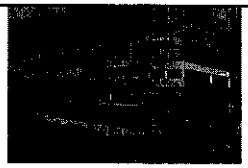


OUTCOMES OF CHILD MALTREATMENT

Rachel Clingenpeel, MD

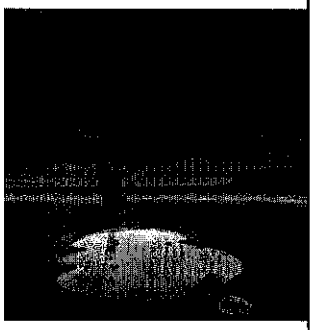
Assistant Professor of Pediatrics, University of Arkanses for Medical Sciences
Center for Children at Risk, Arkansas Children's Hospital
rclingenpeel@uams.edu

Arkansas Children's

What We Will Cover

- What are the aftereffects of child maltreatment?
- What are the mechanisms by which these effects occur?
- How might we be able to ameliorate these effects?

"The child is father of the man"
William Wordsworth



...so what happens if there are Adverse Childhood Experiences (ACEs)?

Origin Story

- Preventive Medicine MD, Dr. Vince Felitti, treating adults in weight loss program
- Found that a some of the people losing weight successfully in the program were more likely to drop out
- Found that obesity was an unconscious solution to other problems, ie shield against unwanted sexual attention

The ACE Study

- Over 17,000 adults voluntarily participated
- Recruited at health maintenance visits
- Completed a detailed questionnaire that asked for detailed information on possible childhood traumas as well as their current behaviors and health status

www.acestudy.org
www.cdc.gov/ace

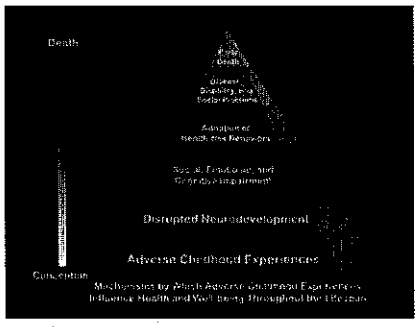
What are the ACEs?

- Physical abuse (recurrent)
- Sexual abuse (involving contact)
- Emotional abuse (recurrent)
- Emotional neglect
- Physical neglect
- Mother treated violently
- Household member incarcerated
- Household substance abuse
- Household mental illness (inciuding suicide attempts)
- Parental separation or divorce

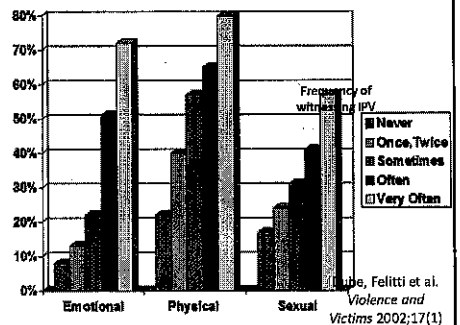
How Common Are ACEs?

- 63% of study participants had at least one ACE
  - *11% of the subjects experienced emotional abuse*
  - *28% physically abused*
  - *21% sexually abused*
  - *15% emotionally neglected*
  - *10% physically neglected*
  - *13% witnessed violence against mothers*
  - *27% household substance abuse*
  - *19% household mental illness*
  - *23% parental separation or divorce*
  - *5% household member incarcerated*

Adverse Childhood Experiences

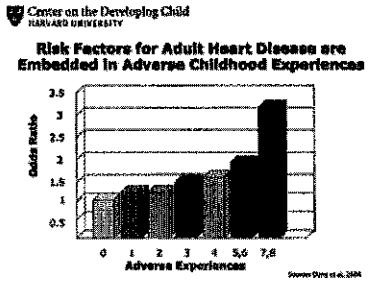


Prevalence of child abuse by frequency of having witnessed DV as a child



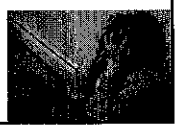
Tajima, Felitti et al. *Violence and Victims* 2002;17(1)

ACE Effects are Cumulative



ACEs and Suicide

- Adolescents with history of child maltreatment are 3 X more likely to have depression and 8 X risk for attempting suicide multiple times
  - Brown, *J Am Acad Child Ado Psych* 1999: 38(12)
- 7 or more ACE's = *31 times* more likely to attempt suicide



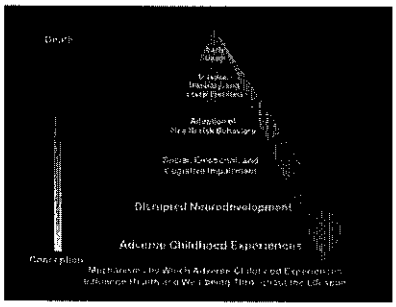
ACEs increase risk of...

- Alcoholism and alcohol abuse
- Chronic obstructive pulmonary disease (COPD)
- Depression
- Fetal death
- Health-related low quality of life
- Illicit drug use
- Ischemic heart disease
- Liver disease
- Intimate partner violence
- Multiple sexual partners
- Sexually transmitted diseases (STDs)
- Smoking
- Suicide attempts
- Unintended pregnancies
- Early initiation of smoking
- Early initiation of sexual activity
- Adolescent pregnancy

....in ADULTS!!!

... BUT HOW????

There are still gaps in the pyramid...



TOXIC STRESS

Toxic Stress: What is it?

- 'A child experiences strong, frequent, and/or prolonged adversity...without adequate adult support' (Center on the Developing Child, Harvard)
- Only a subset of possible stress responses

Emotional Stress Produces Physical Results

- Release of epinephrine ('adrenaline') and cortisol
  - Heart rate, breathing accelerate
  - Blood pressure rises
  - More blood to muscles, less to gut
  - Release of sugar from liver for fuel
  - Pupils dilate
  - Abstract thinking declines!

Stress Effects on the Body

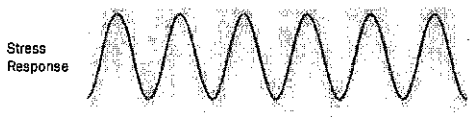
Positive
- Brief increases in heart rate, mild elevations in stress hormone levels

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

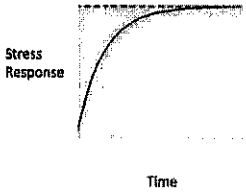
Toxic
- Prolonged activation of stress response systems in the absence of protective relationships

From Toxic Stress: The Facts, Center on the Developing Child, Harvard University

Positive or Tolerable Stress



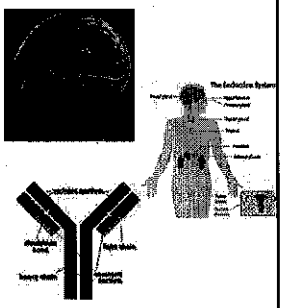
Toxic Stress



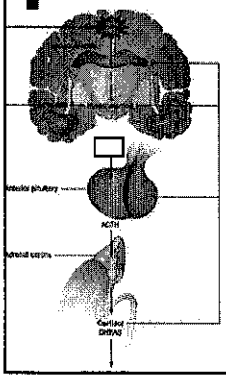
What Changes Can This Cause?

- Brain changes
- Hormonal changes
- Immunologic changes

...which are all connected!



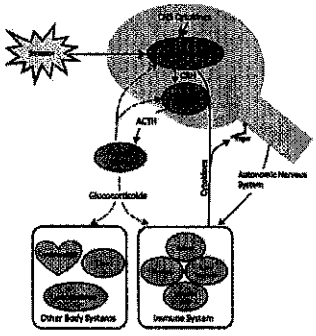
The Hypothalamic-Pituitary-Adrenal Axis (HPA)



- Mediates stress response, modulates many normal body processes
- Found in all vertebrate animals

- Some analogous systems in invertebrates and even single-celled organisms

Relationship between the HPA axis, Immune systems, and other body systems.



Johnson S B et al. Pediatrics 2013;131:319-327 ©2013 by American Academy of Pediatrics

PEDIATRICS

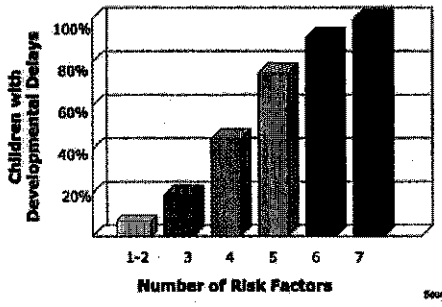
Toxic Stress: Brain

- Toxic stress in early childhood can negatively affect brain development
  - Brain regions involved in fear, anxiety, impulsiveness overdeveloped
  - Brain regions for planning, reasoning, behavioral control underdeveloped
  - Damage to hippocampus – involved in learning and memory

National Scientific Council on the Developing Child. (2005/2014). *Excessive Stress Disrupts the Architecture of the Developing Brain: Working Paper 3*. Updated Edition. Retrieved from www.developingchild.harvard.edu

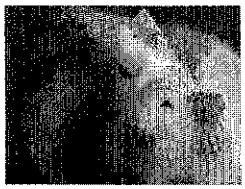
Center on the Developing Child
HARVARD UNIVERSITY

Significant Adversity Impairs Development in the First Three Years



Source: Barth et al. (2008)

How To Study This More Closely?



Early Caregiving: Rodent Lessons

- Some rat mothers are 'high nurturing' – lots of licking, grooming, and other contact
  - *Adult offspring of these mothers are 'relaxed' with a well-regulated HPA response to stress*
- Some rat mothers are 'low nurturing' – less licking and grooming, minimal contact
  - *Adult offspring are 'anxious', with exaggerated HPA response to stress*

Early Caregiving: Rodent Lessons

- ...BUT, if the infants of low-nurturing mothers are reared by high-nurturing mothers, they develop into more 'relaxed' adults
- →Early caregiving not only mitigates the stress response, but programs it!
  - *Similar HPA programming in children from institutional care*

Windows of Opportunity

- Brain plasticity is greatest in infancy and toddlerhood
- Experiences during this time have a disproportionately large effect on later development
- →Infants are particularly vulnerable!
- →Early interventions are best!

What About Genetics?

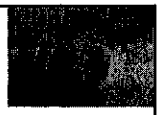
- There are 'vulnerability genes' – which underlie some of the variation in how different people respond to similar stressors
  - Infants with vulnerable genes can do well with effective nurturance
- Epigenetics – could take its own hour!
  - genome= hardware epigenome=software
  - Epigenome built and modified by experiences
  - There may be some epigenetic heritability

Lessons from Primates

Rhesus monkeys: important research subjects

- Share 95-96% of genes with humans
- Adaptable species – found around the world in a wide variety of environments
- Social animals: live in troops, complex communication, dominance hierarchies
- Young infants in constant contact with their mothers
- Later infants start exploring while using mom as a 'secure base'

Monkeys Have Different Temperaments



- 15-20% are 'anxious or fearful'
  - Leave mothers later, spend less time away
  - Increased heart rate and HPA response with novelty
- Anxious monkeys demonstrate maladaptive adult behaviors
  - Increased drinking of alcohol
  - Neglect and abuse their offspring in unstable environments
  - Can parent well in stable environments

Monkeys Have Different Temperaments

- 5-10% of adult macaques are 'aggressive'
  - Risk-taking behaviors, aggression toward other macaques when it is dangerous
- Aggressive macaques have maladaptive adult behaviors
  - Difficulty with social relationships
  - Increased alcohol consumption
  - Poor parenting
  - Decreased serotonin activity, including in infancy (before became aggressive)

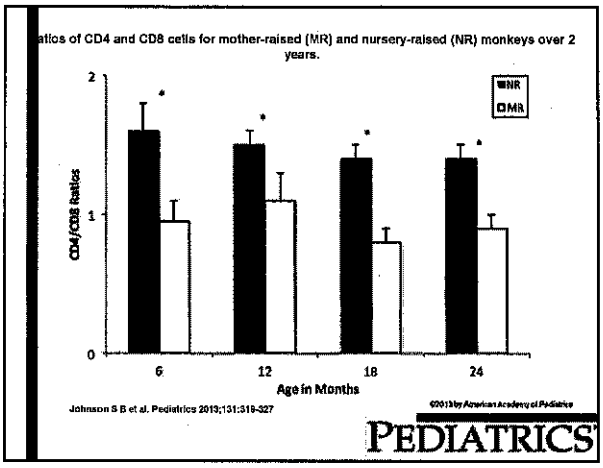
Peer-Reared Monkeys as a Model

- Alteration in normal early socialization
- No contact with adults for first 6 months
- First month: care by humans in a nursery
- After first month: housed with 3-5 other infants of similar age

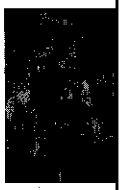
→Lack adult 'model'

Peer-Reared Monkeys as a Model

- Differences are evident early in life
  - Decreased exploration
  - Less frequent and complex play
  - Increased HPA response to stress
- Differences persist into adulthood
  - Increased aggression, impulsivity
  - Increased alcohol consumption
  - Lower social rank
  - Increased HPA response to stress



Another Model: Variable Foraging Demand (VFD)



- Varied amount of work mother needed to perform to obtain daily rations
  - No nutritional deprivation or physical separation
  - Mother is rendered 'socioemotionally unavailable'
- Behavioral and physical changes in infants persisting to adulthood
  - Anxious temperament, decreased dominance rank
  - Neurotransmitter changes

OK, Back to Humans...

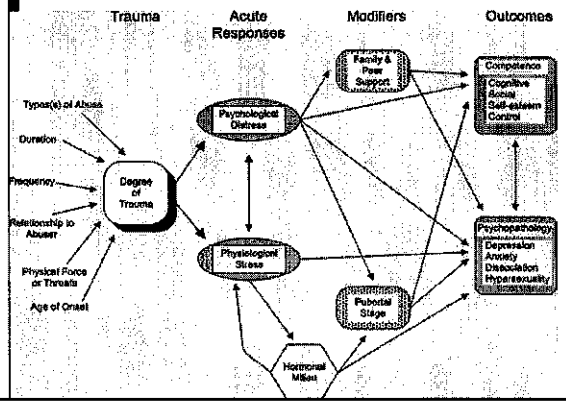
Trickett, Noll, and Putnam 2011

- Longitudinal study of female victims of child sexual abuse and matched controls, lasting **23 years**
- Followed female child victims and controls (G2), their female caregivers (G1), and their children (G3)
- Controls matched geographically, socioeconomically, & with regard to other traumas
- Girls were 6-16yo at enrollment, disclosed within 6 months, substantiated abuse with genital contact, abuse by family member
- Six intermittent assessments (T1-T6)
  - *T1: mean age 11.06*
  - *T6: mean age 24.89*
- Over **96%** of G2 subjects were reassessed on at least one of the last three time points

Trickett et al: What Was Measured?

- Details of abuse – perpetrator, duration, violence
- Psychological testing
- Physical health
- Parenting behaviors
- CPS involvement
- Cortisol levels

Trickett et al: The Conceptual Model



Findings: Abuse Subgroups

- SP: single perpetrator, not the bio dad
  - 50% 'father figure', 50% other relatives
  - Shorter duration, nonviolent
- MP: multiple perpetrators, not the bio dad
  - Shorter duration, assoc w/ physical violence
- BF: perpetrator was biological father
  - Longest duration, started young, nonviolent

Findings: G1

- Mothers of abused girls had higher likelihood of own sexual abuse
- More anxiety, lower current family cohesion, higher family stress
- Parenting at enrollment predicted G2's mental health 7 years later

Findings: G2 Abused

- Abuse by bio father had most extreme pattern of behavior problems and maladjustment
- Increased substance abuse
- Increased psychiatric diagnoses: depression, anxiety, PTSD, somatic symptoms
- Increased delinquent behaviors and school problems
- Risky sexual behaviors in adolescence
  - Healthy relationship with males somewhat protective

Findings: G2 Abused

- Increased teen pregnancy and early motherhood
- 2x sexual and physical revictimization
- Increased other lifetime traumas
- Increased suicidality
- Increased domestic violence
- Lower educational attainment

Findings: G2 Abused

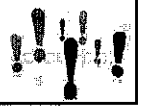
- HPA dysregulation and attenuation
  - *Abused girls had attenuated cortisol response to stress later in life*
- Increased obesity
- Increased healthcare usage
- Increased risk of preterm delivery
- Accelerated pubertal development

Findings: G3

- Abused girls who became mothers more likely to have further victimization, depression, substance abuse, IPV, obesity
- Increased CPS involvement
- Premature birth
- Anxious attachment among offspring
- 3 deceased offspring of abused G2: two due to birth complication, one due to drowning (left alone in bathtub)

What About Neglect?

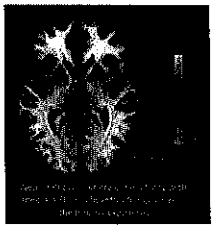
- Chronic neglect can produce more significant impairments than overt physical abuse!!
- Severe deprivation and neglect:
  - Changes brain development
  - Chronically or permanently changes the stress response system
  - Increases risk for emotional and interpersonal problems
  - Increases risk of learning problems and poor school achievement



Effects Appear Years Later

- Li and Godinet, 'The Impact of Repeated Maltreatment on Behavior...' (2014)
- Repeated maltreatment predicted later behavior problems in children ages 4-12
  -internalizing: cause harm to self
  -externalizing: cause harm to others
- Even children who did not have abnormalities early on developed them years later, and they became more pronounced with time

Looking into the future...



Josh M. Cisler , J. Scott Steele , Jennifer K. Lenow , Sonet Smitherman , Betty Everett , Erick Messias , Clinton ...

Functional reorganization of neural networks during repeated exposure to the traumatic memory in posttraumatic stress disorder: An exploratory fMRI study

Journal of Psychiatric Research, Volume 48, Issue 1, 2014, 47 - 55
http://dx.doi.org/10.1016/j.jpsychires.2013.09.013

What Can We Do?

- Deploy resources in early childhood – most cost-effective and successful
  - Early intervention programs
  - Early childhood education
  - Early childhood mental health
- Foster Safe, Stable, Nurturing Relationships (SSNRs)
- Ensure availability of evidence-based treatment and prevention programs

Why TF-CBT?

- It is an evidence-based treatment!
- It is the most rigorously tested treatment for traumatized children (at least 20 randomized trials; cited in over 50 research publications)
- Studies have been conducted with children exposed to sexual abuse, domestic violence, traumatic losses, civil war, natural disasters, sex trafficking, and multiple traumas
- Shows improvement for youth in PTSD, depression, anxiety, shame, and behavior problems when compared to supportive therapy
- Improved parental distress, parental support, and parental depression compared to supportive treatment

TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program

When is TF-CBT Appropriate?

- Children with known trauma history
- Children with prominent trauma symptoms with or without behavioral concerns
  - Children with severe behavior problems, who are actively suicidal, or who are actively abusing substances may need additional or alternative intervention
- Parent/Caretaker involvement is optimal

TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program

TF-CBT Treatment Structure

- Average 12 – 18 sessions
- 1 to 1 ½ hour weekly sessions
- Each session is divided into individual child and parent sessions
- The length of the child and parent portions may vary by topic
- Similar topics in most parent and child sessions
- Same therapist for both child and parent(s)
- Combined parent-child time in some to many sessions

TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program

TF-CBT Components (PRACTICE)

- Psychoeducation and Parenting Skills
- Relaxation
- Affective Modulation
- Cognitive Processing
- Trauma Narrative
- In Vivo Desensitization
- Conjoint Parent-Child Sessions
- Enhancing Safety and Social Skills

TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program

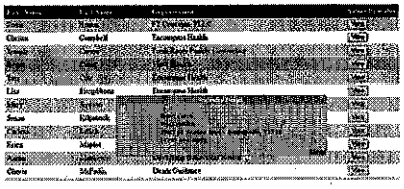
Arkansas Building Effective Services for Trauma (AR BEST)

- The mission of AR BEST is to improve outcomes for traumatized children and their families in Arkansas through excellence in clinical care, training, advocacy and research/evaluation.
- http://arbest.uams.edu/

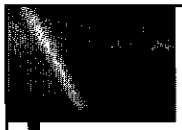
TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program

http://arbest.uams.edu/cliniciansliste

TF-CBT Clinicians



TF-CBT information courtesy of Dr. Jan Church, UAMS Family Treatment Program



Reasons for Hope

- Knowledge increasing exponentially
- Strong caregiving is key – we can influence this
  - Even in vulnerable children
- Not all maltreated children develop later pathology
  - Future research directions
- Degree of adult adverse outcomes linked to those in childhood – improving child outcomes may improve adult health also

'It is easier to build strong children than to repair broken men.'

-Frederick Douglass

Resources

- ACE Study:
  - www.acestudy.org
  - www.cdc.gov/ace
- Toxic stress:
  - www.developingchild.net
- Finding a TF-CBT trained mental health provider:
  http://arbest.uams.edu/clinicianslist/

Selected References

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