

Shifting the Paradigm: Preventing and Addressing Childhood Toxic Stress at the Primary, Secondary, and Tertiary Levels

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Presentation Format

Two Segments:

- 1) Epidemiology of childhood trauma
- 2) Introductory application of trauma-informed approaches

Terminology for Presentation

- **Adverse Childhood Experiences (ACES)** = physical, emotional, sexual abuse; physical, emotional neglect; growing up in homes with: domestic violence, substance abuse, parental discord, incarceration of household members, mentally ill household members
- **Childhood traumatic stress, Childhood toxic stress, Childhood adversity**
- **Trauma – experience/exposure**
- **Post-traumatic stress disorder PTSD**
- **Emotional Dysregulation**
- **Hypervigilance**
- **Triggers– sensory input**
- **Somatic – refers to the body**
- **Dissociation – out of body, catatonic state**

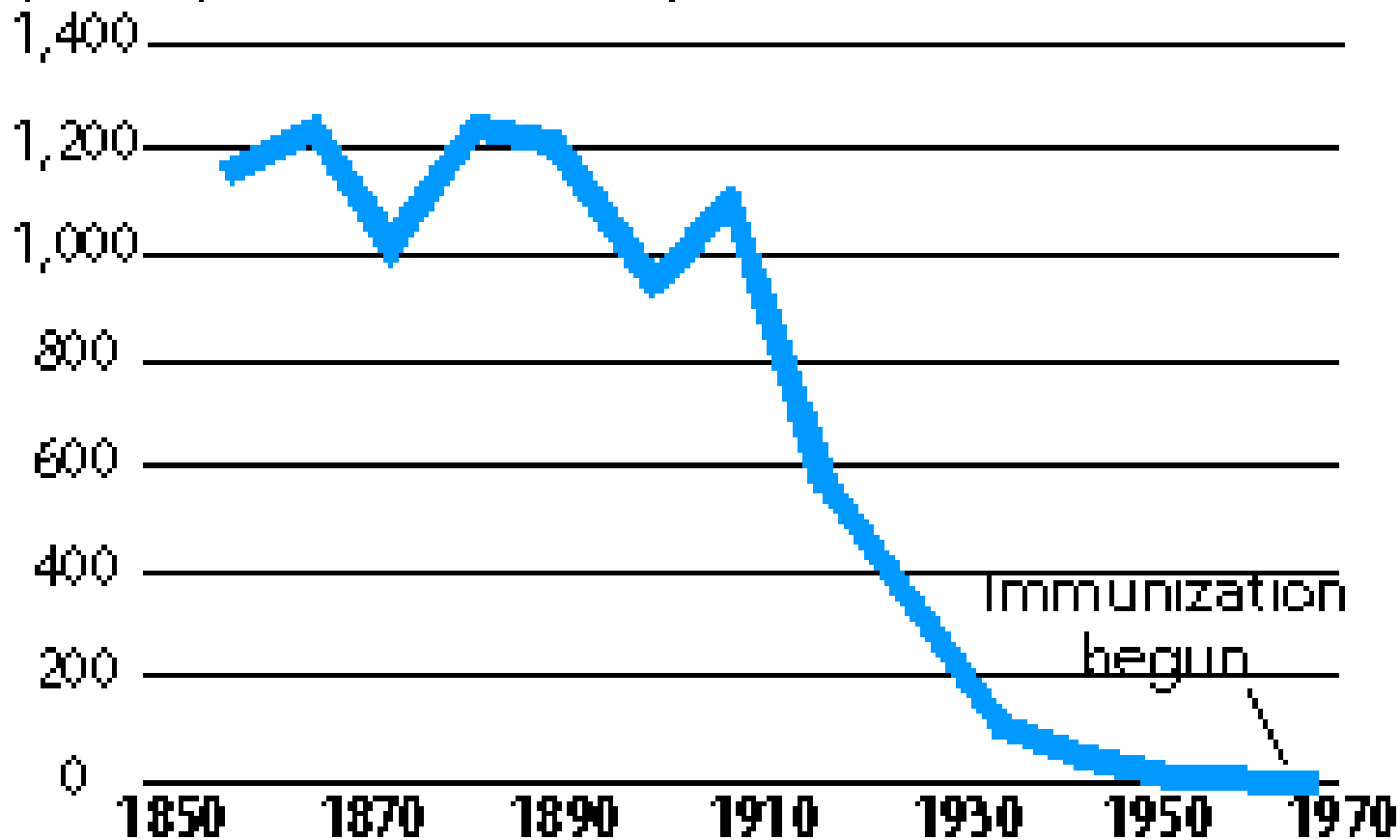
Modern Medicine and Public Health Achievements for Childhood Well-Being

Vaccines, the advent of antibiotics, and sanitation reduced:

- Burden of infectious diseases (e.g. TB)
- Rates in childhood mortality due to infectious disease (e.g. measles)
- Lead poisoning in children – Removed from paints and other industrial materials to prevent exposure from occurring
- Child labor laws and compulsory education

Death Rates for Measles in Children Under Age 15, England and Wales, 1850-1970

(deaths per 1 million children)



Thomas McKeown, *The Modern Rise of Population* (Academic Press, San Francisco, 1976), pp. 93, 96.

Changing Patterns of Disease = U.S. Epidemiologic Transition

Leading Causes of Death in the United States in 1900 and 2013:

In 1900*:

- 1) Pneumonia and Influenza
- 2) Tuberculosis
- 3) Diarrhea and Enteritis
- 4) Heart disease
- 5) Stroke
- 6) Liver Disease
- 7) Injuries
- 8) Cancer
- 9) Senility
- 10) Diphtheria

In 2013**:

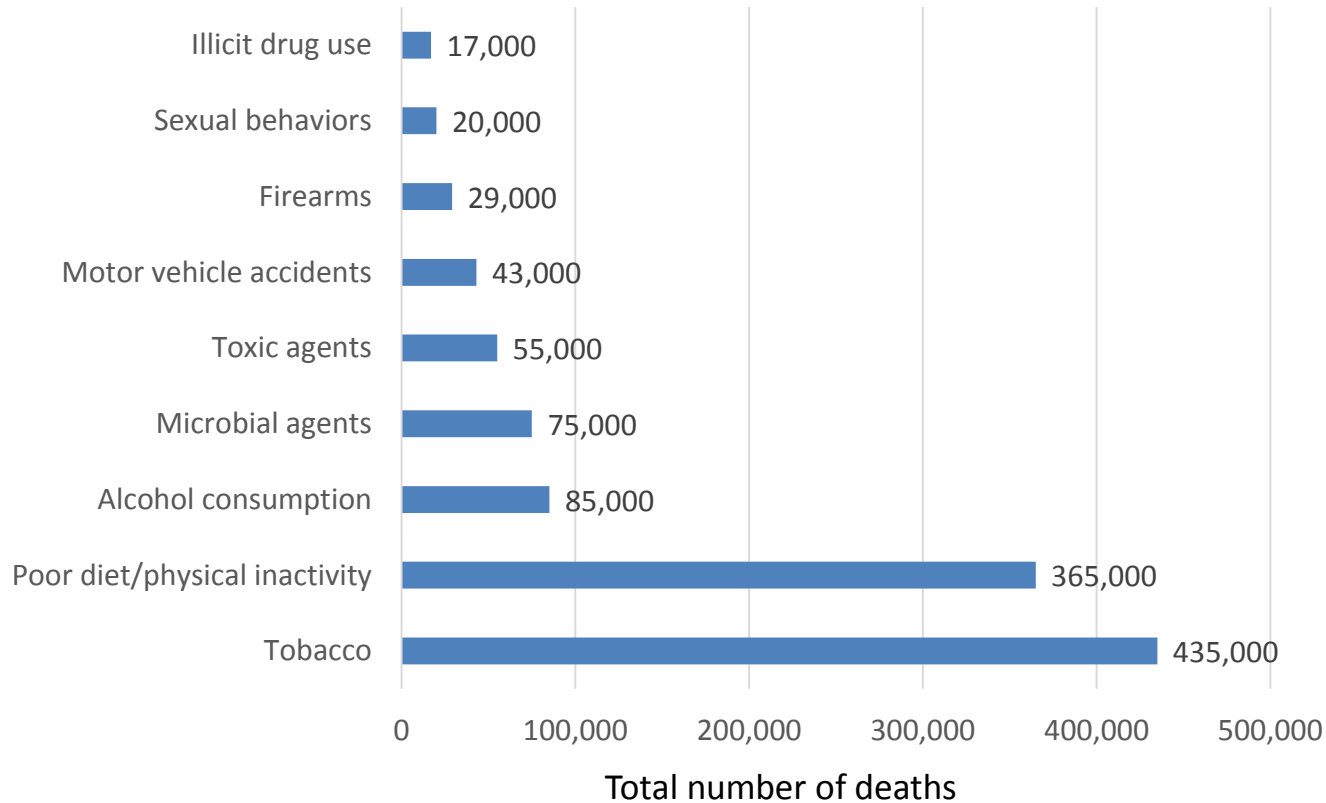
- 1) Heart disease
- 2) Cancer
- 3) Chronic lower respiratory diseases
- 4) Accidents
- 5) Stroke
- 6) Alzheimer's disease
- 7) Diabetes
- 8) Influenza and Pneumonia
- 9) Nephritis and nephrosis
- 10) Intentional self-harm (suicide)

*CDC. Achievements in Public Health, 1900-1999: Control of Infectious Diseases. MMWR; July 30, 1999 / 48(29);621-629

**CDC, National Center for Health Statistics: <http://www.cdc.gov/nchs/products/vsus.htm>

Actual Causes of Death, United States

Actual Causes of Death, 2000



McGinnis JM¹, Foege WH. Actual causes of death in the United States. JAMA. 1993 Nov 10;270(18):2207-12.

Mokdad AH, Remington PL. Measuring health behaviors in populations. Prev Chronic Dis 2010;7(4):A75.

http://www.cdc.gov/pcd/issues/2010/jul/10_0010.htm. Accessed 7/25/2015.

Scientific Gap Remained

Taking a Life Span Approach: What are the underlying factors that contribute to *actual* and *leading* causes of disease and death?

Adverse Childhood Experiences (ACE) Study Investigated the Health, Behavioral, and Social Consequences of Childhood Abuse, Neglect and Household Dysfunction

The Adverse Childhood Experiences (ACE) Study

A large scale epidemiologic study to examine the occurrence and contribution of early life adversity on behavioral, social, and health outcomes (over 17,000 participants)

Conducted among adult health maintenance organization (HMO) members, 18+ years who visited Kaiser Permanente in San Diego, CA for wellness based care between 1995-1997

Assessment of experiences:

- emotional, physical, sexual abuse
- emotional or physical neglect
- Growing up with: domestic violence, substance abuse or mental illness, parental discord, and crime

ACE Study Procedure

1. Participants were health maintenance organization (HMO) members seeking an overall health assessment
2. After doctor office visit, the Family Health History (FHH) questionnaire mailed home to participant.
3. The FHH included items about exposure to abuse and household dysfunction and other details about current health status

Definition of Adverse Childhood Experiences

Abuse and Neglect (\leq 18 years):

Emotional Abuse

Often or very often sworn at, insulted, or put down **OR**
made afraid of being physically hurt

Physical Abuse

Sometimes to very often pushed, grabbed, shoved, or slapped **OR**
Ever hit so hard that there were marks or injuries

Sexual Abuse

An adult or person at least 5 years older:

Ever Touch you in a sexual way **OR** Have you touch his/her body in a sexual way
OR Attempt **OR** actually had oral, anal, or vaginal intercourse

Emotional Neglect

Family members rarely or never made them feel special, loved, or
family was rarely or never was a source of strength, support, and protection.

Physical Neglect

Rarely or never had enough to eat, if parents drinking interfered with care,
if they wore dirty clothes, and rarely or never had someone
to take them to the doctor.

Definition of Adverse Childhood Experiences

Household Exposures (\leq 18 years):

Substance Abuse

Lived with anyone who was a problem drinker or alcoholic or who used street drugs

Mental Illness

Lived with anyone who was depressed or mentally ill or attempted suicide

Mother Treated Violently

Witnessed mother (or stepmother) sometimes to very often being pushed, grabbed, slapped or had something thrown at her **OR** Sometimes to very often kicked, bitten, hit with a fist, or hit with something hard **OR** Ever repeatedly hit over a few minutes **OR** Ever threatened with, or hurt by, a knife or gun.

Criminal Behavior in Household

Grew up with any family member who was sent to prison

Parental Separation or Divorce

Grew up with parental separation or divorce

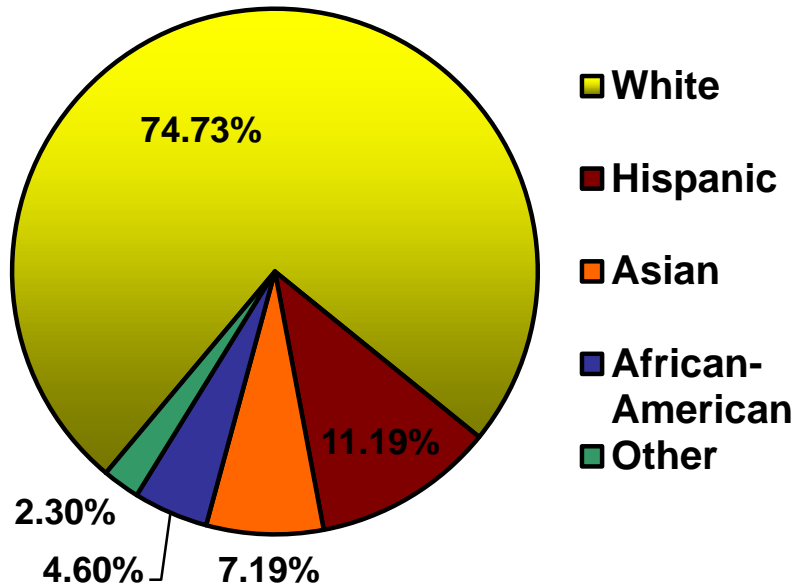
Growing up with: Childhood abuse, neglect domestic violence, substance abuse, mental illness in the home, parental discord, crime

- Impact developing child in ways that are not readily “seen”
 - endogenous stress response
- The experiences often go unrecognized or unsubstantiated
 - Stigma and secrecy of experiences



Characteristics of Study Participants

Characteristics of the Study Population



Mean age 57 years

Women 54%

Education

No H.S. diploma 7%

H.S. diploma or GED 17%

Some college 35%

College graduate 39%

Prevalence of Childhood Adversity

Prevalence of Individual Childhood Adversities

Childhood Abuse:

Physical	28.3%
Sexual	20.7%
Emotional	10.5%

*Childhood Neglect:**

Emotional	15.0%
Physical	10.0%

Household Exposures

Substance abuse	26.9%
Parental separation or divorce	23.3%
Mental illness	17.3%
Battered mother	12.7%
Criminal behavior	4.7%

* Wave 2 Only

Prevalence of reporting additional childhood adversities if reported any one category

One category reported

Probability of reporting another

Second ACE

Third ACE

Abuse

Emotional

98

90

Physical

83

64

Sexual

78

58

Neglect

Emotional

93

79

Physical

89

75

Household Dysfunction:

Battered Mother

95

82

Criminal household member

90

74

Mental illness

84

65

Parental separation/divorce

82

60

Substance abuse

81

60

Adverse Childhood Experiences (ACE) Score

<i>ACE score</i>	<i>Prevalence</i>
0	36.4%
1	26.2%
2	15.8%
3	9.5%
4	6.0%
5	3.5%
6	1.6%
7 or more	0.9%

64% reported experiencing one or more

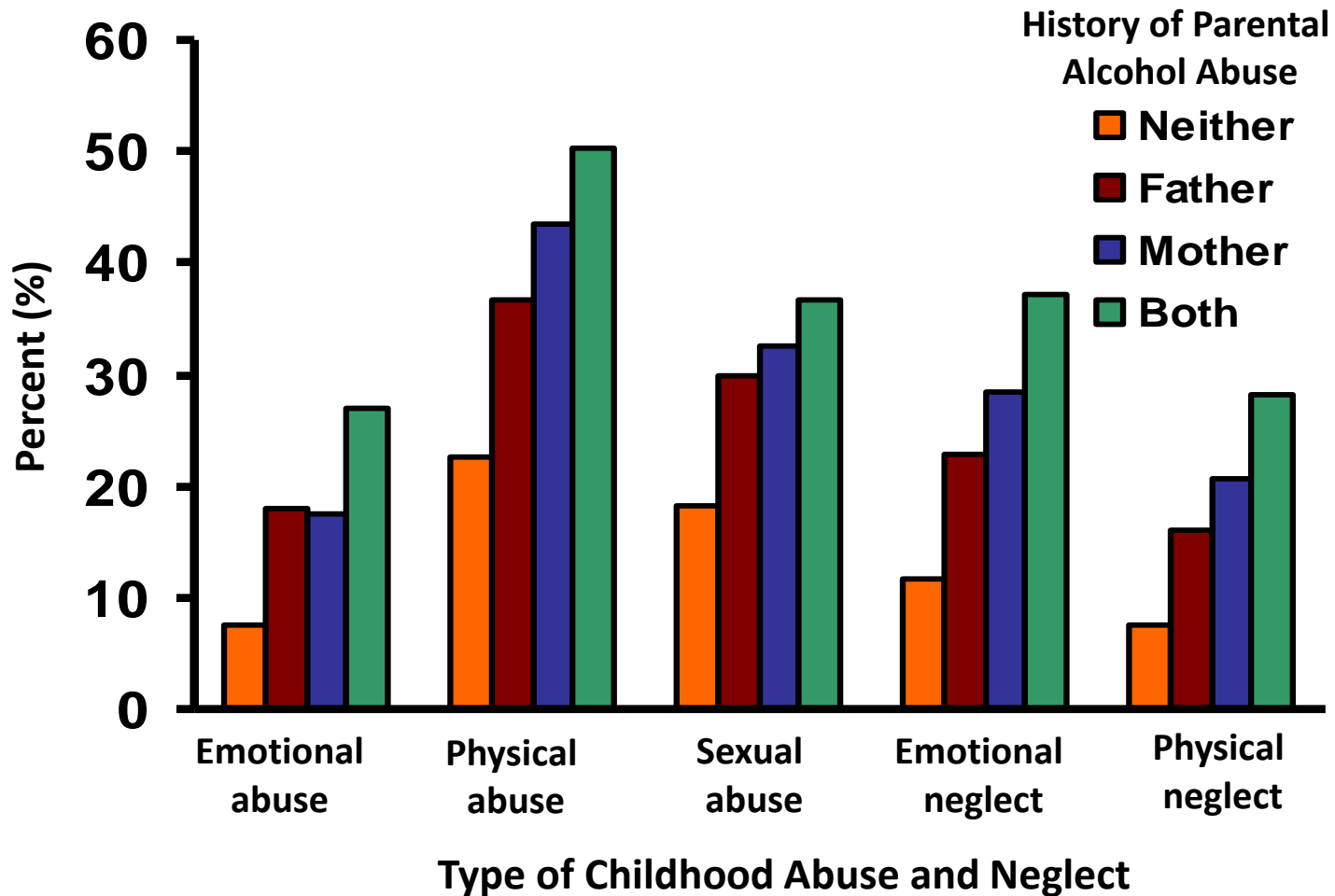
37% reported experiencing two or more

Total number reported —→ Cumulative Childhood Toxic Stress

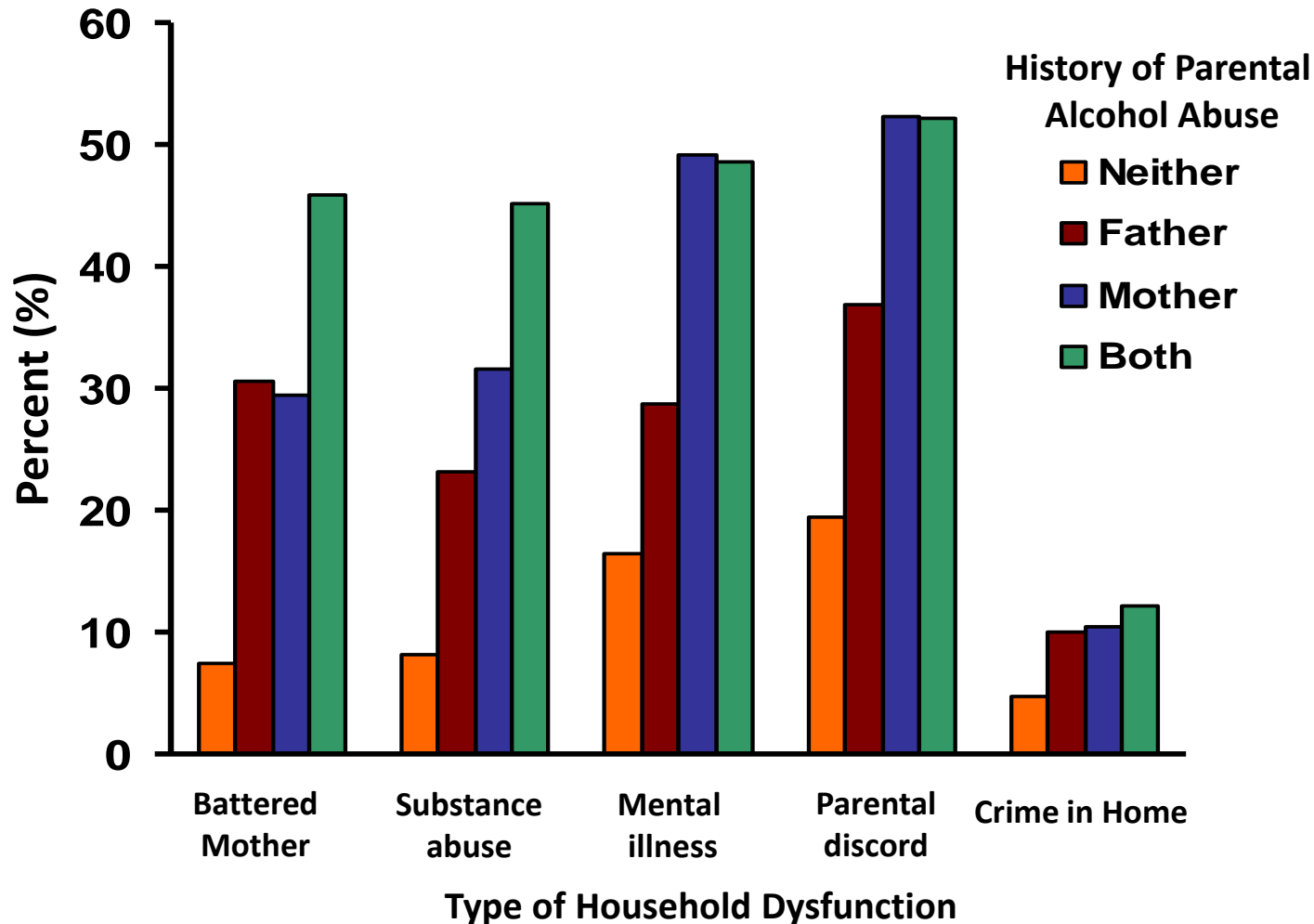
The Childhood Home Environment

**Exposure to parental alcohol abuse and
Co-occurrence of other childhood stressors**

Prevalence of Childhood Abuse and Neglect by History of Parental Alcohol Abuse

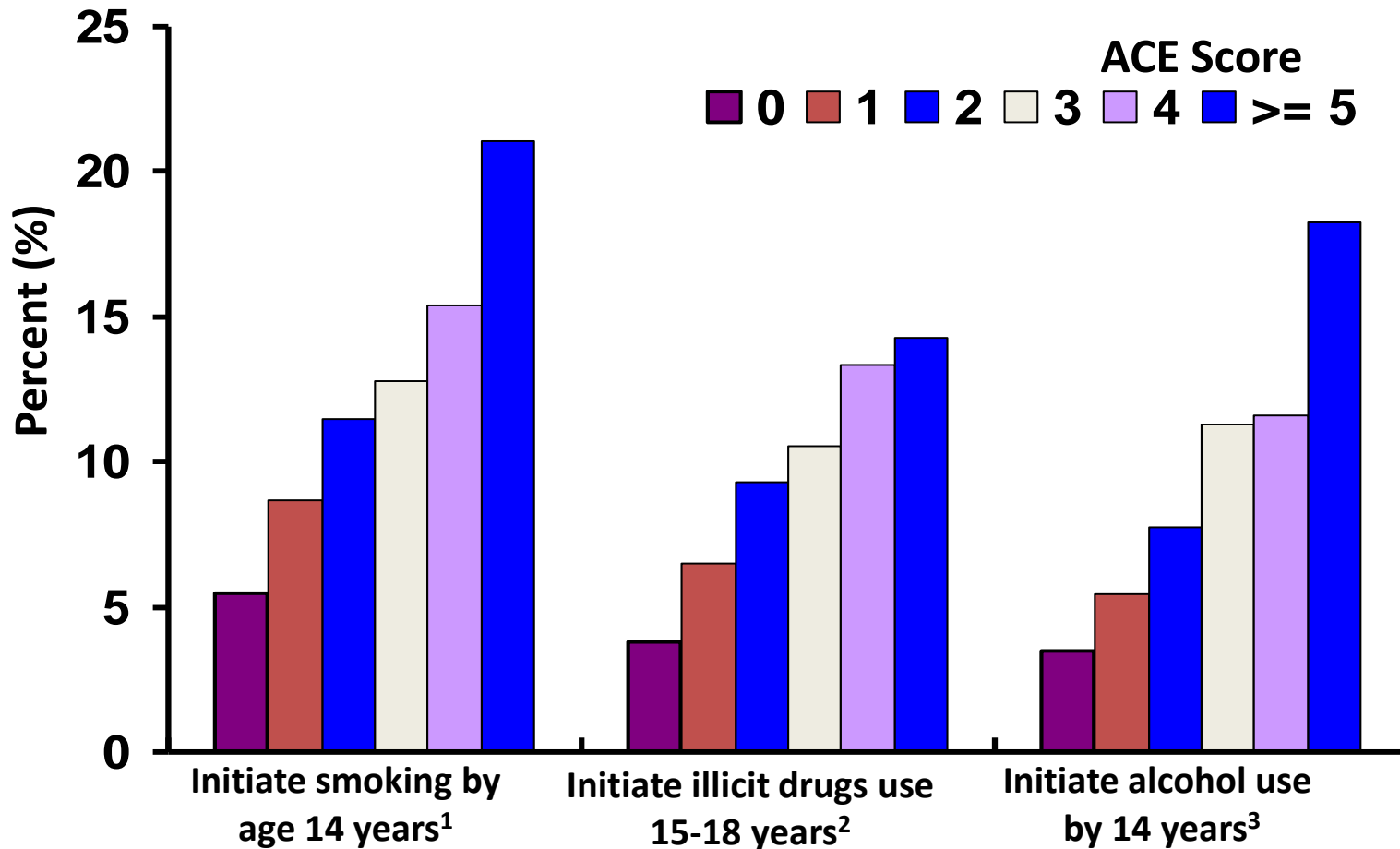


Prevalence of Household Dysfunction by History of Parental Alcohol Abuse



Childhood Adversity and Adolescent Health Risk Behaviors

Relationship Between ACE Score and Adolescent Substance Use

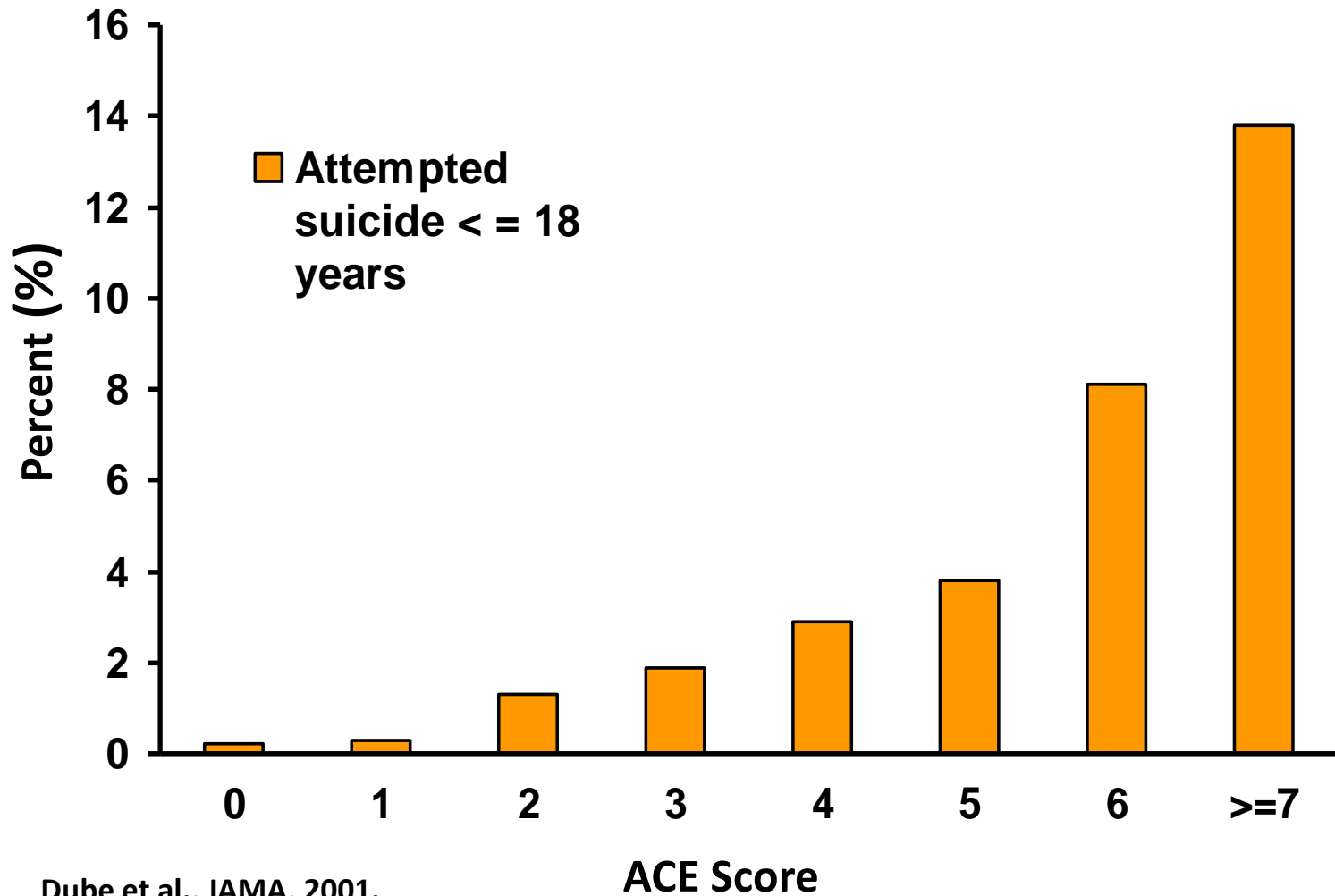


¹ Anda et al., JAMA, 1999.

² Dube et al., Pediatrics, 2003

³ Dube et al., Journal of Adolescent Health, 2006

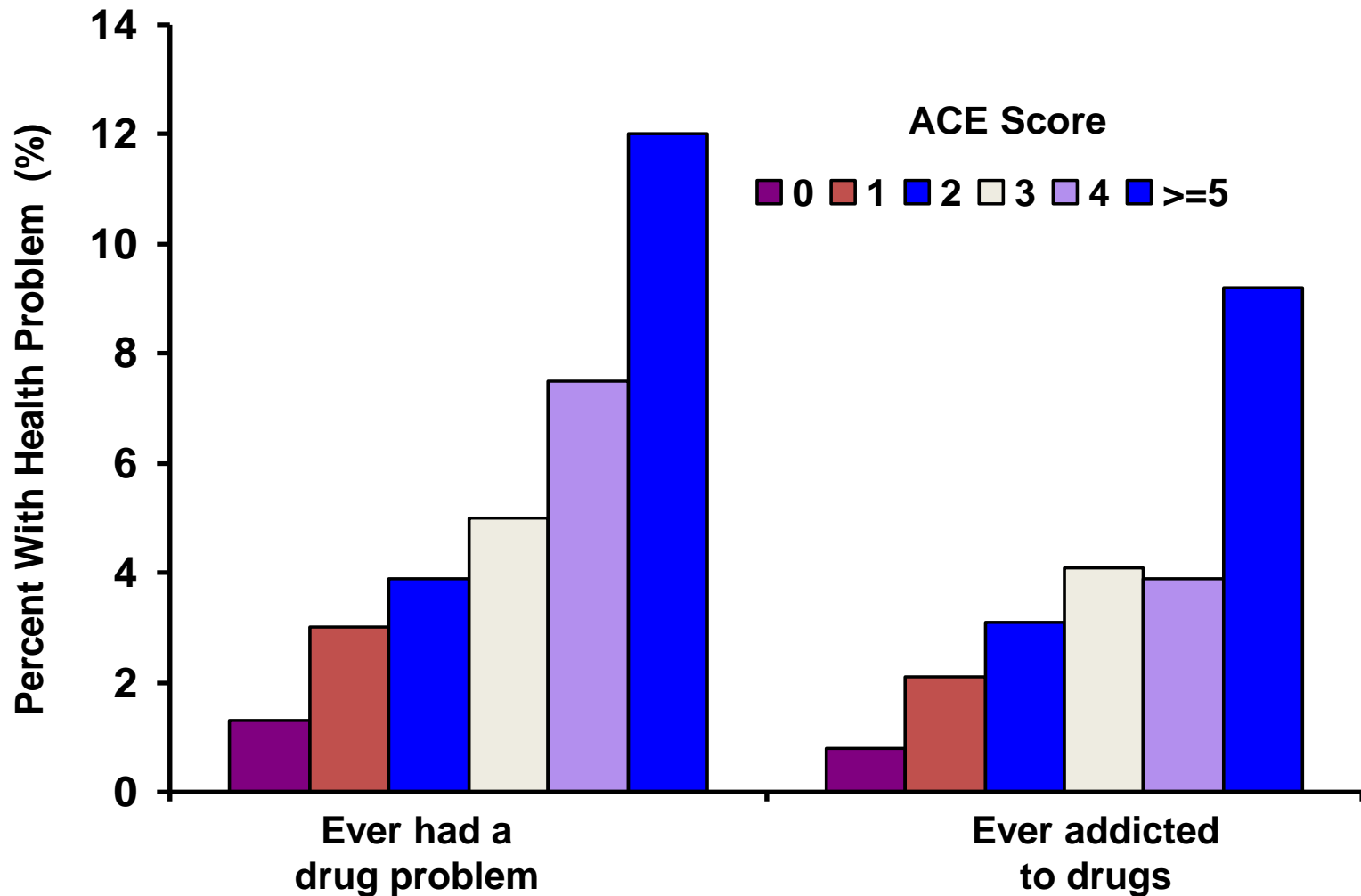
Relationship Between the ACE Score and Attempting Suicide During Adolescence



Dube et al., JAMA, 2001.

Childhood Adversity and Adult Health

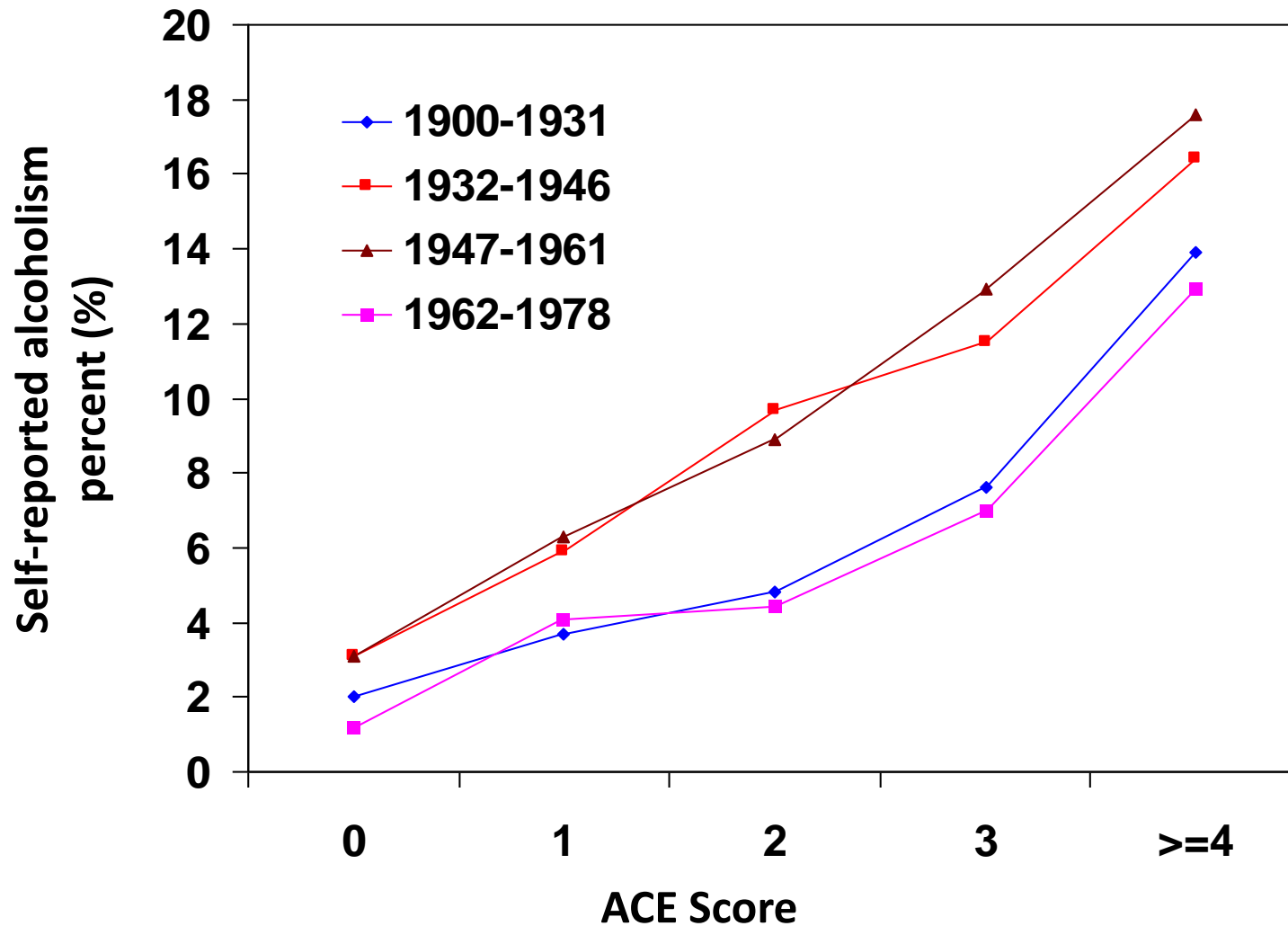
ACE Score and Drug Abuse



Despite social and secular influences to change health risk behaviors over the past 100 years.....

- Growing up with childhood adversity increased the risk for alcohol problems, tobacco use, risky sexual behaviors, and mental health issues across 4 consecutive generations.

The association of the ACE score to self-reported alcoholism, by birth cohort.



ACE Study Findings: A Biological Phenomena

“Unseen” impact of toxic stress on the developing brain and nervous system

**-Emotional, social, and cognitive impairments
(Perry et al, 1995)**

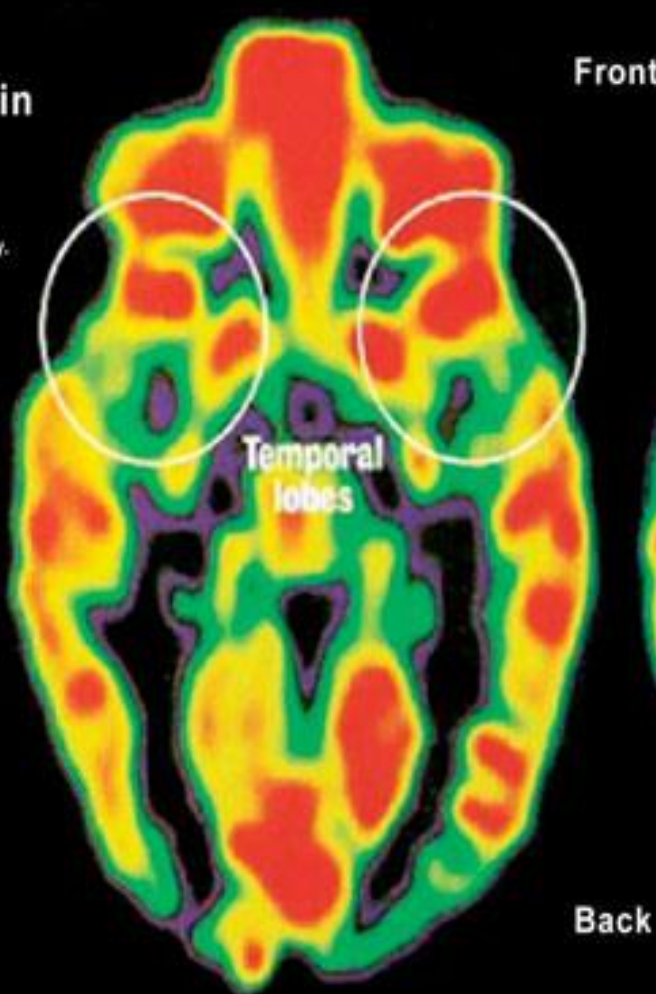
**-Neurobiological evidence of childhood trauma
Limbic system (Teicher et al, 1997)
Hippocampus and Amygdala
(DeBellis et al, 1999; Sapolsky, 1994; Chugani, 2002)**

**-Attachment mechanisms disrupted (Schoore AN, 2009;
Murphy et al., 2014)**

ACE Study Findings: A Biological Phenomena

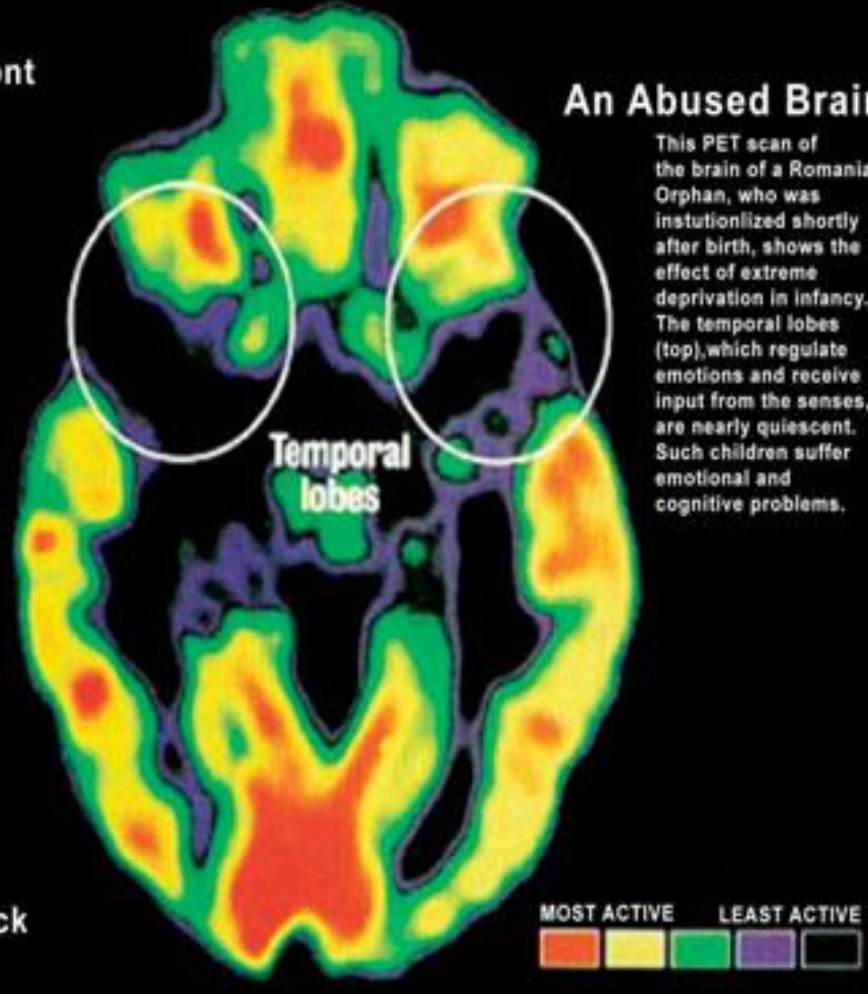
Healthy Brain

This PET scan of the brain of a normal child shows regions of high (red) and low (blue and black) activity. At birth, only primitive structures such as the brain stem (center) are fully functional; in regions like the temporal lobes (top), early childhood experiences wire the circuits.

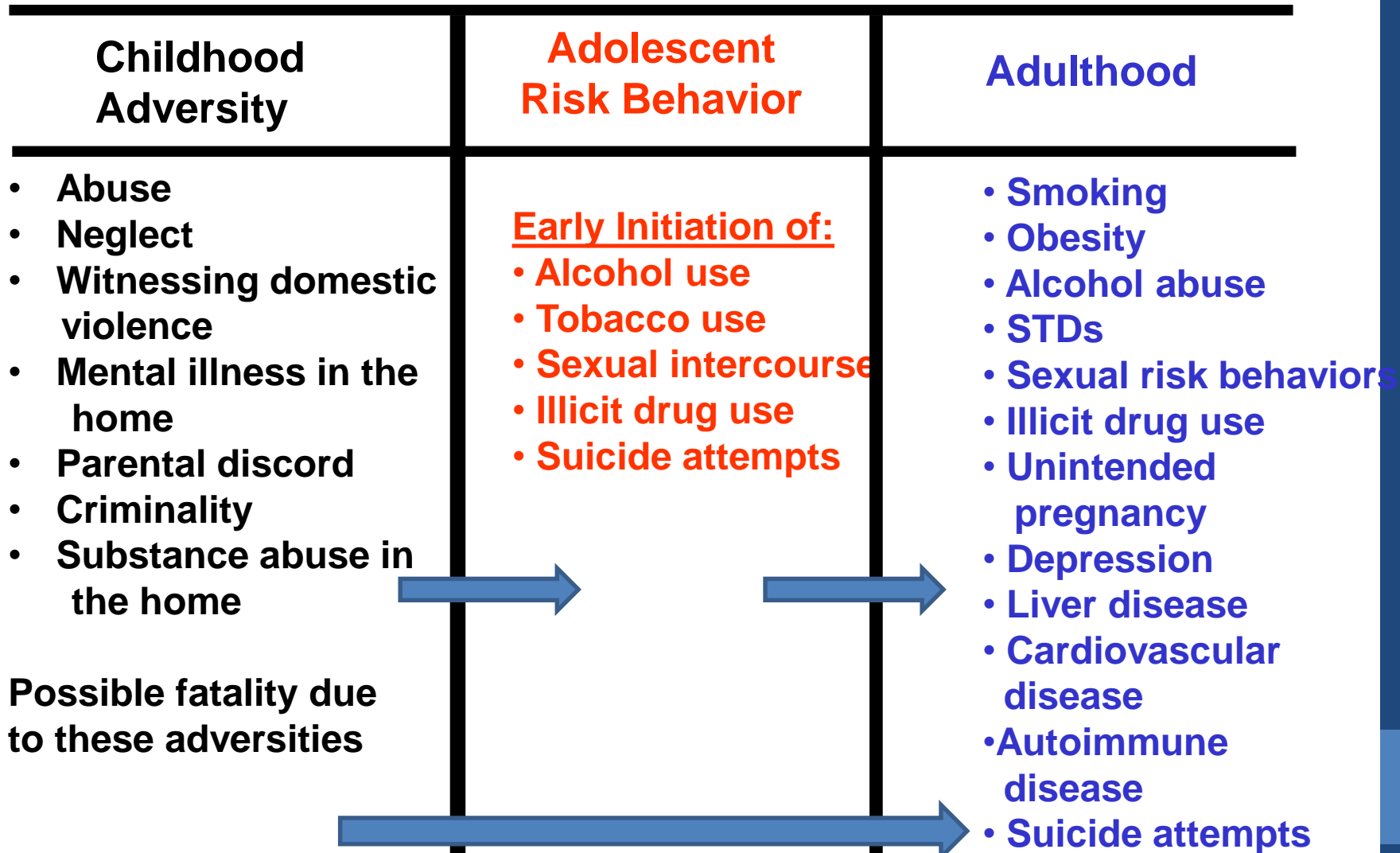


An Abused Brain

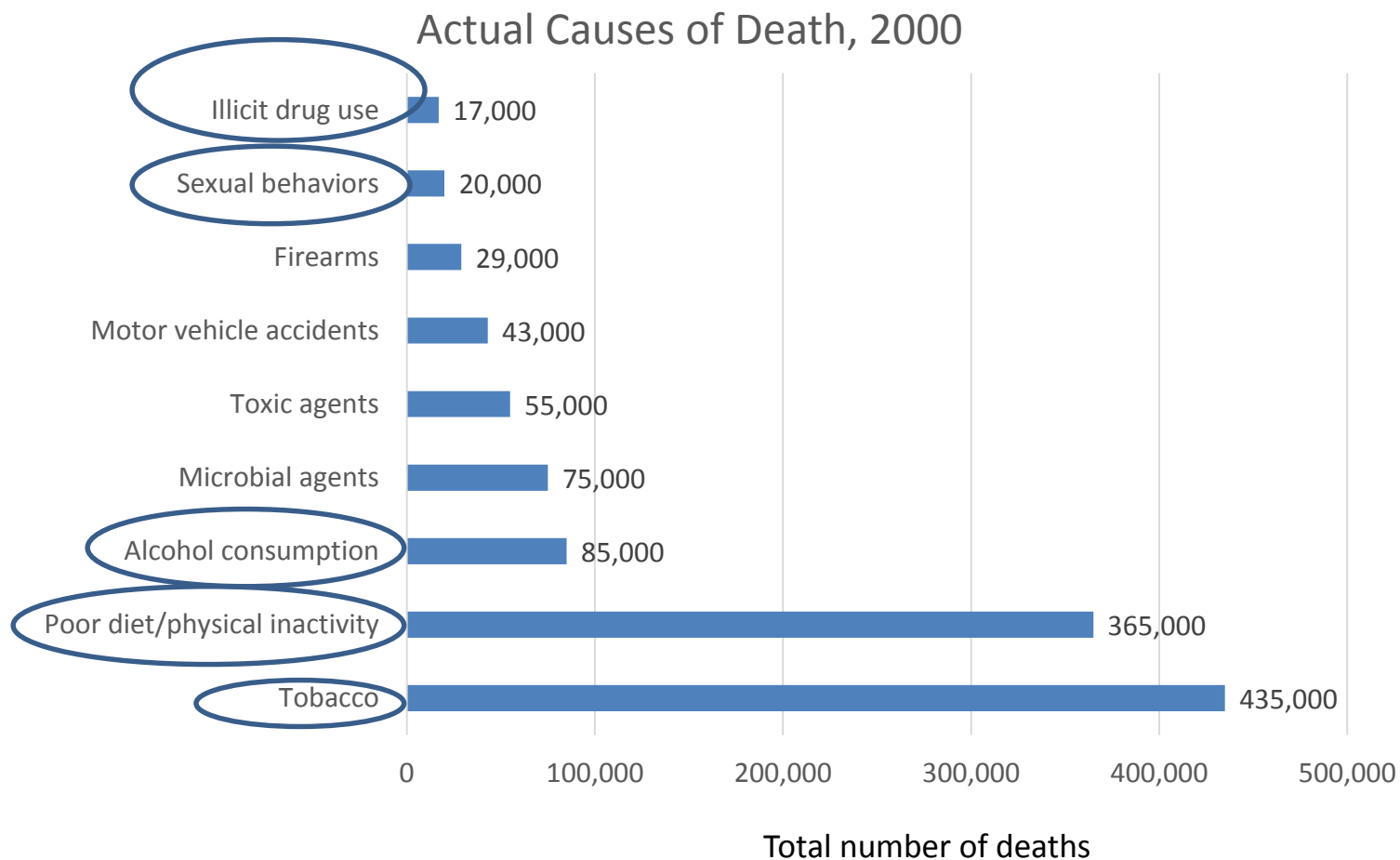
This PET scan of the brain of a Romanian Orphan, who was institutionalized shortly after birth, shows the effect of extreme deprivation in infancy. The temporal lobes (top), which regulate emotions and receive input from the senses, are nearly quiescent. Such children suffer emotional and cognitive problems.



What We've Learned: ACEs Across The Life Span



Childhood Adversity and Actual Causes of Death



McGinnis JM¹, Foege WH. Actual causes of death in the United States. JAMA. 1993 Nov 10;270(18):2207-12.

Mokdad AH, Remington PL. Measuring health behaviors in populations. Prev Chronic Dis 2010;7(4):A75.

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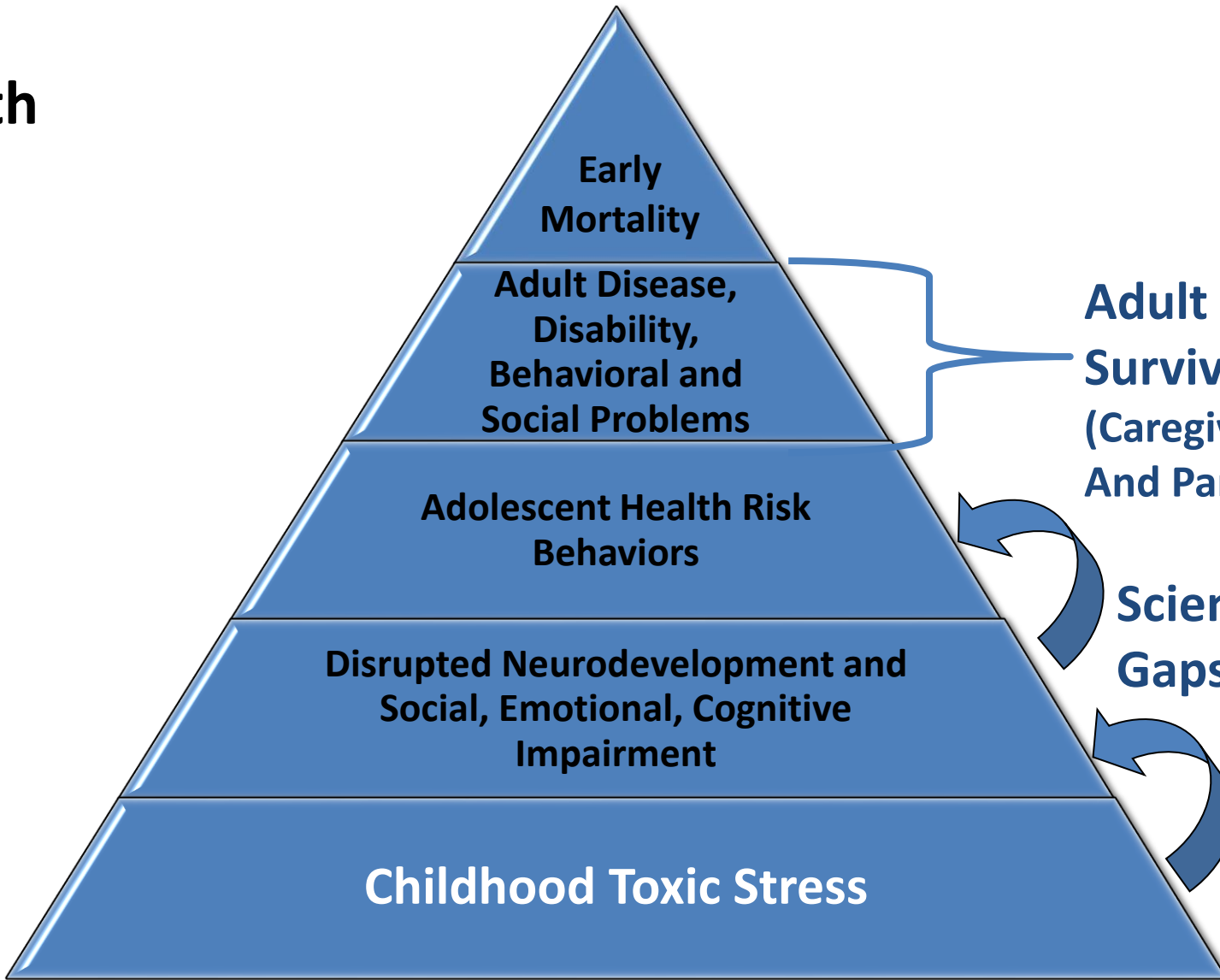
Key Findings from the ACE Study that Contributed to Public Health

1. Adverse childhood experiences (ACEs) are common
2. Multiple ACEs = Cumulative stress and dose-response associations
3. Behavioral health impact of ACEs starts in early adolescence and continues into adulthood
4. Health impact of ACEs transcends 100 years of social and secular trends to change behaviors
6. Neurobiological mechanisms
7. Primary prevention of ACEs needed

Other Key Points that Emerged but were NOT emphasized:

1. A large percentage (~2/3) of persons **survived their experiences**
2. ACEs are **NOT** the only childhood stressors that can occur.
3. ACEs cannot be removed or prevented once they occur
4. Adult outcomes associated with ACEs (substance abuse, mental illness) **may perpetuate toxic stress to the next generation**

Death



Conception

Address and Prevent Childhood Toxic Stress

Reflective Exercise

STRESS



Stage 1

Stimuli from one or more of the five senses are sent to the brain



Stage 2

The brain deciphers the stimulus as either a threat or a non-threat



Stage 3

The body stays activated or aroused until the threat is over



Stage 4

The body returns to homeostasis, a stage of physiological calmness, once the threat is gone



Autonomic Nervous System

Sympathetic system

- Heart and blood pressure increases
- Respiration accelerates, blood sugar is released from the liver
- Adrenalin, noradrenalin are released from the adrenal glands.
- **Fight or flight**

Parasympathetic system

- Heartbeat slows
- Blood pressure reduces
- Respiration levels
- Your body experiences visceral responses typical of periods of rest and relaxation.
- **Rest and digest**

BODY

Fatigue
Headaches
Constricted Breathing
Frequent Infections
Skin Irritations
Taut Muscles

Worrying
Foggy Thinking
Impaired Judgment

MIND

Hasty Decisions
Negativity
Indecision

Irritability
Depression

Loss of Confidence
Apprehension
Indifference

Insomnia

Insomnia
Restlessness

Loss of Appetite

Substance Abuse

Accident Prone

Loneliness

BEHAVIOR

Stress



Childhood Toxic Stress or Trauma Become Embodied

Behaviors that are associated with childhood adversity are learned as a way to cope and ameliorate unpleasant emotions and feelings from the past.

Kaiser Permanente Positive Choice Wellness Center (2001):

- Weight management program – addressing the emotional triggers
- Smoking cessation – persistence of smoking in the presence of smoking-related diseases

Research on Salutogenesis among Trauma Survivors

- 1) Trauma Healing Project: Community Based Participatory Research (CBPR)¹
- 2) ACE Study Trauma Survivors: Conducted among Kaiser Cohort with ≥ 1 childhood adversity²
- 3) Defining Salutogenesis: What People Say about Wellbeing and Healing?³

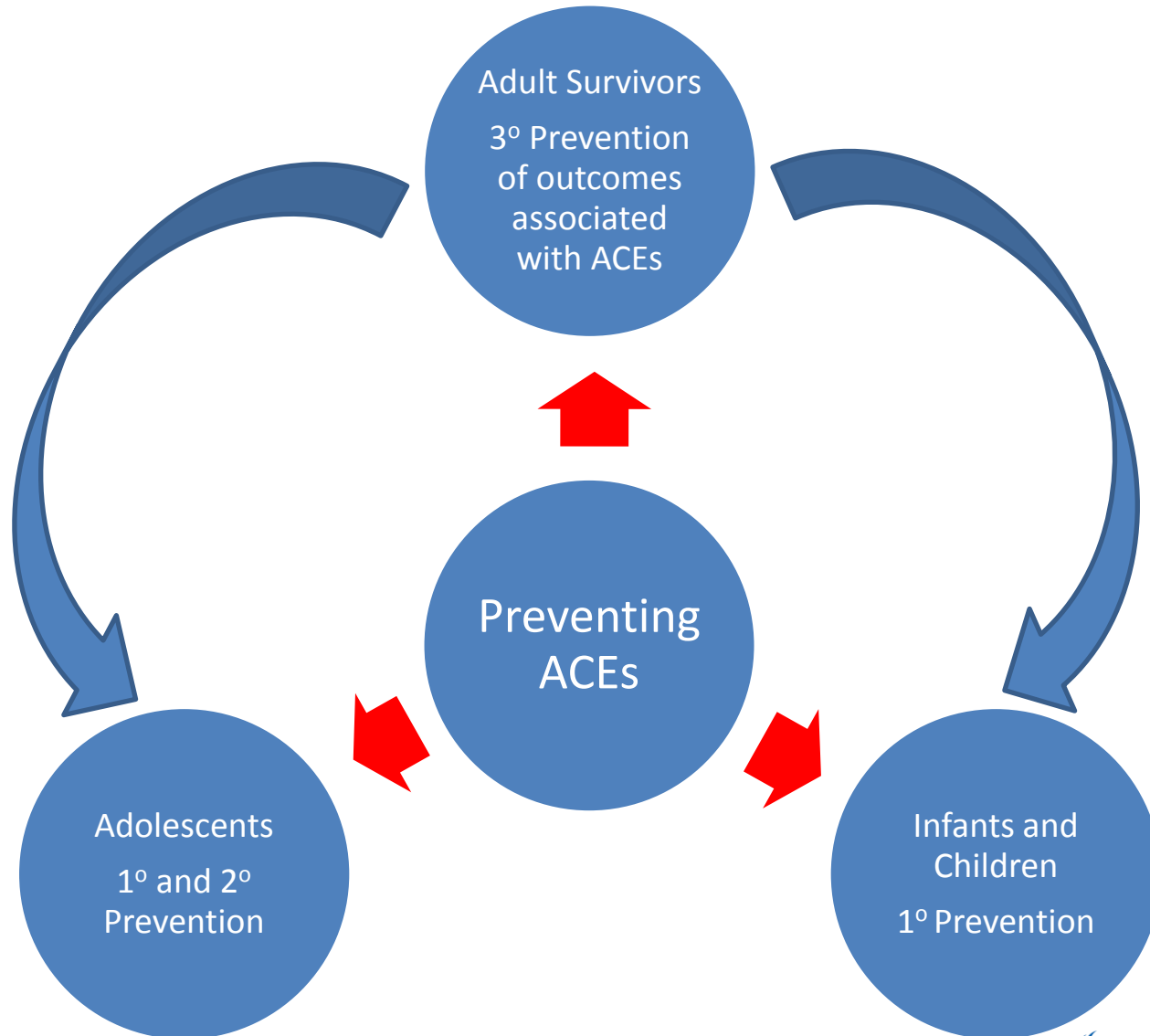
KEY FINDINGS: Being heard and validated; Trusting and supportive people; Mind-Body work; Becoming aware about trauma; Healing is a process that begins with awareness; education, exercise, emotional and social support are key factors associated with well-being

1. Todahl JL, Walters E, Bharwadi D, Dube SR. Trauma Healing: A Mixed Methods Study of Personal and Community-Based Healing. *J Aggress Maltreat Trauma*. 2014 Aug;23(6):611-632.

2. Dube SR, Felitti VJ, Rishi S. Moving Beyond Childhood Adversity: Association between Salutogenic Factors and Subjective Well-Being among Adult Survivors of Trauma. In: K Rutkowski & M Linden, eds. *Hurting Memories and Beneficial Forgetting*. London, England: Elsevier, Inc; 2013. (ISBN: 978-0-12-398393-0).

3. Dube SR, Goman C, Rishi S. What Trauma Survivors Have to Say about Healing, Under preparation.

Three Level Public Health Prevention Strategy



THE TIME IS NOW:

Paradigm Shift and Future Directions

The high proportion of early traumatic stress in the population requires prevention at **all three levels**:

- Primary and Secondary Prevention through appropriate screening and parenting interventions (Parent and Child Clinical Adverse Childhood Experiences screening Questionnaire, Murphy, Dube, Steele & Steele, 2007)
- Tertiary Prevention among persons with trauma symptoms using the salutogenic approach to promote health and overall well-being
- Recognize the need for trauma-informed alternative and integrative approaches to healing and well-being
 - Building awareness about trauma
 - Stress management
 - Addressing emotion and health

Addressing Toxics Stress in Adults = Prevention In Children

“When I approach a child, he inspires in me two sentiments; tenderness for what he is, and respect for what he may become.”

— *Louis Pasteur* —



THANK YOU

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