

# Adverse Childhood Experiences and the Impact on Mental Health and Medical Outcomes



**RANDALL RICARDI, D.O.**  
**CHILD AND ADOLESCENT PSYCHIATRIST**

**BARROW**  
Neurological Institute



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# Disclosures



- Research Support-None to disclose





UNFORTUNATELY,  
NOT EVERY CHILD  
WILL BECOME AN ADULT  
BUT  
EVERY ADULT WAS A  
CHILD



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

Frederick Douglas (1817-1895)



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# Learning Objectives



- List the more common medical and psychiatric outcomes for elevated ACE scores
- Describe the proposed effect of ACE's on brain development
- Become familiar with the general ACE categories and associated questions



# Major Public Health Issues



- **Lead exposure**
  - Reduce I.Q. and increase antisocial behavior.
  - Removed from gas starting in 1976 and ending in 1986.
- **Cigarette Exposure**
  - Causes >480,000 deaths/year in the US
  - October 2012, 81.3% of the U.S. population is covered by bans on smoking
    - workplaces, and/or restaurants, and/or bars
- **Mercury Exposure**
  - Toxic to central and peripheral nervous system
  - Seizures, vision/ hearing loss, delayed development, language disorders and memory loss



# Training Pediatricians



- Preventative Medicine
- Integrated medicine







# ACE Study



- 1998
- Dr Vincent Felitti – Kaiser Permanente
- Dr Robert Anda – CDC
- Surveyed >17,000 adults
- 74.8% where white
- 75.2% had attained college level education or higher
- 2/3 had 1 ACE
- 12.5 % had 4 or more ACEs
- Finding of a correlation of ACEs and:
  - Risk of chronic disease
  - Negative health outcomes

# ACE Screening Tool



- Attachment 1



# Adverse Childhood Experiences (ACEs)



- *“Psychosocial stressors and traumas experienced by children that have a significant impact on later health and wellbeing”<sup>1</sup>*
- Traumatic experiences over which a child has no control
- Experiences that can have lifelong implications to their:
  - Health – physical and mental
  - Relationships
  - Learning capacity
  - Future Success
- They can enter the world with multiple ACE’s



# Exposure increases the risk of:



- Substance abuse
- Alcohol abuse
- Smoking
- Mental health
- Domestic violence
- Poor health
- Court involvement
- Child welfare
- Obesity



# ACE's – Chronic Illnesses



- Asthma
- Cancer
- Diabetes
- Heart disease , hypertension
- IBS
- Liver disease
- Obesity



# Types of ACE's



- ABUSE
  - Physical
  - Emotional
  - Sexual
- NEGLECT
  - Physical
  - Emotional
- HOUSEHOLD DYSFUNCTION
  - Mental Illness
  - Incarcerated relative
  - Substance abuse
  - Divorce / separation
  - Mother treated violently



# Many Other Types of Trauma



- New Research is Examining:
  - Bullying
  - Homelessness
  - Growing Up in Foster Care
  - Extreme Illness or Injury
  - Historical Trauma
  - Community Violence



# ACES can have lasting effects on....



Health (obesity, diabetes, depression, suicide attempts, STDs, heart disease, cancer, stroke, COPD, broken bones)

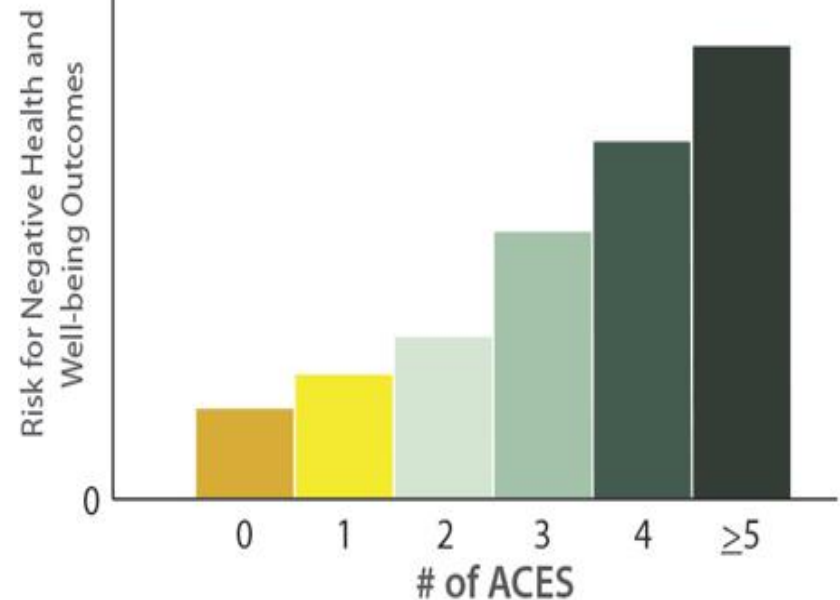


Behaviors (smoking, alcoholism, drug use)



Life Potential (graduation rates, academic achievement, lost time from work)

ACEs have been found to have a graded dose-response relationship with 40+ outcomes to date.



\*This pattern holds for the 40+ outcomes, but the exact risk values vary depending on the outcome.

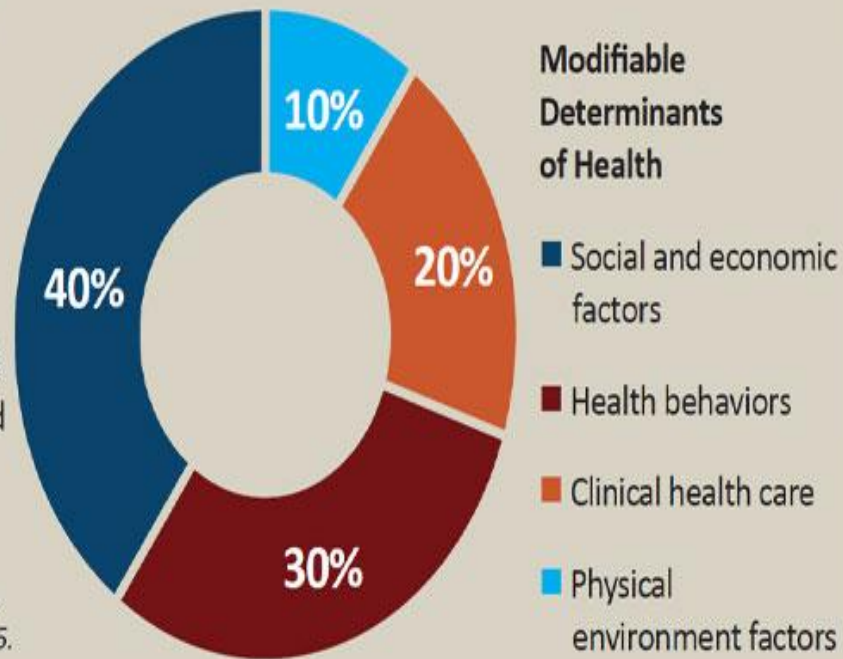




## What Affects Health?

Researchers at the University of Wisconsin Population Health Institute estimated the percentage of people's health—including length and quality of life—that is affected by factors that can be changed or modified (i.e., excluding genetics).

Source: Park, H., Roubal, A.M., Jovaag, A., Gennuso, K.P., and Catlin, B.B., 2015.



# 4 or More ACEs



- Increase the risk of :
- Disease:
  - Ischemic heart disease by 2.2 times
  - Stroke by 2.4 times
  - Cancer by 1.9 times
  - Diabetes by 1.6 times
  - Obesity / Overweight by 4 times
- Mental Health Disease :
  - Attempt suicide by 12.2 times
  - Depression by 4 times
  - Drug abuse by 10.3 times
  - Alcoholism by 7.4 times
  - Learning or behavioral problem by 32.6 times



# 4 or More ACEs



- Adopting high risk behaviors
  - smoking
  - drugs ,alcohol
  - multiple sex partners
- The effects of chronic stress
  - hypercortisolemia
  - inflammatory cytokines
  - dysregulation of the stress response



# HPA Axis

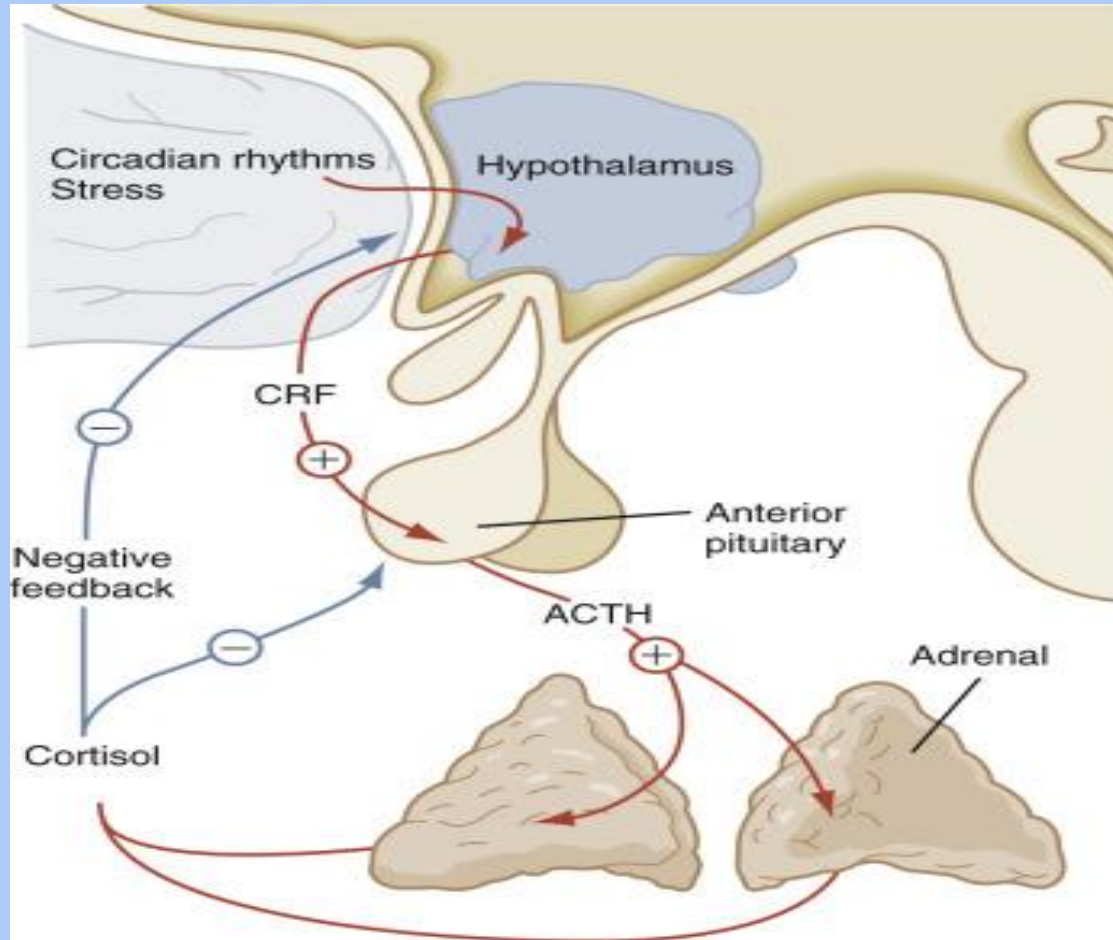
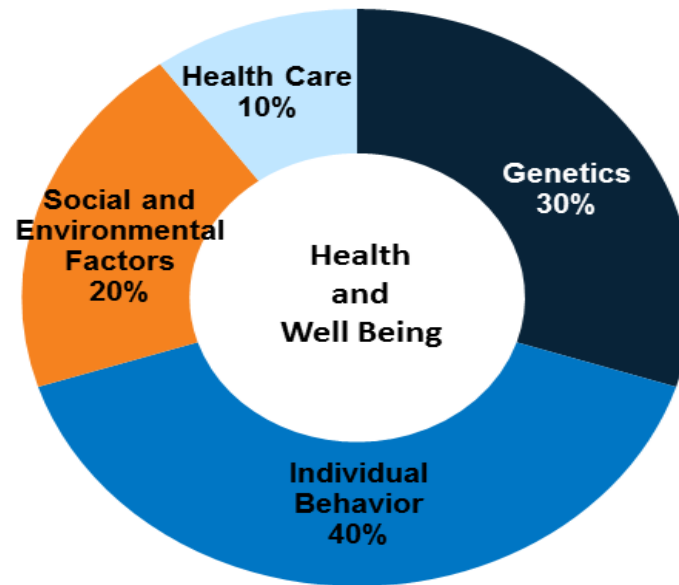




Figure 2  
Impact of Different Factors on Risk of Premature Death



SOURCE: Schroeder, SA. (2007). We Can Do Better — Improving the Health of the American People. *NEJM*. 357:1221-8.



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# ACEs Increase Odds for Academic & Health Problems



# of ACEs	Increase in Academic Failure	Increase in Attendance Problems	Increase in Severe School Behavior Concerns	Increased Frequency of Reported Poor Health
3 or More ACEs N=248	3x	5x	6x	4x
2 ACEs N=213	2.5x	2.5x	4x	2.5x
1 ACE N=476	1.5x	2x	2.5x	2x
No Known ACEs N=1,164	1.0x	1.0x	1.0x	1.0x

Washington State University Area Health Education Center. (2012). A Review of Community Efforts to Mitigate and Prevent Adverse Childhood Experiences and Trauma.

16



# ACEs in the Classroom



Greatest single predictor for health, attendance and behavior

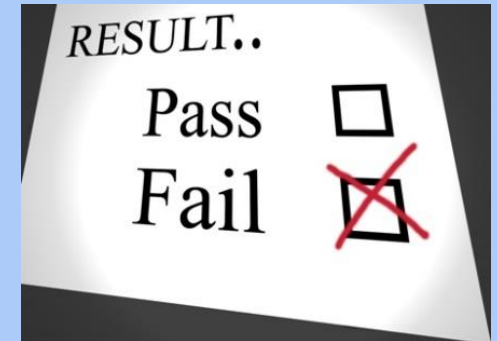
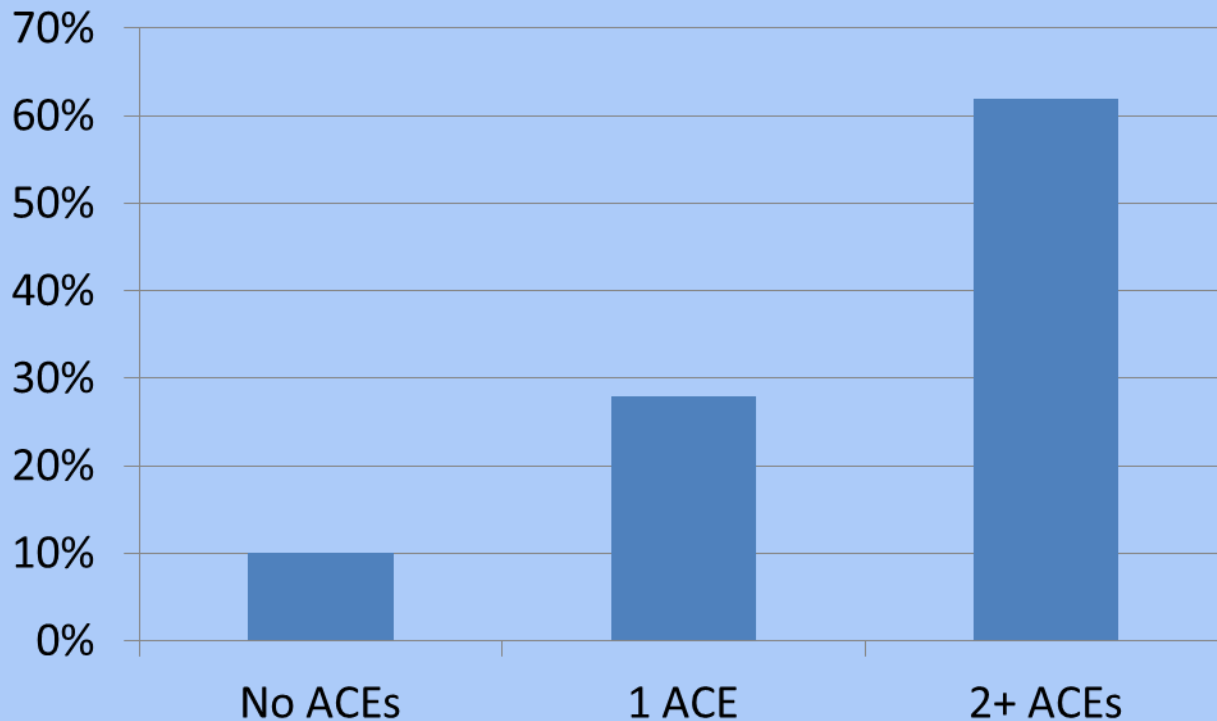


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# Repeated 1 or More Grades





# Out of 100 people...

33%

Report No  
ACEs



With 0 ACEs

1 in 16 smokes

1 in 69 are alcoholic

1 in 480 use IV drugs

1 in 14 has heart disease

1 in 96 attempts suicide

51%

Report 1-3  
ACEs



With 3 ACEs

1 in 9 smokes

1 in 9 are alcoholic

1 in 43 use IV drugs

1 in 7 has heart disease

1 in 10 attempts suicide

16%

Report 4-10  
ACEs



With 7+ ACEs

1 in 6 smokes

1 in 6 are alcoholic

1 in 30 use IV drugs

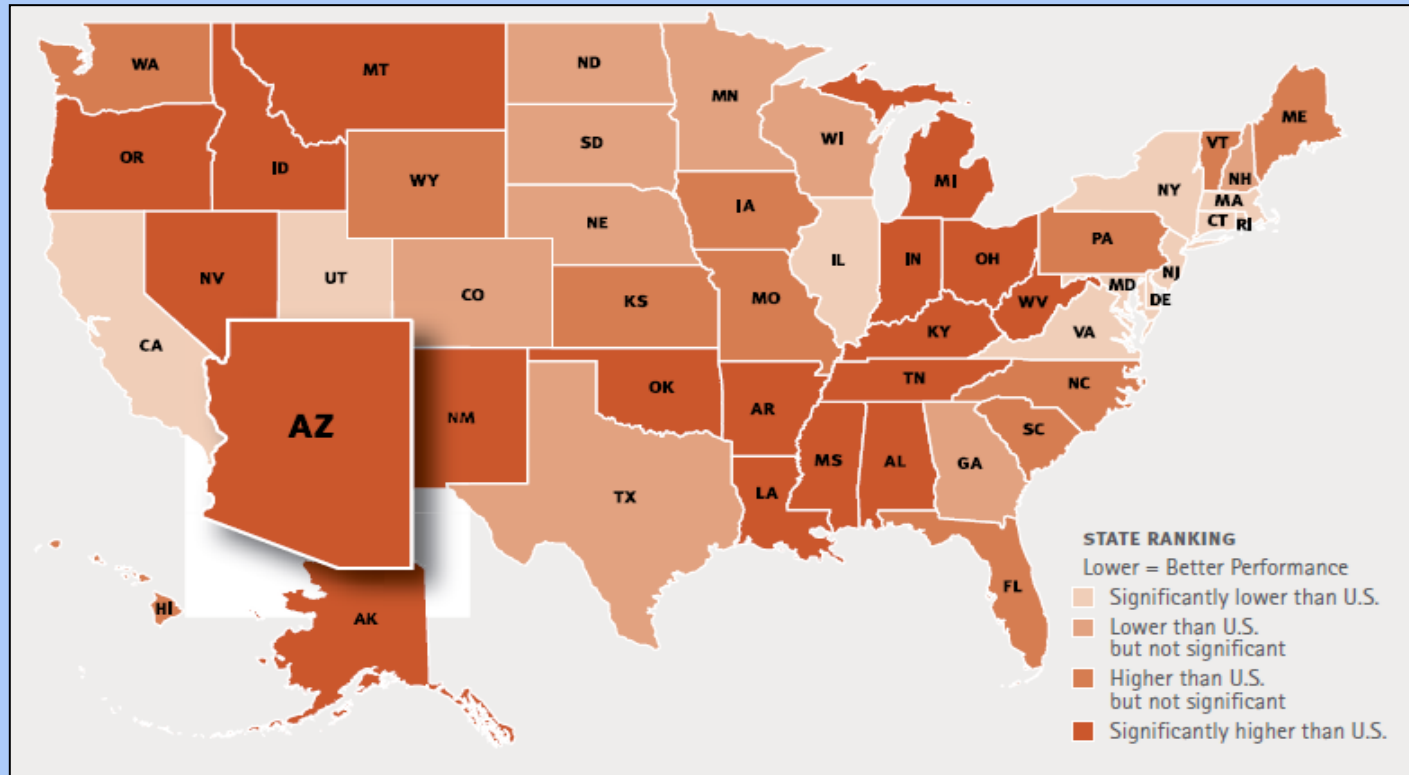
1 in 6 has heart disease

1 in 5 attempts suicide





# ACE Results in Arizona



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# Arizona Children, 0 – 17

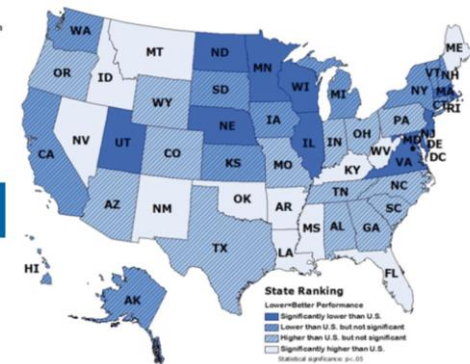
2016 National Survey of Children's Health



- Two + ACEs: **30%**
- Natl. average: **22%**

Percent of Children Age 0-17 with One or More Adverse Childhood Experiences in the US

Nationwide: 46.3%  
State Range: 38.1%-55.9%



# Arizona Children



- Ethnic minority children have disproportionately higher share of **6+** ACEs
- Estimated 69,213 have **5+** ACEs



# AZ Kids with 5+ ACEs Would Fill University of Phoenix Stadium



© AP

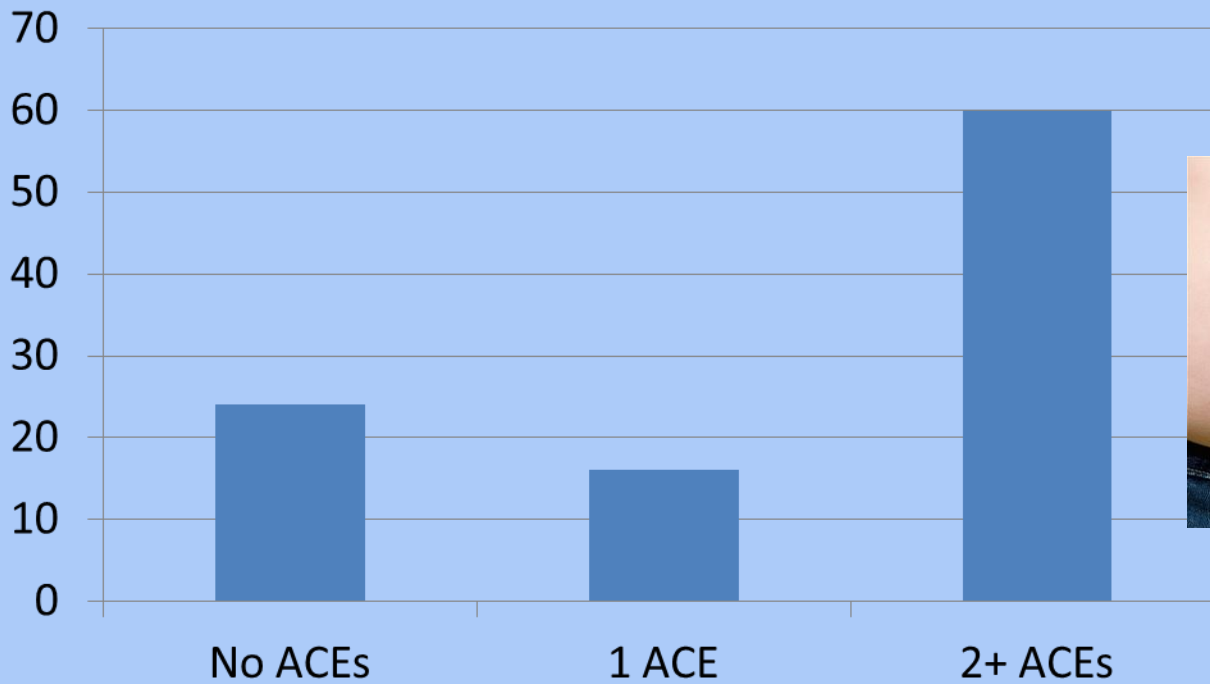


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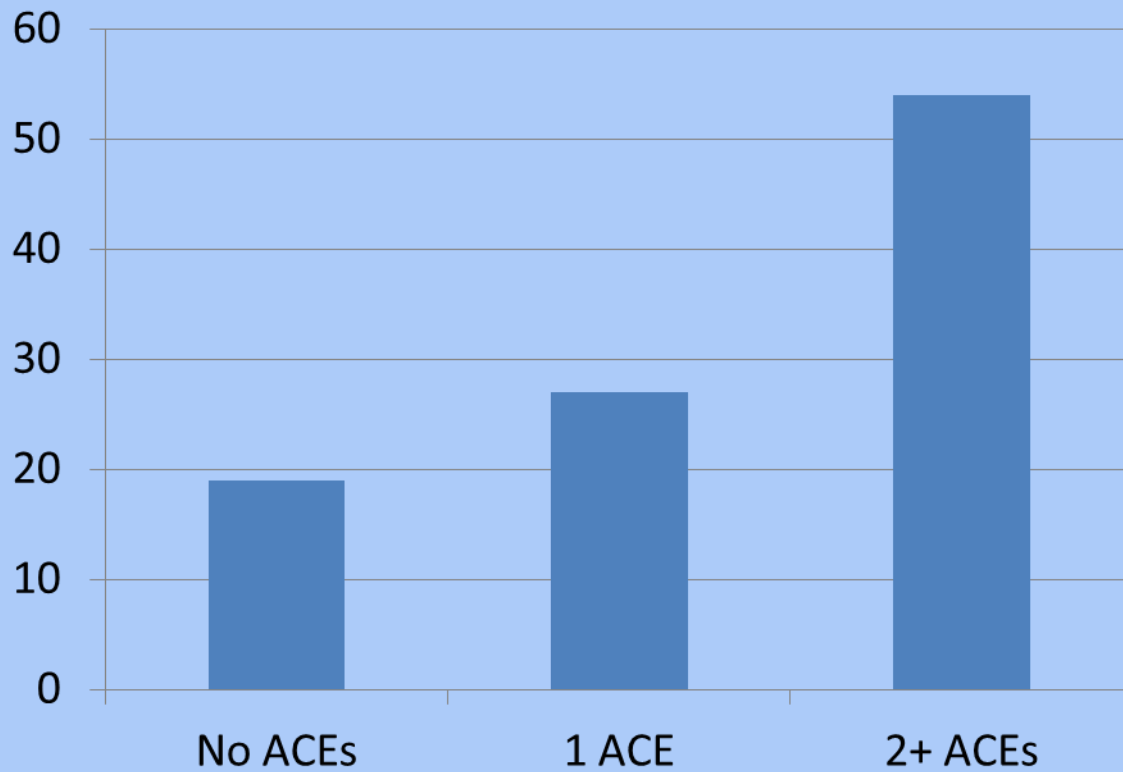




# AZ Children Overweight or Obese



# Received Treatment from Mental Health Professional Past 12 Months

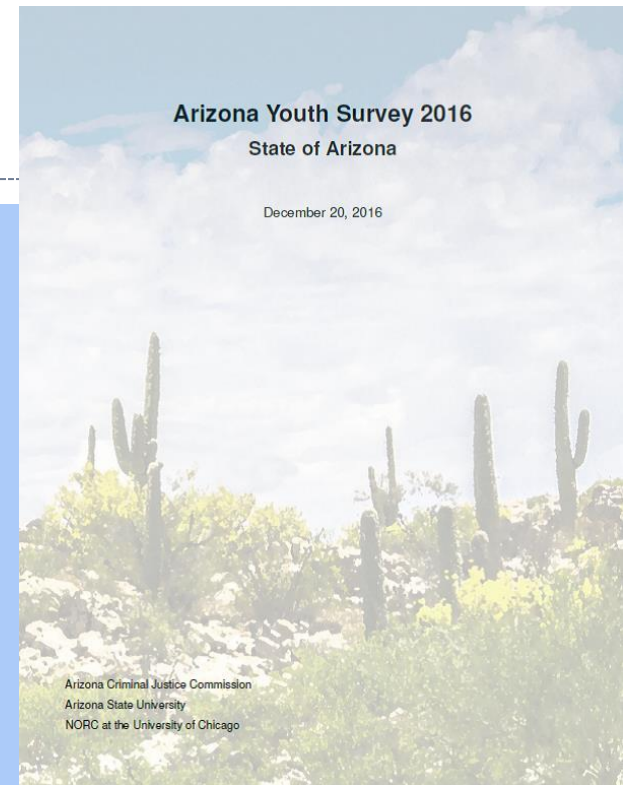


# 2016 Arizona Youth Survey



- Over 57,000 Responses
- 8th, 10<sup>th</sup>, 12th Graders
- All Counties
- 249 Schools

• [http://www.azcjc.gov/ACJC.Web/pubs/2016\\_Arizona\\_Youth\\_Survey\\_State\\_Report.pdf](http://www.azcjc.gov/ACJC.Web/pubs/2016_Arizona_Youth_Survey_State_Report.pdf)

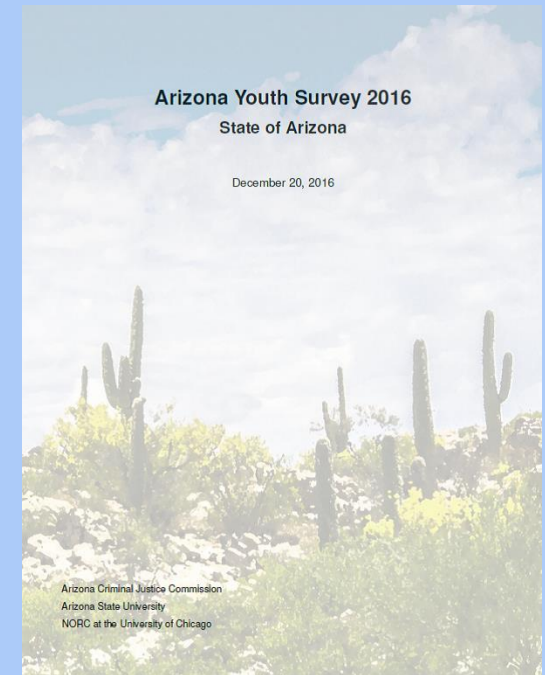




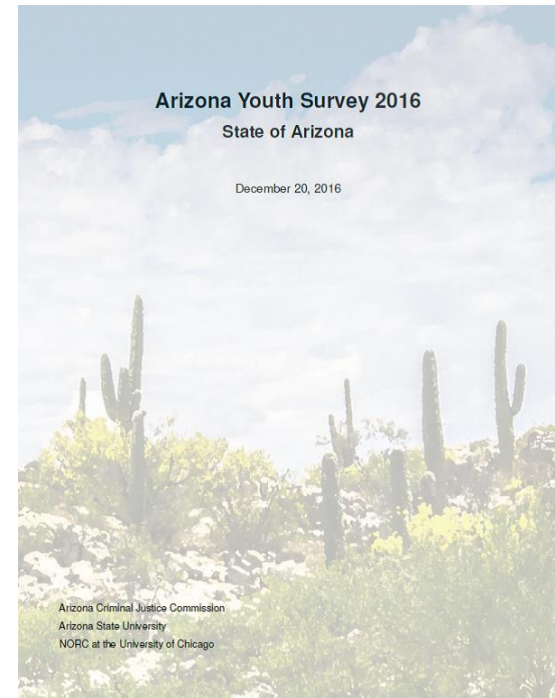
# 2016 AZ Youth Survey



- Lived with Adults Insulted You – **53%**
- Parents Separated or Divorced – **47%**
- Lived with Alcoholic – **25%**
- Lived with Someone Incarcerated - **23%**
- Lived with Adults Who Fought – **23%**
- Ever Lived with a Drug User – **17%**



- Over 91% who abused opioids in the past 30 days had at least 1 ACE
- Youth reporting abusing opioids to cope with stress and sadness
- Almost half (45.1%) had 4 or more ACEs
- Over 83% experienced past emotional abuse
- Nearly 2 out of 3 (64.1%) lived with someone who had a substance abuse problem

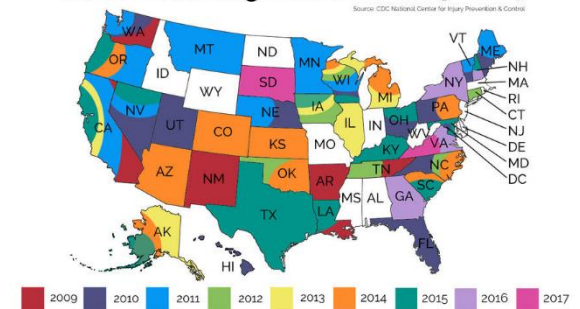


# ACEs in Arizona Adults

## Prevalence of Adverse Childhood Events (ACEs)

- 9%** **Sexual Abuse**-Anyone at least 5 years older than them or an adult ever touch them sexually, tried to touch them or forced to them have sex at least once
- 9%** **Incarcerated Household Member**- Lived with anyone who served time or was sentenced to served time in prison, jail or other correctional facility
- 12%** **Drug use in household**- Lived with anyone who used illegal street drugs or abused prescription medication
- 15%** **Mental Illness among adults**-Lived with anyone who was depressed, mentally ill or suicidal
- 15%** **Violence between Adults**- Parents or adults in their home ever slap, hit, kick, punch or beat each other up at least once
- 16%** **Physical abuse**- Parent or adult in the home hit, beat, kick or physically hurt them at least once (Spanking not included)
- 22%** **Drinking problem in household**- Lived with anyone who was a problem drinker or alcoholic
- 26%** **Parent separation/ divorce**- Parents separated or divorced
- 32%** **Verbal Abuse**- Parent or adult in the home ever swear at them, insult them or put them down at least once

States Collecting ACEs Data 2009 - 2017



# ACE's



- Stress Response
- Involuntary response for “survival”
- In Children , there are 3 stress responses
  - Positive
  - Tolerable
  - Toxic





Brief increases in heart rate,  
mild elevations in stress hormone levels.

Serious, temporary stress responses,  
buffered by supportive relationships.

Prolonged activation of stress  
response systems in the absence  
of protective relationships.

# POSITIVE STRESS RESPONSE



- Brief, infrequent, mild to moderate intensity
- Necessary for appropriate and healthy childhood development
- Social- emotional buffers allow a return to baseline
- It builds normal development and resiliency
- Examples:
  - Receiving Vaccines
  - A 2 yr old who stumbles while running
  - First day of Kindergarten
  - Taking a test



# TOLERABLE STRESS RESPONSE



- More severe stress response
- Greater magnitude of adversity or threat
- Limited in Duration
- Presence of a caring, stable and nurturing adult
- Examples:
  - Death of a family member
  - Contentious divorce
  - Natural disaster
  - A move
  - Serious illness or injury
- Of note, it can become Toxic Stress



# TOXIC STRESS RESPONSE



- Extreme, frequent or prolonged activation of the physiologic stress response
- No buffering presence of a stable, caring and nurturing adult
- Cause permanent changes and long lasting effects
  - Epigenetics
  - Brain architecture
  - Neuroendocrine-Immune (NEI)
- Examples
  - Abuse
  - Neglect
  - Household dysfunction





# Trauma Induced Alterations



- Early adversity is a catalyst that can change the:
  - DNA
    - read/ transcribed - Epigenetic modifications
  - Brain structure/architecture
  - Brain function
    - Neuroendocrine
    - Immune
- These effects are individual as well as cooperatively
- Long term, possible permanent, negative consequences



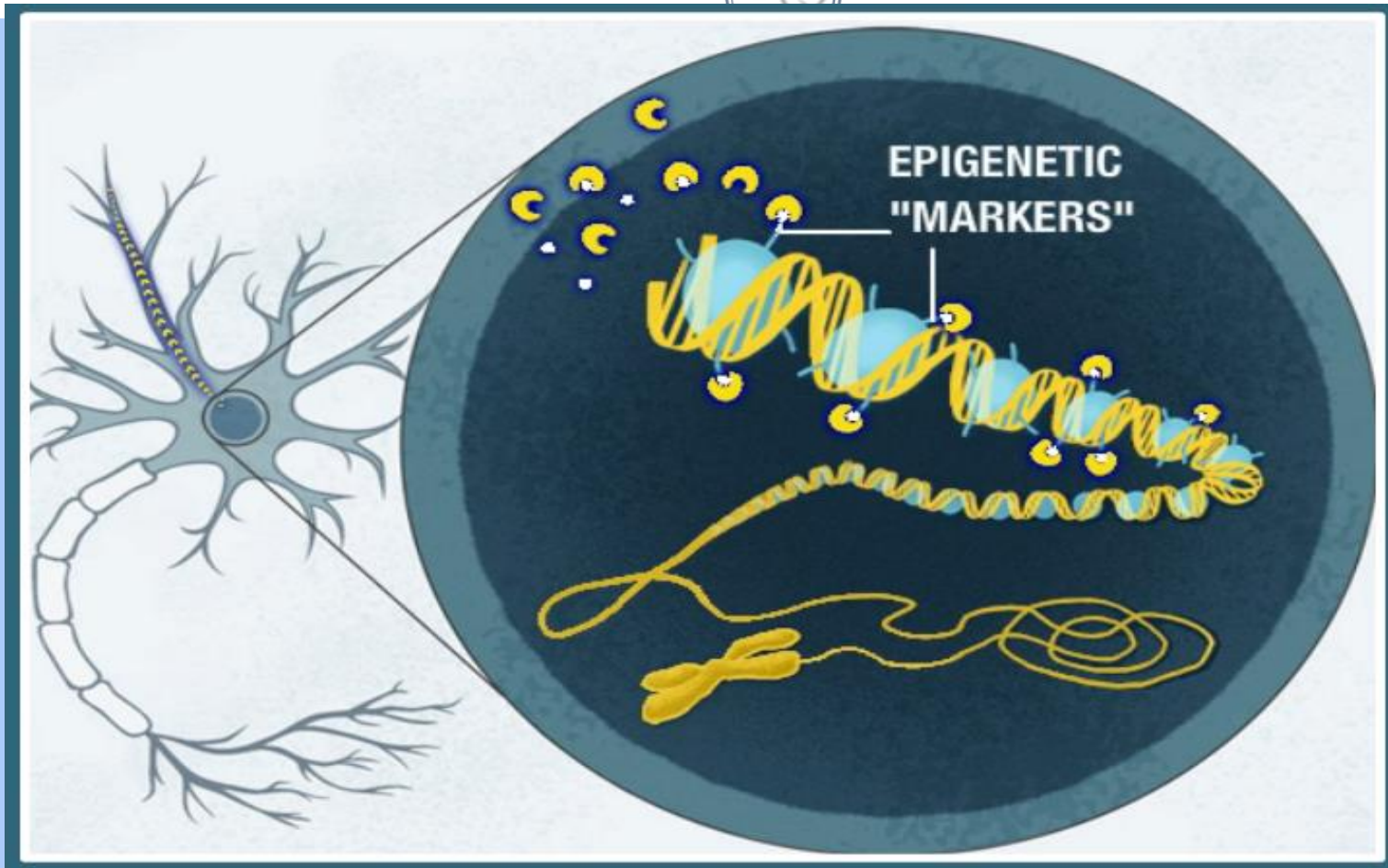
# Epigenetics



As an organism grows and develops, carefully orchestrated chemical reactions activate and deactivate parts of the genome at strategic times and in specific locations. Epigenetics is the study of these chemical reactions and the factors that influence them.

Genetic Science Learning Center. (2013, July 15) Lick Your Rats.  
Retrieved May 09, 2018, from  
<http://learn.genetics.utah.edu/content/epigenetics/rats/>

# Epigenetics



[https://cpeip.fsu.edu/mma/Module/FSU\\_Pediatricians/story.html](https://cpeip.fsu.edu/mma/Module/FSU_Pediatricians/story.html)

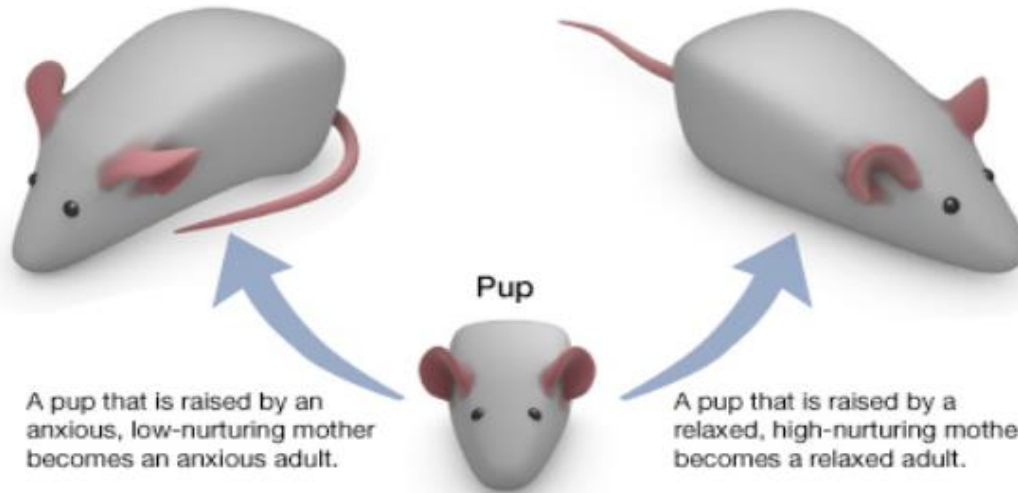


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# Lick Your Pups



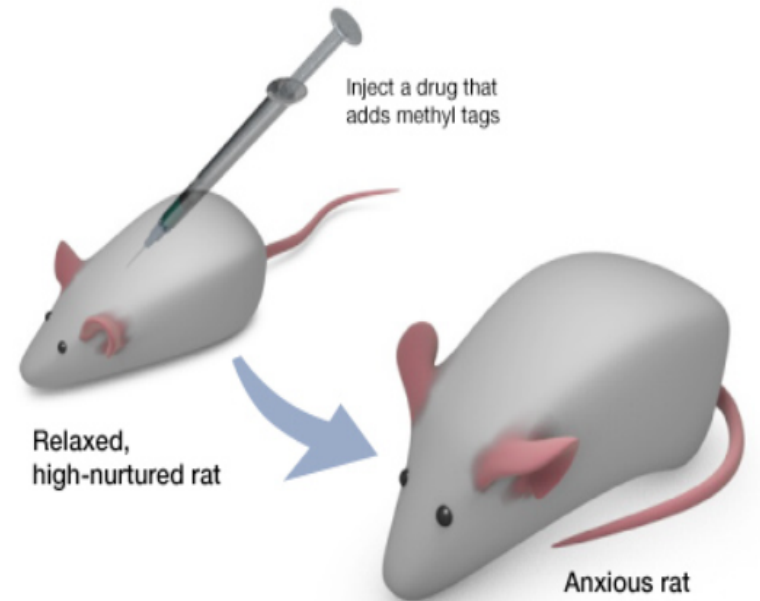
High-nurturing mothers raise high-nurturing offspring, and low-nurturing mothers raise low-nurturing offspring. This may look like a genetic pattern, but it's not. Whether a pup grows up to be anxious or relaxed depends on the mother that raises it - not the mother that gives birth to it.

Genetic Science Learning Center. (2013, July 15) Lick Your Rats. Retrieved May 09, 2018, from <http://learn.genetics.utah.edu/content/epigenetics/rats/>

# Epigenetic Patterns are Reversible



Gene expression patterns that are set up early in life are not necessarily stuck that way forever. You can take a low-nurtured rat, inject its brain with a drug that removes methyl groups, and make it act just like a high-nurtured rat. The GR gene gets turned on, cells make more GR protein, and the rat takes on a more relaxed personality. It works in the other direction too. You can take a relaxed, high-nurtured rat, inject its brain with methionine (a source of methyl) and make it more anxious. Of course drugs affect many genes, so they're not an exact substitute for maternal care. But it turns out that you can also turn an anxious rat into a more relaxed rat by spicing up its living quarters. So take heart -- your epigenetic destiny is not written in permanent ink.



Genetic Science Learning Center. (2013, July 15) Lick Your Rats.  
Retrieved May 09, 2018, from  
<http://learn.genetics.utah.edu/content/epigenetics/rats/>

# Early Brain Development



## Early Childhood Health Optimization

A Project by Florida State University  
Center for Prevention and Early Intervention Policy

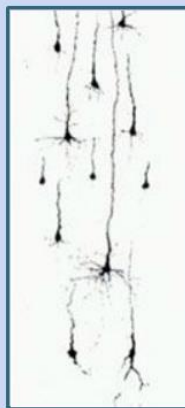
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Early Experiences Build Brain Architecture

### Brains Are Built From the Bottom Up

#### Reinforcing and Pruning Connections

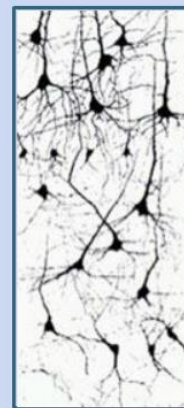
Birth



6 Years



14 Years



Source: Chugani, H.T. (1997)

Page 2 of 5

# EPIGENETICS



- Genes are inherited from your parents
- Computer versus software
- Environment and experience influence:
  - How the genes are read
  - How the genes are expressed
- Experiences put a “signature” on the genome
  - “Epigenetic Marker”
    - Determines Neuroendocrine Immune
    - Varies the sensitivity of stress hormone receptors in the brain





# Genes



- **Epigenetics**
  - Turn on or off
- **Telomeres**
  - Noncoding sequences
  - Bumpers
    - ✦ Protect the DNA strand
  - Too short
    - ✦ cell retires
  - Protect and make more cells
    - ✦ Replicates uncontrollably
    - ✦ Precancerous or cancerous
- **Telomerase**
  - Enzyme that lengthens the telomers
  - Research





# Healthy Well Regulated Brain



- Thinking brain and emotional brain work well in tandem
- With stressful situations our brain gets us back to a steady state
- This is the foundation of “healthy” development





Early Brain and  
Child Development

BUILDING BRAINS, FORGING FUTURES

A Program of the American Academy of Pediatrics



# Differential Brain Maturation

- **The Brake** – PFC (with some hippocampal help)

## Frontal lobes:

Abstract thought, reasoning, judgment, planning, impulse and affect regulation, consequences

## Temporal lobe (outside):

Processing sound and language

## Limbic System (inside):

Emotions and impulsivity

**+ The Gas Pedal +  
Amygdala**

## Parietal Lobe:

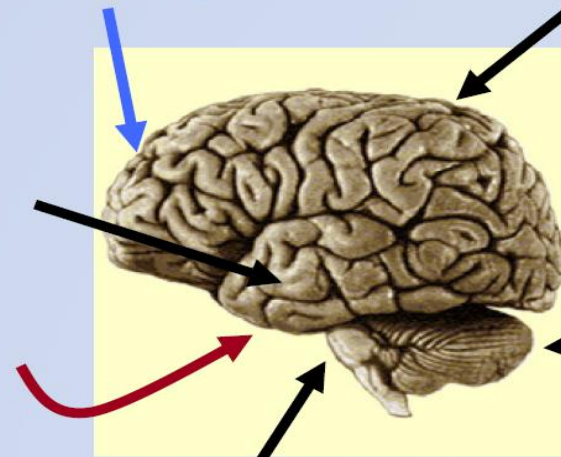
Integration of sensory data and movement

## Occipital Lobe:

Visual processing

## Cerebellum:

Smooth movements  
Coordination



## Brain Stem & Cranial Nerves:

Vital functions  
Swallowing

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# Effect on the brain in childhood trauma



- Emotional brain becomes a survival brain
  - ✦ The child feels unsafe in the “Chaos”
  - ✦ Relies on basic automatic survival responses
  - ✦ Hijacks the thinking brain - “Hostel takeover”
    - Good decisions vs bad decisions
    - Traumatized brain can’t rely on the thinking brain
- Alarm system in the brain becomes distorted
  - ✦ Perceives danger in everything
  - ✦ Alarm of “danger” goes off all the time
  - ✦ Interferes with “being present”
- Inability to appraise the present and learn from experience
  - ✦ Velcro for bad
  - ✦ Teflon for good



# ACE's - Effect on Brain and Body



- Brain Architecture
  - ✦ Loss of cells / atrophy
  - ✦ Damage to neuron connections
  - ✦ Hypertrophy
- First 5 yrs
  - ✦ Wire the neurons
- Prepuberty / Puberty
- Adulthood



# ACEs - Brain



- Limbic System
- Ventral Tegmental Area
- Locus Coeruleus
- Cortex
- HPA Axis

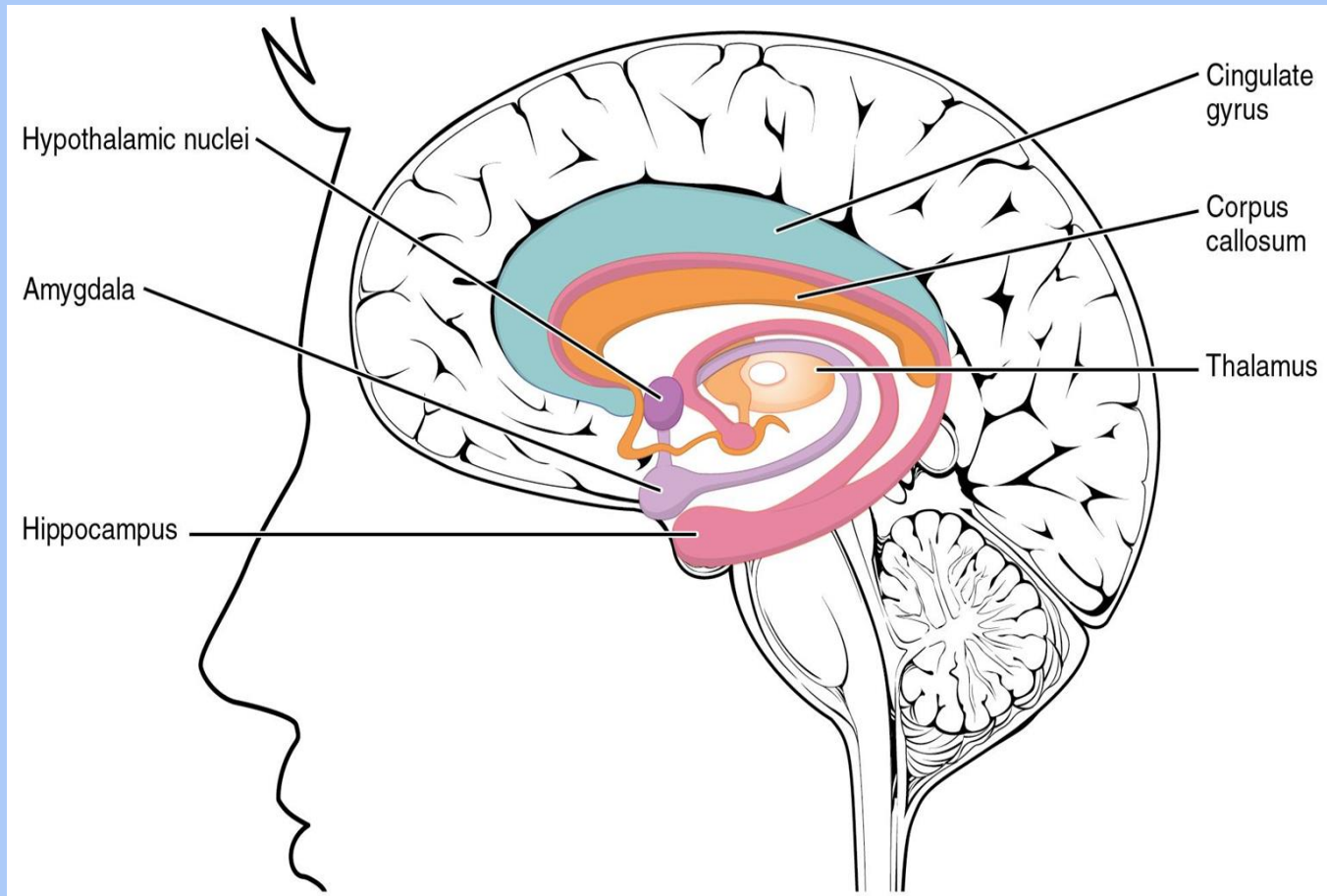


# ACE's - Effect on Brain



- Limbic System – housing of emotional life
  - Amygdala
    - ✦ “The Alarm” or the “smoke detector”
    - ✦ Emotions – fear, anxiety, violence, anger
    - ✦ Impulsivity / reactions
  - Hippocampus
    - ✦ “Memory Bank”
      - especially of context (ST to LT)
      - Is the new input relevant for Survival based on past experiences?
    - ✦ Learning
    - ✦ Mood





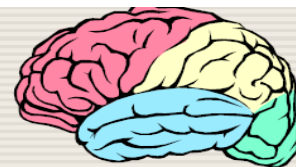
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# Out of Balance?



## Prefrontal Cortex

**Cold Cognition**

**Judgmental**

**Reflective**

**Calculating**

**Think about it**

**Biological maturity by 24**

## Amygdala

**Hot Cognition**

**Emotional**

**Reactive**

**Impulsive**

**Just do it**

**Biological maturity by 18**

Adapted from Ken Winters, Ph.D.



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# ACE's – Effect on Brain



- **Ventral Tegmental Area**
  - Reward center
  - Converses with the limbic and cortical areas via dopamine
  - Motivation, addiction



# ACE's - Effect on Brain



- **Local Coeruleus**
  - Regulates mood, aggression and arousal
  - Can mess with the sleep - wake cycle
  - Works with the Prefrontal Cortex
- **Cerebral Cortex**
  - Prefrontal Cortex - “Watchtower”
    - ✦ Judgement, decision making
    - ✦ Impulse control / regulation
  - Helps critical observation to false alarm or further action



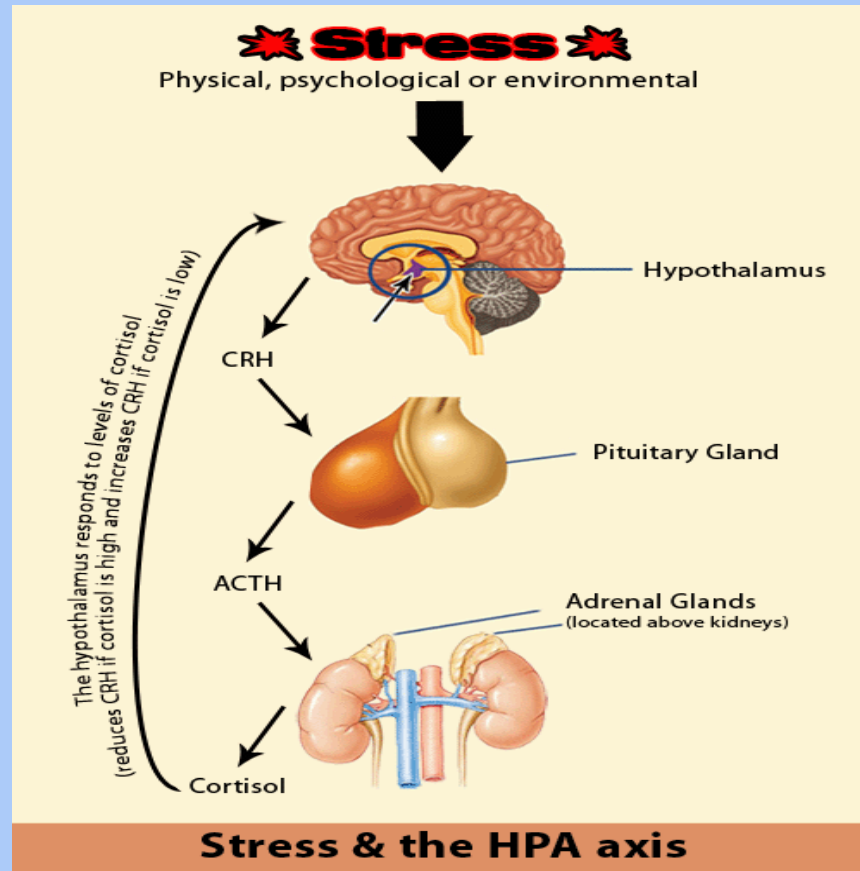
# ACE's - Effect on Brain



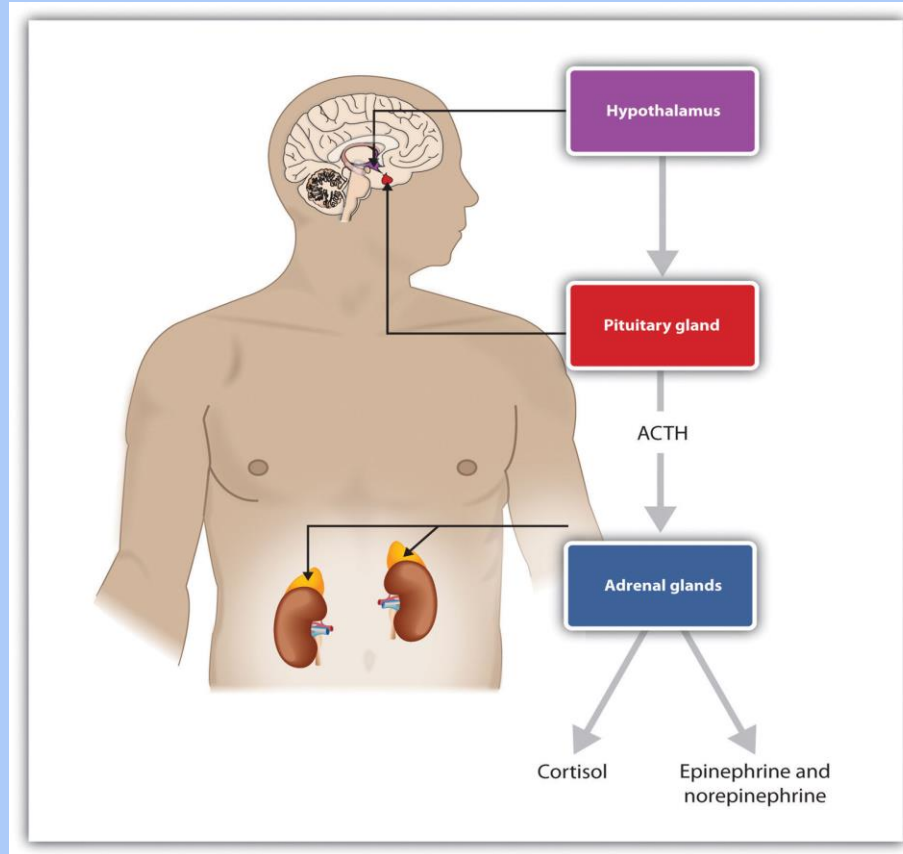
- HPA Axis -
  - Hypothalamus
    - ✦ Regulates the Autonomic Neuron System
    - ✦ Flight or fight – Epinephrine
    - ✦ Rest or digest - Norepinephrine
  - Pituitary
  - Adrenal Gland



# ACE's - Effect on Brain and Body



# ACE's - Effect on Brain and Body



# ACE's - Effect on Brain and Body



- **Immune System**
  - The nervous system has direct affect on it
  - Secretion of inflammatory cytokines
  - Lymphocytes and macrophages
  - Immune memory
- **Too much cortisol**
  - Suppress cellular immunity
  - Susceptible to infections
- **Too little cortisol**
  - No negative feedback
  - More secretion of inflammatory cytokines
  - Prone to Autoimmune diseases





# HOW **STRESS** AFFECTS THE BODY

## **BRAIN**

Difficulty concentrating, anxiety, depression, irritability, mood, mind fog

## **CARDIOVASCULAR**

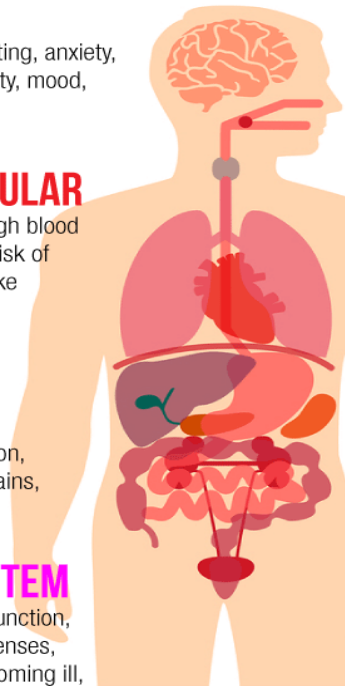
higher cholesterol, high blood pressure, increased risk of heart attack and stroke

## **JOINTS AND MUSCLES**

increased inflammation, tension, aches and pains, muscle tightness

## **IMMUNE SYSTEM**

decreased immune function, lowered immune defenses, increased risk of becoming ill, increase in recovery time



## **SKIN**

hair loss, dull/brittle hair, brittle nails, dry skin, acne, delayed tissue repair

## **GUT**

nutrient absorption, diarrhea, constipation, indigestion, bloating, pain and discomfort

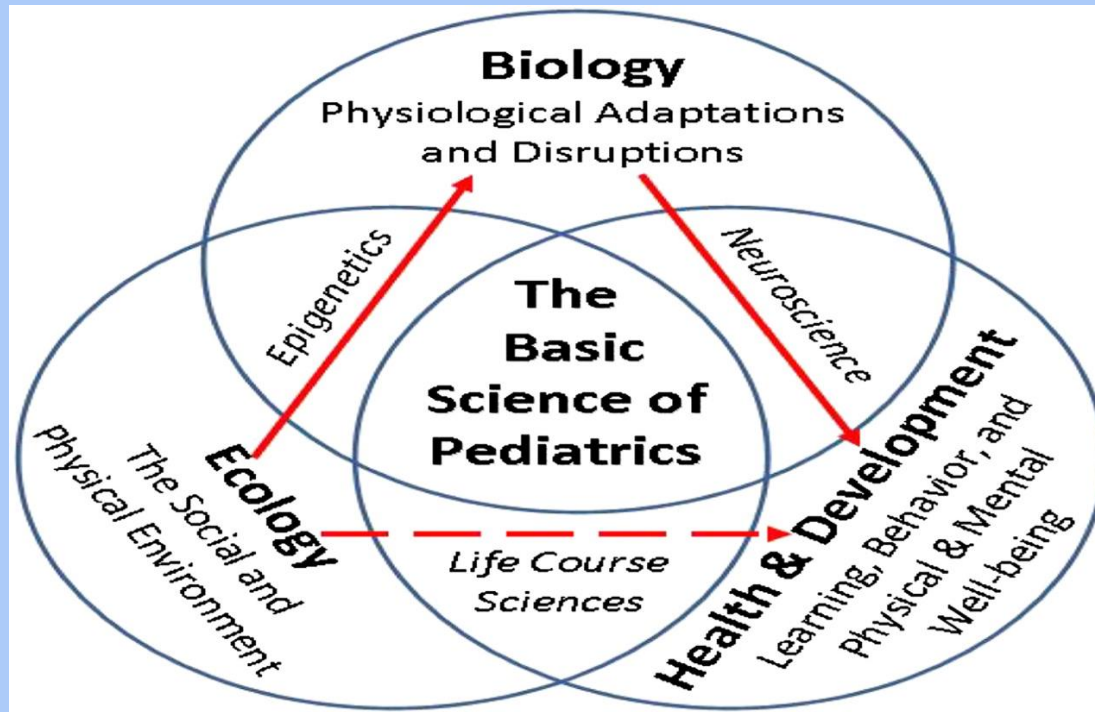
## **REPRODUCTIVE SYSTEM**

decreased hormone production, decrease in libido, increase in PMS symptoms



Ecology becomes Biology  
and together

They drive Health & Development over a lifespan.



AAP technical report jan 2012 (volume 129 issue 1)



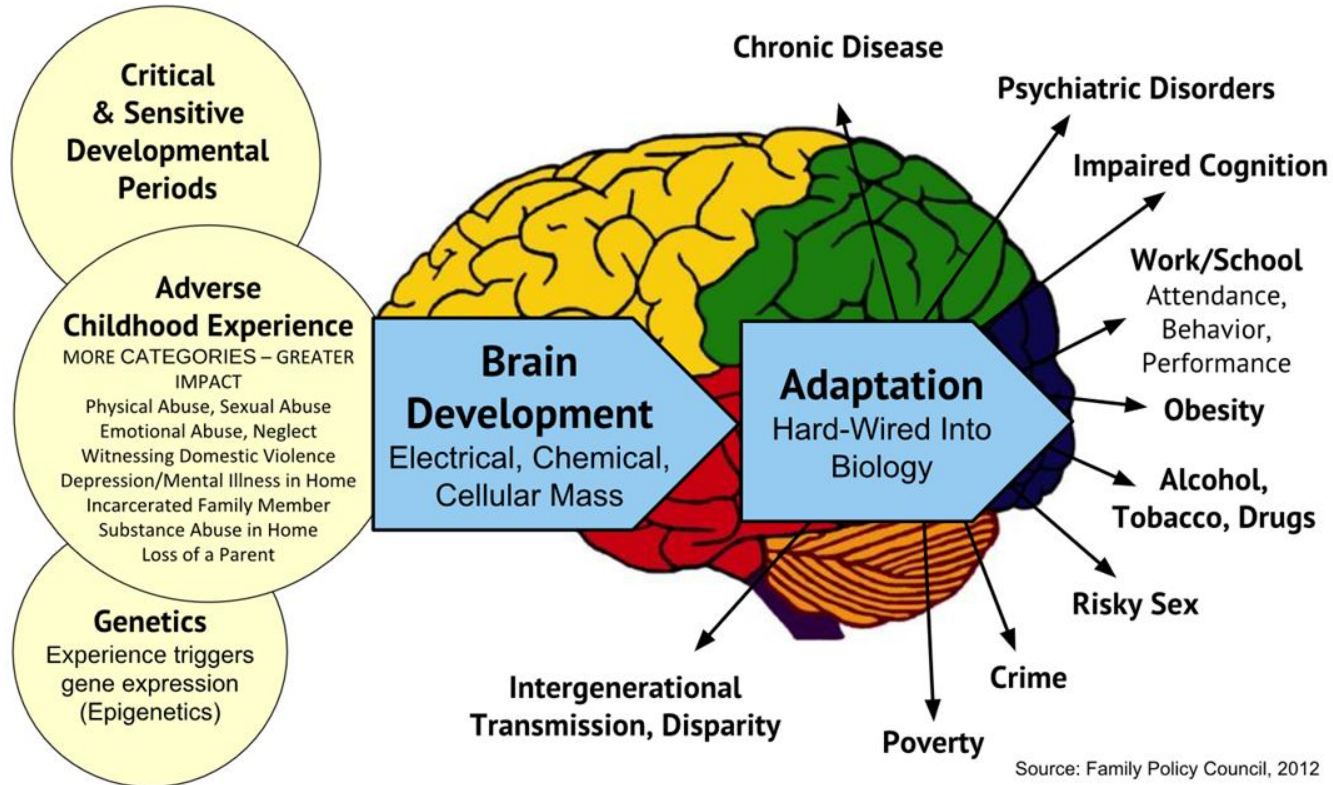
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# Lifetime Effects from ACEs





.... what is really beneath the surface?



Anger

Shame

Hate

Fear of physical harm

Lack of confidence

Abuse

Neglect

Domestic Violence



# Neuroplasticity



- Orchestrated dance between:
  - Brain & Environment
- Synaptic
  - Change in strength of connection (synapse)
  - Whisper to shout
  - Lifelong
- Cellular
  - Number of brain cells talking to each other
  - 1 person shouting vs everyone in a stadium shouting
  - Occurs primarily during the first 5 yrs of life
- Neurons that fire together, wire together
  - Can be negative or positive



# Parental ACE's



- Epigenetics
  - Pass these changes on to their children
- Childhood ACE's linked to increase adult mental disorders
  - impaired parenting
  - dysfunctional interactions
  - lack of understanding of normal development
- High risk behaviors
  - exposure to toxins ie. smoke
  - learned behaviors
- Increase risk of higher ACE's in their own children
- Increased risk to their own children having
  - Higher ACE's
  - poor physical and emotional health
  - behavioral problems
- May contribute to stressful living situations: poverty, food insecurity

“The potential intergenerational effects of ACE's are supported by research revealing increased risk of adverse health outcomes among children of parents who experienced chronic trauma”<sup>2</sup>

# Prenatal



- **Mother**
  - Stress- increase cortisol
    - ✦ Alters the infants immune response
  - Calorie intake
    - ✦ Fetus make due
    - ✦ Increase glucose exposure
  - Nutrition
  - Vitamins and minerals – folate
  - Habits - exposures to toxins
- **Low Birth weight**
  - Obesity
  - Diabetes
  - Early CV disease



# Prenatal Stress



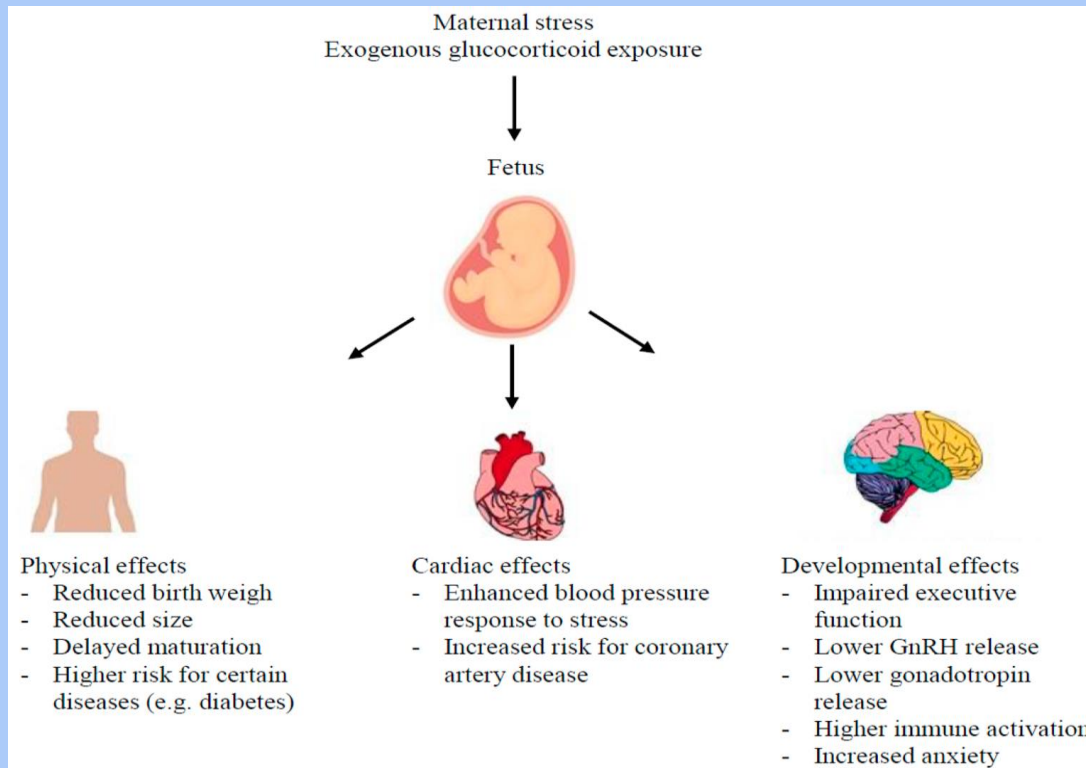
Leads to:

- Increase Corticosterone
- Increase in ACTH

Exposure to glucocorticoids results in:

- Delayed formation of myelin sheaths
- Decrease production of inter-neuronal connections
- Decrease production of new neurons in the fetal brain
- Long term wariness in unfamiliar environments





## Stress and the HPA axis: Balancing Homeostasis and Fertility Dana Joseph and Shannon Whirledge





# Postnatal



- Mother's Stress
  - ✦ elevated basal cortisol
  - ✦ more harsh discipline due to hyperresponsiveness of the HPA axis
- Breastfeed
  - ✦ Mother's diet
  - ✦ Oxytocin - security and bonding / attachment
  - ✦ IGA, lactoferrin
- Adult - Infant interaction
  - ✦ program the HPA axis
  - ✦ healthy development of the HPA axis
- Immunity of the infant - TH1 and TH2
  - ✦ Breastfeed
  - ✦ Vaginal delivery
  - ✦ Exposure to animals
  - ✦ Avoid Smoke



# Parental ACE's and Transmission



- Epigenetics
  - Pass these changes on to their children
- Childhood ACE's linked to increase adult mental disorders
  - impaired parenting
  - dysfunctional interactions
  - lack of understanding of normal development
- High risk behaviors
  - exposure to toxins ie. smoke
  - learned behaviors
- Increase risk of higher ACE's in their own children
- May contribute to living situations
  - poverty
  - food insecurity

“The potential intergenerational effects of ACE's are supported by research revealing increased risk of adverse health outcomes among children of parents who experienced chronic trauma”<sup>2</sup>



# Parental ACE's and Transmission



- Genetics
- Social Learning Theory
  - parent influenced by psychological factors and responses to environmental stimuli
  - parent changed by their trauma/ stress
- Epigenetics
  - Intergenerational transmission
- Uterine exposure changes
- Early postnatal care



# What can Healthcare Providers do?



Learn About ACE's and Toxic Stress  
Trauma Informed Office (TIO)

Intervene early

Screen

Help children learn to turn off their stress  
response

Become a Reach Out and Read Provider  
2 generation support

Teach from an early age healthy lifestyles

Help in teaching the parent and child about  
Resilience



# Pediatric Advantage



- Medicine and health
- Development
- Advantages of prevention over treatment
- Healthcare beyond medicine
  - Importance of family
  - Importance of early behaviors
  - Importance of early education
- We are advocates for those:
  - Who have no voice
  - One of the most vulnerable in our society
- We know the mechanism and pathways and now we need to use this information



# Nutrition



- Fast food increases inflammation
- Eat breakfast everyday
- Fill all 3 meals meals with colorful fruits and vegetables
- Decrease sugar in the diet (desserts and added sugar)
  - Addiction center – dopamine and down regulate
- Drink more water
  - 0 soda pop/cola
  - Limit, or preferably, NO juice
- Try to eat meals as a family
- Fish oil, Tumeric are anti inflammatory



# Sleep



- REM
  - Dream sleep
  - Creativity
  - Emotional therapy
    - ✦ the brain shuts off stress neurotransmitter NE
    - ✦ emotional lights up but in a safe environment
    - ✦ strips away painful emotional aspect from the experiences
- NREM
  - Imprints information
  - Memory function - “Save “ button
    - ✦ recently acquired knowledge and information and imprints them



# Exercise



- Metabolizes the stress hormones
- Anti - Inflammatory
- Decreases blood glucose
- Goal should be 30-60 minutes/day of “activity”
  - Start early in life to make it a habit
  - Find ways to make exercise fun
  - Change the activities up
- Limit screen time
  - Preferably < 2 hrs / day
  - Especially 1-2 hrs before bedtime
- Spend time outside
  - Appreciate nature
  - Imagination, exploration
  - Natural Vitamin D exposure





# Sleep



- Set bedtime and awakening to get the needed sleep
  - Go to sleep on time
  - Get up daily within an hour of the same time
  - Infants – 12-16 hrs
  - Toddlers – 11-14 hrs
  - Preschoolers – 10-13 hrs
  - Grade School – 9-12 hrs
  - Teenagers and adults – 8-10 hrs
- Turn off “screens” 1 hr before bedtime
- Important for :
  - Attention
  - Behavior
  - mood



# Sleep



- Lack of sleep is a stressor
- Anti- Inflammatory in itself
- Regulates cortisol
- Allows the parasympathetic system to work
- Set bedtime and awakening to get the needed sleep
  - Go to sleep around the same time
  - Get up daily within an hour of the same time
- Turn off “screens” 1 hr before bedtime
- Important for :
  - Attention
  - Behavior
  - Mood





# Mindfulness-Mind Body Awareness



- Evidence based intervention
  - Enhance regulation and resilience
  - Negate the acute response
  - Inversely associated with poor health behavior
  - Decreases the chronic inflammatory response
- Mind-body methods
  - Guided imagery
  - Yoga
  - Biofeedback, Neurofeedback
- Mindfulness
  - MBSR
  - MBCT
  - STIC – Stop, Take a breath, Imagine, Choose (act vs don't act)
  - Mindful Parenting
  - Mindfulness in School



# Resilience



<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/resilience/Pages/Promoting-Resilience.aspx>



# Why is Resilience Important



# RESILIENCE



- The ability, in the face of adversity/ challenge:
  - To assimilate
  - And rebalance oneself
- The 7 C's
  - Competence
  - Confidence
  - Connectedness
  - Character
  - Contribution
  - Coping
  - Control

<https://www.healthychildren.org/English/healthy-living/emotional-wellness/Building-Resilience/Pages/The-7-Cs-Model-of-Resilience.aspx>



# Competence



Feeling of knowing that you can handle a situation effectively.

- Helping children focus on individual strengths
- Focusing any identified mistakes on specific incidents
- Empowering children to make decisions
- Avoid “helicopter” behavior
- Recognizing the competencies of siblings individually and avoiding comparisons





# CONFIDENCE



A child's belief in his own abilities is derived from competence

- Focusing on the best in each child
- Clearly expressing the best qualities, such as fairness, integrity, persistence, and kindness
- Recognizing when he or she has done well
- Praising honestly about specific achievements; not diffusing praise that may lack authenticity
- Not pushing the child to take on more than he or she can realistically handle



# CONNECTION



Developing close ties to family and community creates a solid sense of security

- Building a sense of physical safety and emotional security within your home
- Allowing the expression of all emotions, so that kids will feel comfortable reaching out during difficult times
- Addressing conflict openly in the family to resolve problems
- Creating a common area where the family can share time (not necessarily TV time)
- Fostering healthy relationships that will reinforce positive messages



# CHARACTER



Children need to develop a solid set of morals and values to determine right from wrong and to demonstrate a caring attitude toward others.

- Demonstrating how behaviors affect others
- Helping your child recognize himself or herself as a caring person
- Demonstrating the importance of community
- Encouraging the development of spirituality
- Avoiding racist or hateful statements or stereotypes

# CONTRIBUTION



Children need to realize that the world is a better place because they are in it. Understanding the importance of personal contribution can serve as a source of purpose and motivation.

- Communicating to children that many people in the world do not have what they need
- Stressing the importance of serving others by modeling generosity
- Creating opportunities for each child to contribute in some specific way



# COPING



Learning to cope effectively with stress will help your child be better prepared to overcome life's challenges.

- Modeling positive coping strategies on a consistent basis
- Guiding your child to develop positive and effective coping strategies
- Realizing that telling him or her to stop the negative behavior will not be effective
- Understanding that many risky behaviors are attempts to alleviate the stress and pain in kids' daily lives
- Not condemning your child for negative behaviors and, potentially, increasing his or her sense of shame



# CONTROL



Children who realize that they can control the outcomes of their decisions are more likely to realize that they have the ability to bounce back. .

- Life's events are not purely random and that most things that happen are the result of another individual's choices and actions
- Learning that discipline is about teaching, not punishing or controlling;
- A person's actions produce certain consequences



# Can



- Improve early childhood education
- 1st 5 years sets the foundation and starts the scaffolding
- What does it save individually and the society
  - Special education
  - Dropping out of school
  - Making less money - pay less taxes
  - cost of judicial system
  - cost of crime
  - Cost of incarceration



# Policies and Programs



- Improved Education
- Behavioral / Mental Health
- Integration of physical and behavioral health care services
- Substance abuse programs
- Healthier and safer communities
- Parent training programs (Triple P, Home Visits, Nurturing Parents)
- Teen pregnancy prevention programs
- Intimate partner violence prevention
- Home Visiting to Pregnant Women
- Social Support for Parents
- Community-based mentoring (little league, big brother/sister, martial arts)
- Safety nets:
  - ✦ High quality child care
  - ✦ Sufficient income support for lower income families (TANF, WICC, SNAP)
  - ✦ Medical – CHIP, Medicaid, EPSDT





# Caregiver & Community Capacities



- **Time and Commitment**
  - Nature of time
  - Quality of time
- **Resources**
  - Financial
  - Psychological and emotional (“style”)
- **Skills and Knowledge**
  - Education
  - Training
  - Interactions with professional



# Foundation of Healthy Development



- Stable and responsive environment of relationships
  - Support Responsive Relationships
- Safe and supportive physical environments
  - Reduce Sources of stress
- Healthy habits
  - Strengthen Core Life skills



# Arizona ACE Information



- [azpbs.org/strongkids](http://azpbs.org/strongkids)
- [acetoohigh.com](http://acetoohigh.com)
- [arizonahealthsurvey.org](http://arizonahealthsurvey.org)
- [azdhs.gov/documents/prevention/womens-childrens-health/reports-fact-sheets/issue-briefs/ACEs-report-2014.pdf](http://azdhs.gov/documents/prevention/womens-childrens-health/reports-fact-sheets/issue-briefs/ACEs-report-2014.pdf)



# Prenatal Stress leads to: (multiple Ans)



- 1. Increased ACTH
  - 2. Decreased Corticosterone
  - 3. Decreased ACTH
  - 4. Increased Corticosterone
- Question Rationale: Prenatal stress has direct impact on the developing HPA axis of the fetus. As a result, there is an increase in ACTH and Corticosterone. This exposure results in:
- •Delayed formation of myelin sheaths
  - •Decrease production of inter-neuronal connections
  - •Decrease production of new neurons in the fetal brain
  - •Long term wariness in unfamiliar environments



# RESOURCES



- WEBSITES

- Arizona ACE's in Action - [www.acesconnection.com/g/arizona-aces-in-action](http://www.acesconnection.com/g/arizona-aces-in-action)
- ACES Too High – <http://acestoohigh.com>
- ACES Connection Network – <http://www.acesconnection.com>
- American Academy of Pediatrics - [www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/EBCD/Pages/default.aspx](http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/EBCD/Pages/default.aspx)
- CDC – <http://cdc.gov/violenceprevention/cestudy/>
- Center for Youth Wellness - (<https://centerforyouthwellness.org/>)
- Center on the Developing Brain - (<https://developingchild.harvard.edu/>)
- National Child Traumatic Stress Network - [www.nctsc.org](http://www.nctsc.org)
- National Pediatric Practice Community (NPPC) - [centerforyouthwellness.org/building-a-movement/](http://centerforyouthwellness.org/building-a-movement/)
- Resilience - <http://resiliencetrumpsaces.org/>
- Robert Wood Foundation - <http://rwjf.org/en/library/collections/aces.html>



# RESOURCES



- AZ ACE Data
  - 2016 National Survey of Children's Health - <http://childhealthdata.org/browse/survey/results?q=4783&r=4>
  - 2016 Arizona Youth Survey
- Videos / Movies
  - Brain Hero - <https://developingchild.harvard.edu/resources/brain-hero/>
  - How Brains are Built -The Core Story of Brain Development. <https://www.youtube.com/watch?v=LmVWOe1ky8s>
  - Paper Tigers
  - Resilience
  - Tedmed Nadine Burke - <https://www.youtube.com/watch?v=uXXTLf7oouU>
- Books / Articles
  - The Deepest Well (Nadine Burke-Harris MD)
  - AAP - The Lifelong Effects of Early Childhood Adversity and Toxic Stress
  - AAP - Early Childhood Adversity, Toxic Stress and the Role of the Pediatrician:Translating Development Science into Lifelong Health

# References



1. Felitti VJ, Anda RF, The Adverse Childhood Experiences Study. *Am J Prev. Med.* 1998
2. Bowers ME, Yehuda R. Intergenerational transmission of stress in humans. *Neuropsychopharmacology.* 2016;41 (1):232-244
3. The Foundations of Lifelong Health are Built in Early Childhood (Center for Developing Child at Harvard)

