteem
Arthritis	
Chronic Back Pain	

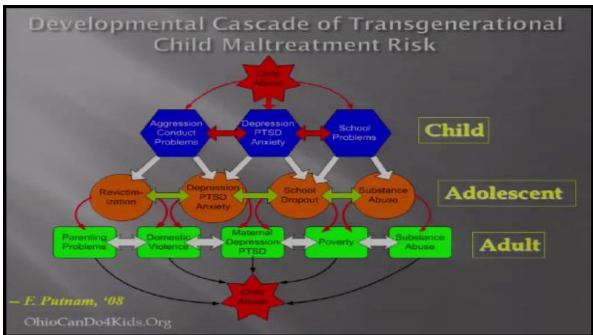
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What does untreated trauma look like?

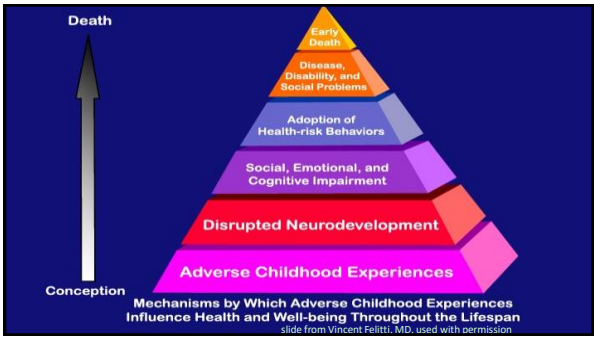
TREVOR:

ADHD Symptoms	Poor Self Esteem
Anxiety	Development Delays
Depression	Educational Delays
Attachment Issues	Emotional & Social Delays
Oppositional Defiant	Trust Issues
Obsessive Compulsive	Re-Victimization
Motor Ticks	Sexual Acting Out
Asthma	
Poor Appetite	

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"Many things we need can wait. The child cannot. Now is the time his bones are being formed, his blood is being made, his mind is being developed. To him we cannot say tomorrow, his name is today."
- Gabriela Mistral, Chilean Poet, Nobel Laureate

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All of the Science tells us that we can mitigate the impact of ACEs through early INTERVENTION

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RESILIENCY!!!!!!!!!!!!!!!

Resilience is the ability to handle adversity in a healthy manner – in the absence of SSNRs, toxic stress can lead to maladaptive responses (chronic stress, obesity, smoking, drugs, promiscuity, alcoholism)

Fortunately, brains and lives are somewhat plastic. The appropriate integration of resilience factors born out of ACE concepts — such as asking for help, developing trusting relationships, forming a positive attitude, listening to feelings — can help people improve their lives.

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What helped the family to begin change?

- Professional Team:
Misty, Trevor, Social Worker, Trevor’s Therapist, SA Counselor, Probation Officer
- Services:
Child Protective Services, Residential SA Treatment, Aftercare Treatment, Narcotics Anonymous Probation, Parenting, In-Home Family Support Partner

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INTERVENTIONS

PREVENT – Educate the public, policymakers and pediatricians on the biology of ACEs and toxic stress and bring attention to ACEs as a public health crisis

SCREEN – Ensure every child is screened for ACEs as part of the average well child exam so that all children can have the opportunity to reach their full potential

HEAL – Support children with toxic stress response with effective and most promising interventions to prevent long-term health outcomes

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Opportunities to Change the Outcome of Traumatized Children

1. Nurse-Family Partnership
2. Screening for ACEs
3. Investing in Children
4. Individual/Community Efforts
5. Counseling, Counseling, Counseling

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Selected RCT Outcomes



Pregnancy Outcomes <ul style="list-style-type: none">• 77% ↓ in pre-term births among smokers• 35% fewer hypertensive disorders• Fewer subsequent Medicaid births• Fewer closely-spaced births	Child Development <ul style="list-style-type: none">• 48% ↓ in child abuse & neglect• 56% ↓ in ER visits for accidents and poisonings• 39% fewer injuries among children• 50% ↓ in language delays• 47% ↓ in behavioral/intellectual problems	Latest Findings <ul style="list-style-type: none">• Reduction in maternal mortality from all causes• Reduction in preventable child mortality from birth to age 20
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Screening for ACEs

Multisite study of children exposed to or at risk for maltreatment found that by age 6 children had an average ACE score of 1.94; between 6-12 they accumulated an additional 1.53 ACEs and between 12-16 another 1.15

Screen before 1 year of age, school problems, mental health concerns, annual PEs, unusual somatic complaints

If ACE score is 1-3 with symptomatology (e.g. sleep disturbance, FTT, poor impulse control, anxiety, depression, high risk behavior, school failure) or 4/greater, then MDT

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Invest in our Children

Programs addressing early childhood education and parenting support which have been shown to improve a child’s long-term health, well-being and productivity and yield a return on investment as high as 14% per year

Build on investments in programs that help lift families out of poverty, like the Earned Income Tax Credit and Child Tax Credit. These programs work! Without these critical supports, it is estimated that nearly one in three children would live in poverty instead of one in five.

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www.pomainsights.com

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Invest in our Children

Support increases in the minimum wage that better approximate a “living wage” for families

Protect and expand federal anti-poverty and safety net programs, including those that provide health care, early education, quality child care, affordable housing and home visiting, as well as critical nutrition assistance like the Special Supplemental Nutrition Program for Women, Infants, and Children, the Supplemental Nutrition Assistance Program, and school and summer meals.

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Individual/Community Efforts

Be a nurturing parent because children need to know that they are special, loved and capable of following their dreams

Be helpful to a friend, neighbor or relative because parenting is not easy

Be helpful to yourself by taking some time outs when life is overwhelming and out of control

Be involved in your community to develop services to meet the needs of children and families

Be an advocate for school programs that teach children, parents and teachers prevention strategies to keep children safe

Be willing to report suspected abuse or neglect

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What did Misty do to address the traumas?

**THERAPY!
THERAPY!
THERAPY!
THERAPY!**

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We Need A Movement

PRIMARY PREVENTION: Raising national awareness

SECONDARY PREVENTION: Early detection and intervention requires routine screening

TERTIARY PREVENTION: Current best practices including home visiting, mental health, social work, two generation interventions

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Final Insights from the ACE Study

ACEs are common but typically unrecognized
Their link to major problems later in life is strong, proportionate and logical
They are the nation’s most basic public health problem
What presents as the “Problem” may be in fact an attempted solution
Treating the solution may threaten people and cause flight from treatment
Change will be resisted by us in spite of enormous benefits

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Raising happy, healthy kids is good for everyone – for parents, for neighborhoods, for communities – support them now and you will see a difference later – Prevention is Possible

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Resources

- www.avahealth.org
- www.acestudy.org
- acesconnection.com
- <http://www.cdc.gov/ace/>
- [Practical Approaches in the Primary Care Setting with Patients Exposed to Multiple Types of Violence](#)
- [AAN Position Statement on Abuse and Violence](#)
- [AAP Policy Statement on Toxic Stress](#)
- [AAP Technical Report –Toxic Stress](#)
- [ACOG Committee Opinion – Intimate Partner Violence](#)
- <http://developingchild.harvard.edu>
- www.nctsn.org
- [ACEs in Minnesota 2011 report PDF](#)
- [ACEs in Wisconsin 2010 report PDF](#)
- [Community Resilience Cookbook](#)
- [Futures Without Violence ACEs online training](#)
- www.CANarratives.org
- [Nadine Burke Harris Ted Talk](#)

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*Let the beauty we love
be what we do.
There are hundreds of ways
to kneel and kiss the ground
~Rumi~*

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