

# The Effects of Early Life Stress and Trauma on Health and Mental Health



**Ann Bullock, MD**  
**Division of Diabetes Treatment and Prevention**  
**Indian Health Service**

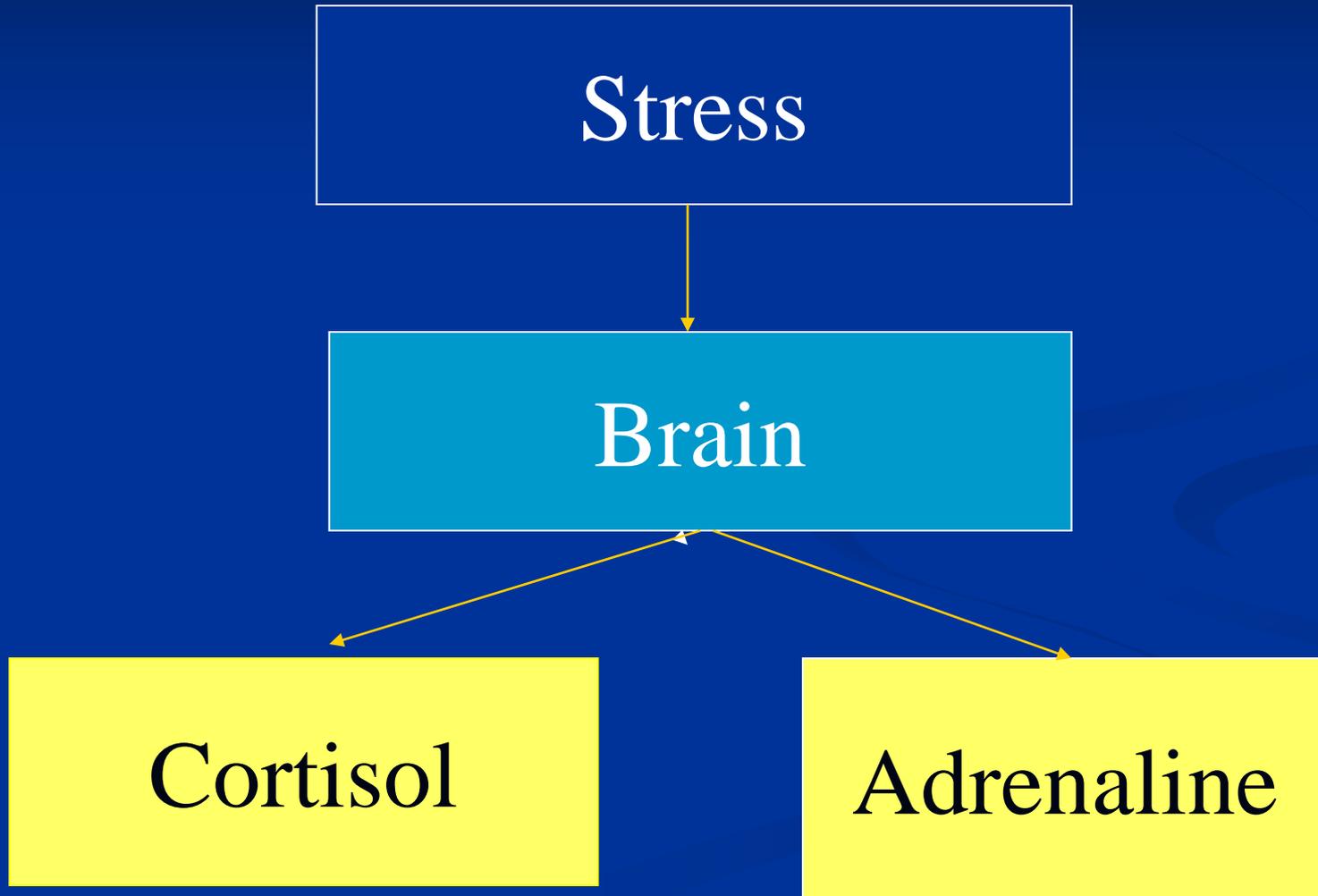
**“...many adult diseases should be viewed as developmental disorders that begin early in life and that persistent health disparities associated with poverty, discrimination or maltreatment could be reduced by the alleviation of toxic stress in childhood.”**

The Lifelong Effects of Early Childhood Adversity and Toxic Stress

Technical Report, American Academy of Pediatrics

*Pediatrics*, January 2012 doi:10.1542/peds.2011-2663

# Basic Stress Pathway



# Stress and Trauma

- Stress: anything that requires a response, can be “good” or “bad”
- Trauma: anything that *overwhelms* our ability to respond, especially if we perceive that our life or our connection to things that support us physically or emotionally is threatened

So what factors make it more likely that a stressful situation will become traumatizing?

# Posttraumatic Stress Responses

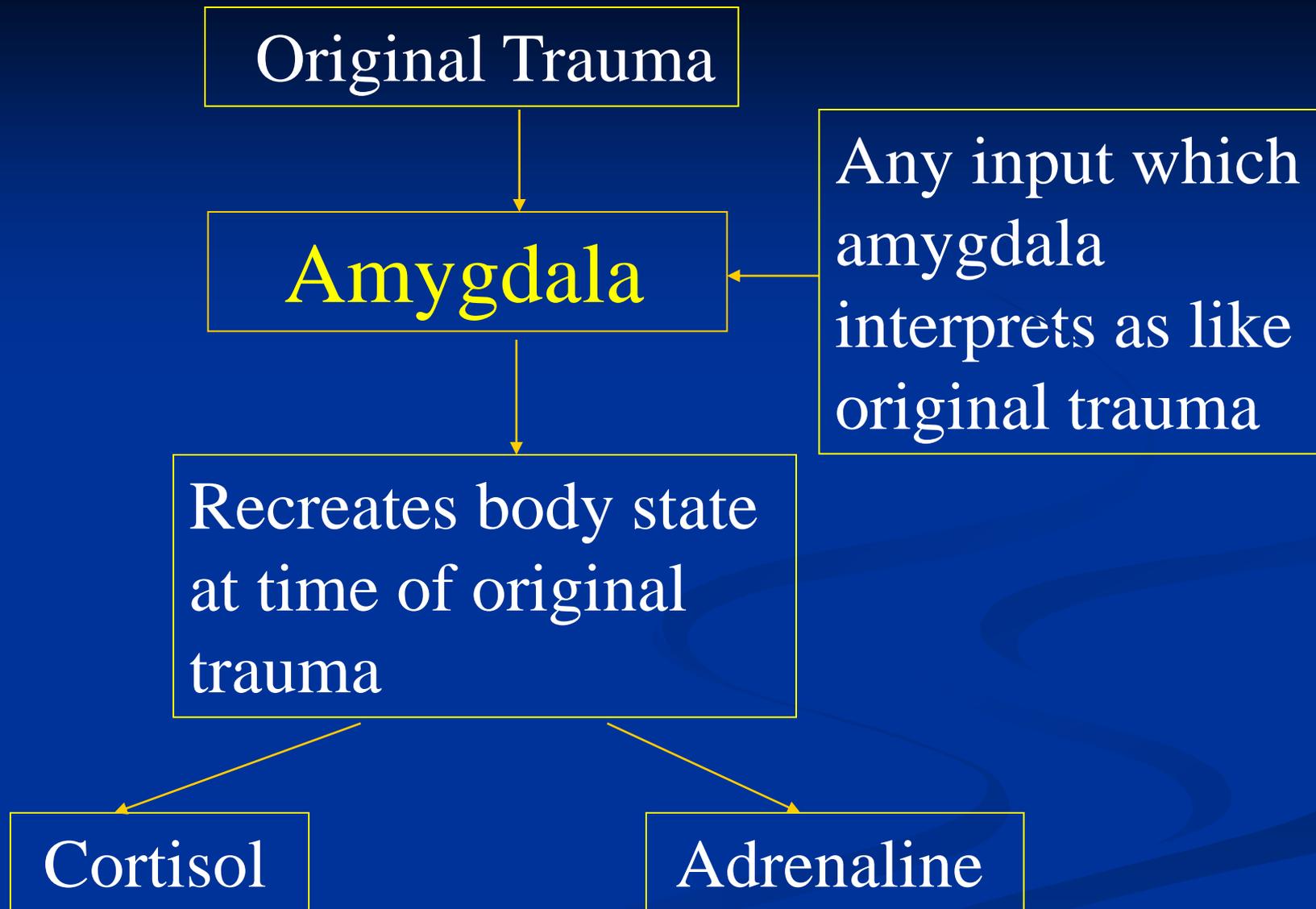
“the long-term consequences of trauma are far-reaching...”

- Context of the trauma
- Age/stage of life
- Loss of family/cultural coherence
- Pre-trauma characteristics
- Life conditions post-trauma
- Symbolic/moral meanings

# Posttraumatic Stress Responses

- PTSD
- Depression
- Anxiety
- “Demoralization”

Kroll, *JAMA* 2003;290:667-670



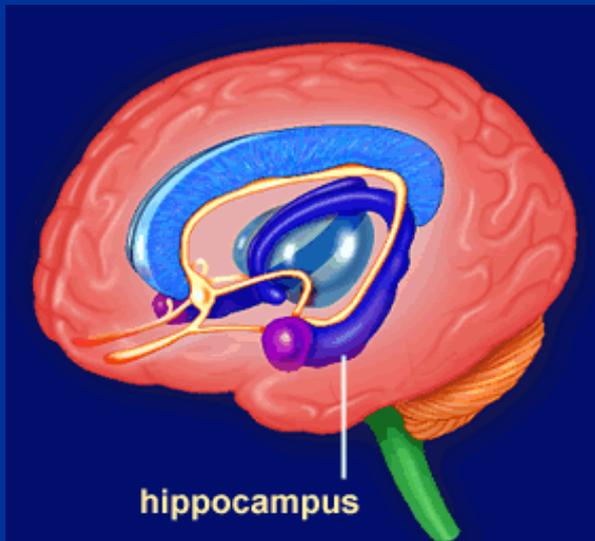
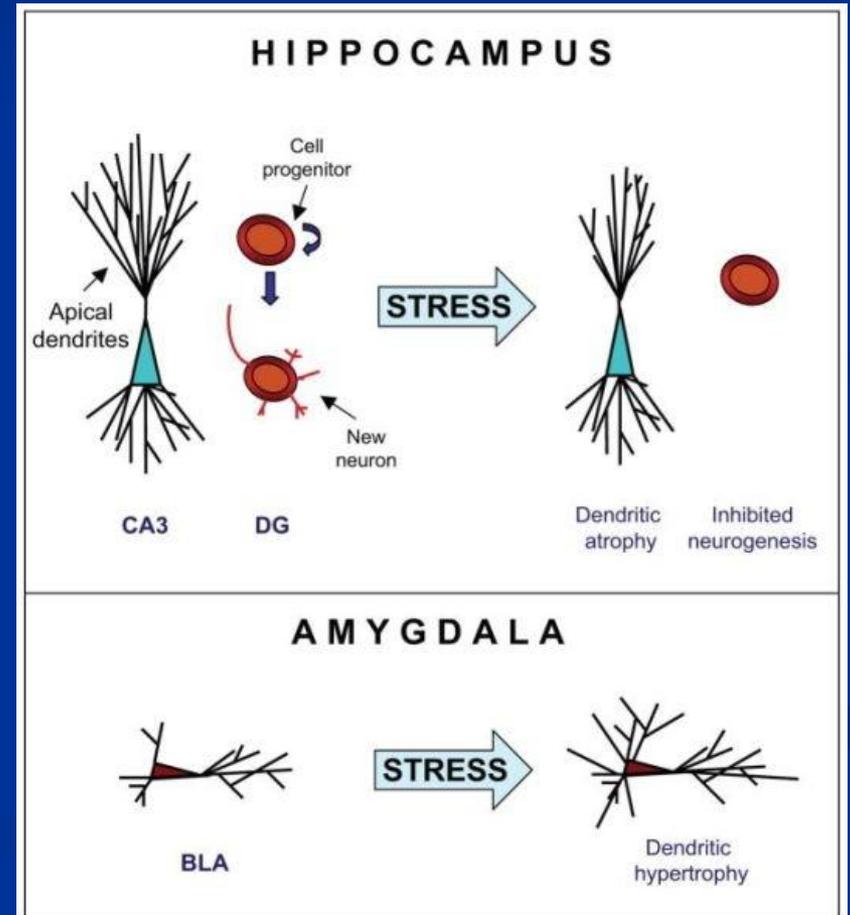
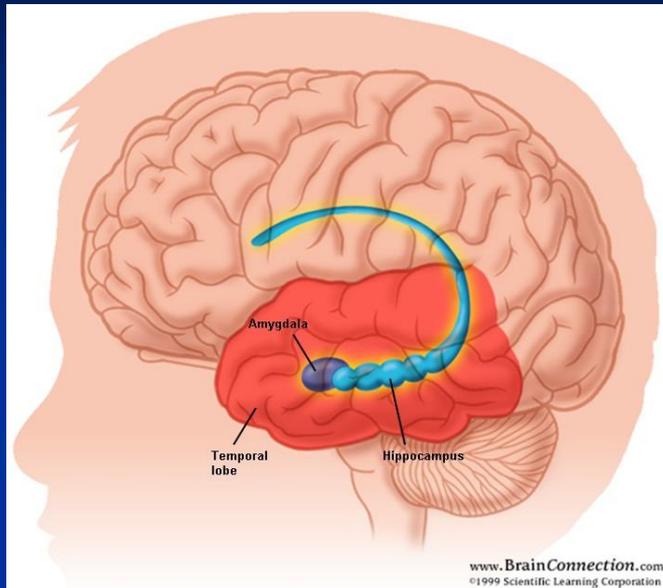
Original emotion re-experienced: fear, rage, sadness

Adapted from LeDoux, *The Emotional Brain*, 1996

# The brain itself is changed by stress

- “What fires together, wires together”
- Complex process of “sculpting” the brain, converting experience into neuronal changes
  - Cortisol, Brain-Derived Neurotrophic Factor (BDNF)
  - Chronic stress and depression:
    - Shrink the hippocampus and prefrontal cortex
      - ↓ Memory, selective attention, executive function/decision making
    - Potentiate growth of the amygdala
      - ↑ Fear/hypervigilience, anxiety, aggression

# Stress and the Brain



# Stress of Racism

- “The lifelong accumulated experiences of racial discrimination by African American women constitute an independent risk factor for preterm delivery.”
  - Odds ratio of 2.6
  - Independent of maternal sociodemographic, biomedical, and behavioral characteristics.

*Am J Public Health.* 94:2132–2138, 2004

# Stress in Children

“Toxic stress in early childhood is associated with disruptive effects on the nervous system and stress hormone regulatory systems that can damage developing brain architecture and chemistry and lead to lifelong problems in learning, behavior, and both physical and mental health.”

“A Science-Based Framework for Early Childhood Policy: Using Evidence to Improve Outcomes in Learning, Behavior, and Health for Vulnerable Children”, Center on the Developing Child at Harvard University, August 2007, p.10 <http://www.developingchild.harvard.edu>

# Brain Development

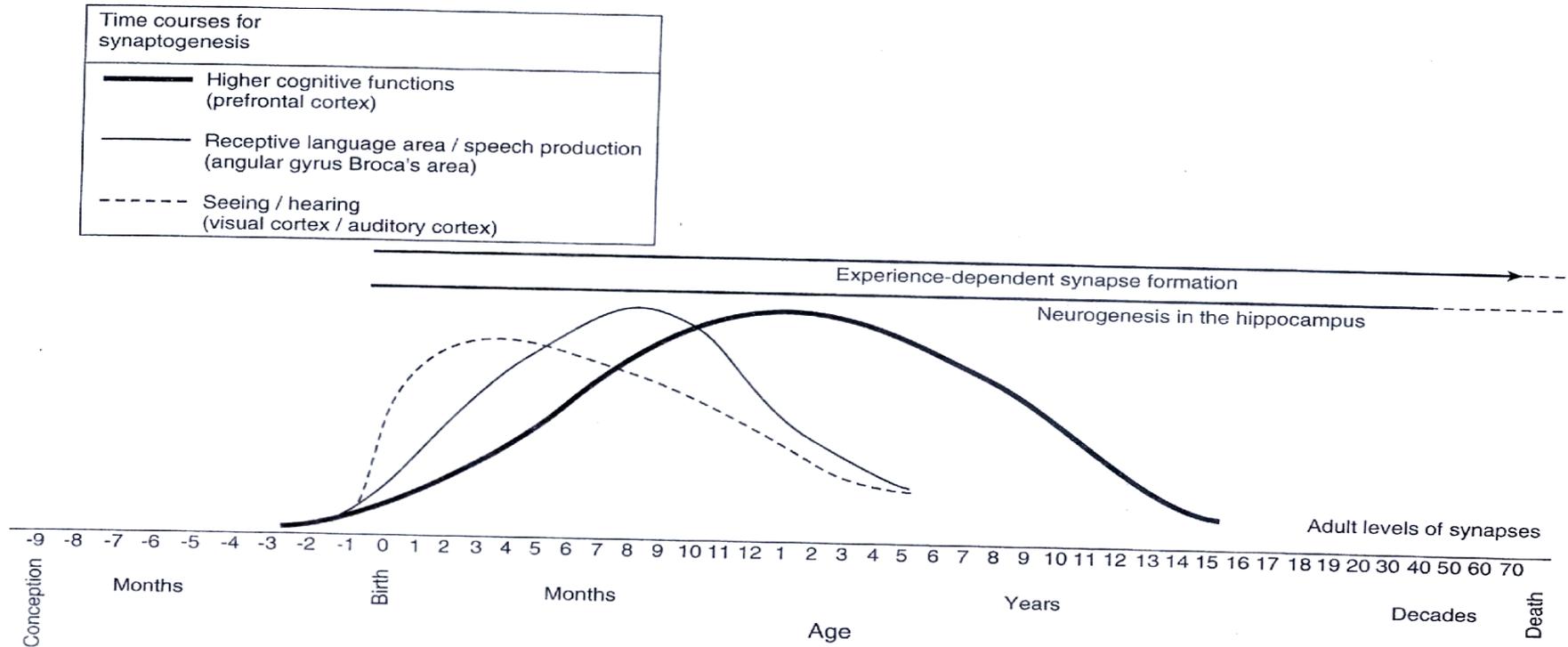


FIGURE 8-1 Human brain development. SOURCE: Charles A. Nelson, University of Minnesota. Reprinted with permission.

# Adverse Childhood Experiences (ACE)

- Physical, emotional, sexual abuse; mentally ill, substance abusing, incarcerated family member; seeing mother beaten; parents divorced/separated

--Overall Exposure: 86% (among 7 tribes)

	<u>Non-Native</u>	<u>Native</u>
Physical Abuse-M	30%	40%
Physical Abuse-F	27	42
Sexual Abuse-M	16	24
Sexual Abuse-F	25	31
Emotional Abuse	11	30
Household alcohol	27	65
Four or More ACEs	6	33

# ACEs and Adult Health

- ACE Score  $\geq 4$ 
  - 4-12 x risk for alcoholism, drug abuse, depression and suicide attempt
  - 2-4 x risk for smoking, teen pregnancy, STDs, multiple sexual partners
  - 1.4-1.6 x risk for severe obesity
  - Strong graded relationship at all levels of ACEs for almost all outcomes, including heart disease

*Am J Prev Med* 1998;14:245-258 and *Circulation* 2004;110:1761-6

- Across 10 countries, adults who experienced  $\geq 3$  childhood adversities
  - Hazard ratios 1.59 for diabetes, 2.19 for heart disease
  - Risk similar to the association between cholesterol and heart disease
    - Both in magnitude as well as population prevalence

*Arch Gen Psychiatry* 2011;68:838-844

What is the average ACE  
score of:

--the patients in your clinic?

--the staff in your program?

What is *your* ACE score?

# Adverse Childhood Experiences and Adult Risk Factors for Age-Related Disease

- Dunedin Study: 32 year longitudinal study of a representative birth cohort—New Zealand
- Adverse childhood experiences in first decade of life:
  - Low SES
  - Maltreatment
  - Social Isolation
- Controlled for established risk factors including birth weight, family history, childhood BMI, adult health behaviors
- Attributable to adverse childhood experiences:
  - 31.6% of depression
  - 13% of elevated inflammation
  - 32.2% of cases with clustering of metabolic risk markers
- As severity of each ACE worsened, greater number of age-related health risks in a dose-response fashion

# Stress and Obesity in Children

- Chronic exposure to Intimate Partner Violence almost doubles (OR 1.8) risk of obesity at age 5 years.

*Arch Pediatr Adolesc Med* 2010;164:540-546

- Toddlers who showed insecure attachment to their mothers at age 2 had a 30% increased risk of obesity by age 4 1/2

*Arch Pediatr Adolesc Med* 2011;165:235-242

- Child attachment security and maternal sensitivity
  - NICHD prospective study of children born in 1991
  - Evaluated at 15, 24, and 36 months of age in 977 kids
  - Odds of obesity at age 15 yrs was 2.45 times higher in youth with lowest scores c/w highest

*Pediatrics* 2012;129:132-140

# Overeating and Psychological Distress

“Youths who overeat may have or be at risk for serious psychological distress, including deficits to self-esteem, compromised mood and suicide risk. Overeating may be a tangible behavior that signals the need for intervention.”

*Pediatrics* 2003;111:67-74

# Stress in Children

## ■ Positive

- Normal/necessary part of healthy development
  - First day with new caregiver; immunization
- Brief increases in heart rate and stress hormones

## ■ Tolerable

- More severe, longer lasting stressor
  - Loss of a loved one, natural disaster, injury
- If buffered by relationship with supportive adult(s), brain and body can recover

## ■ Toxic

- Strong, frequent, prolonged adversity
  - Abuse, neglect, caregiver mental illness, poverty
- If no adult support, can disrupt brain and organ development long-term

## Domains of Impairment in Children Exposed to Complex Trauma

I. Attachment	IV. Dissociation	VI. Cognition
<ul style="list-style-type: none"> <li>Problems with boundaries</li> <li>Distrust and suspiciousness</li> <li>Social isolation</li> <li>Interpersonal difficulties</li> <li>Difficulty attuning to other people's emotional states</li> <li>Difficulty with perspective taking</li> </ul>	<ul style="list-style-type: none"> <li>Distinct alterations in states of consciousness</li> <li>Amnesia</li> <li>Depersonalization and derealization</li> <li>Two or more distinct states of consciousness</li> <li>Impaired memory for state-based events</li> </ul>	<ul style="list-style-type: none"> <li>Difficulties in attention regulation and executive functioning</li> <li>Lack of sustained curiosity</li> <li>Problems with processing novel information</li> <li>Problems focusing on and completing tasks</li> <li>Problems with object constancy</li> <li>Difficulty planning and anticipating</li> <li>Problems understanding responsibility</li> <li>Learning difficulties</li> <li>Problems with language development</li> <li>Problems with orientation in time and space</li> </ul>
II. Biology	V. Behavioral control	VII. Self-concept
<ul style="list-style-type: none"> <li>Sensorimotor developmental problems</li> <li>Analgesia</li> <li>Problems with coordination, balance, body tone</li> <li>Somatization</li> <li>Increased medical problems across a wide span (eg, pelvic pain, asthma, skin problems, autoimmune disorders, pseudoseizures)</li> </ul>	<ul style="list-style-type: none"> <li>Poor modulation of impulses</li> <li>Self-destructive behavior</li> <li>Aggression toward others</li> <li>Pathological self-soothing behaviors</li> <li>Sleep disturbances</li> <li>Eating disorders</li> <li>Substance abuse</li> <li>Excessive compliance</li> <li>Oppositional behavior</li> <li>Difficulty understanding and complying with rules</li> <li>Reenactment of trauma in behavior or play (eg, sexual, aggressive)</li> </ul>	<ul style="list-style-type: none"> <li>Lack of a continuous, predictable sense of self</li> <li>Poor sense of separateness</li> <li>Disturbances of body image</li> <li>Low self-esteem</li> <li>Shame and guilt</li> </ul>
III. Affect regulation		
<ul style="list-style-type: none"> <li>Difficulty with emotional self-regulation</li> <li>Difficulty labeling and expressing feelings</li> <li>Problems knowing and describing internal states</li> <li>Difficulty communicating wishes and needs</li> </ul>		



# Ways to lessen trauma response of patients: “trauma-informed care”

- How would we set up our programs if we assumed that most participants are dealing with trauma?
  - Peaceful, cheerful program environment
  - Staff who are calm, kind and give straight-forward directions/explanations
  - Model loving, supportive, nonjudgmental interactions
- Make the *relationship* with patient the primary goal, not just meeting a particular requirement

# Integrative Approaches

## Relaxation Techniques

Surwit, *The Mind-Body Diabetes Revolution*

*A Proven New Program for Better Blood Sugar Control*, 2004

- Meditation, Guided Imagery
- Progressive Muscle Relaxation *Diabetes Care* 2002;25:30-34
- Biofeedback-assisted relaxation *Diabetes Care* 2005;28:2145-9
- Yoga/Tai Chi/Qi-Gong *Diabetes Care* 2002;25:241-2  
*Diabetes Care* August 11, 2011;doi: 10.2337/dc10-2430
- Massage
- Acupuncture (helps with chronic pain)
- Spiritual support: Traditional, church, other



# Newer approaches which address Trauma

- Trauma narration in presence of empathic nonjudgmental therapist or lay person
  - Narrative Exposure Therapy
- Working with how trauma is held in the body
  - EMDR (Eye Movement Desensitization and Reprocessing)
  - Somatic Experiencing
- Mindfulness-based
  - Dialectical Behavior Therapy (DBT)

# Importantly...

- Recognize that we have our own wounds to heal that impact our ability to interact with clients the way we want to—we have our own work to do
  - What are ways we can heal ourselves?
  - How can we not pass on our own traumas to the clients we work with?
  - How can we support our co-workers in this?
  - What approaches do you use with clients who have experienced and/or are experiencing trauma?

**Thank You!**



# *Living a Balanced Life with Diabetes: A Toolkit Addressing Psychosocial Issues for American Indian and Alaska Native People*

- IHS Diabetes Best Practice Depression Care
- *Using Our Wit and Wisdom* (book and audio CD)
- New Tipsheets for American Indians/Alaska Natives
- Depression Screening Tools
- Suicide Prevention Hotline Magnet
- IHS Division of Diabetes “Health for Native Life Magazine” Articles
- Resource List

*The American Indian/Alaska Native Workgroup of the  
National Diabetes Education Program*

# “Pima Pride” Study

- DPP pilot study
  - People randomized to “Action” group
    - Structured diet/exercise meetings
  - People randomized to “Pride” control group
    - Unstructured activities emphasizing Pima culture and history
- “Pima Pride” group showed more positive outcomes on every biological parameter measured

*Narayan et al, Diabet Med 1998;15:66-72*

# Food Insecurity

- Prevalence of overweight in women ↑'s as food insecurity ↑'s  
*Journal of Nutrition* 2001;131:1738-1745
- In pregnancy: assoc with pregravid obesity, ↑ gest wt gain, and gest diabetes  
*J Am Diet Assoc* 2010;110:692-701
- 42% of households below poverty level are food insecure, 21% of all households w/children  
*NEJM* 2010;363:6-9
- Independent risk factor for poor glycemic control
  - 2-item screening tool:
    - “Within the past 12 months we worried whether our food would run out before we got money to buy more.”
    - “Within the past 12 months the food we bought just didn't last and we didn't have money to get more.”
    - Response of “often true” or “sometimes true” to either item:  
97% specificity and 83% sensitivity for food insecurity

*“Where did you learn  
how to do this?”*

Eduardo Duran, PhD



# Legacy of Boarding Schools

“...many generations of Indigenous children were sent to residential schools. This experience resulted in collective trauma, consisting of ...the structural effects of disrupting families and communities; the loss of parenting skills as a result of institutionalisation; patterns of emotional response resulting from the absence of warmth and intimacy in childhood; the carryover of physical and sexual abuse; the loss of Indigenous knowledges, languages, and traditions; and the systemic devaluing of Indigenous identity.”

# Historical Trauma

- Trauma(s) that are often intentionally inflicted and occur at more or less the same time to a defined group of people—these traumas:
- Have effects like individual traumas, *plus*
- Because the traumas are so pervasive, affect caregivers and elders, affect community and cultural infrastructures and are targeted at a specific group—they have huge effects on:
  - People's/communities' abilities to cope with and adapt to traumatic event and aftermath
  - Abilities to interpret the meaning/psychologically incorporate the trauma
  - Patterns of trauma transmission to subsequent generations

# Some Behaviors/Beliefs We Can Have as the Result of Trauma

- Distrust—of the government, institutions, our own leaders, supervisors, etc. even to our own detriment-- “they” are out to get us
- Sense of never having “enough”
- Spend/eat/use what you have now as it may be taken from you
- We will not live to be old, so it doesn't matter what we do now
- “Love” is not to be trusted and is often linked with emotional/physical/sexual abuse

# Behaviors we can see in program

- Different threshold for “normal” behaviors
- Anger, rage “out of proportion” to situation
  - Escalation of emotions/voice if demands aren’t met
- Dissociation: can look like disinterest, “spaciness”
- Desensitized to loss
- Distrust of providers
- Overly dependent on provider
- Patients say they are doing something (taking meds, exercising, etc.) that they aren’t
- Patients deny doing something that they are (eating unhealthy foods, etc.)

# Seeing the larger picture helps us have compassion: the most important “intervention”

- People in our communities often live with incredible adversity and loss—amazing resilience
- “Strengths-based” approaches: reinforce strengths, teach new skills, listen to their experiences/wisdom
  - We often tell people what they’re doing “wrong”
- We parent the way we were parented unless we learn another way
  - How were people raised in boarding schools parented?
  - What did they learn that was passed down?