

Roadmap for Resilience

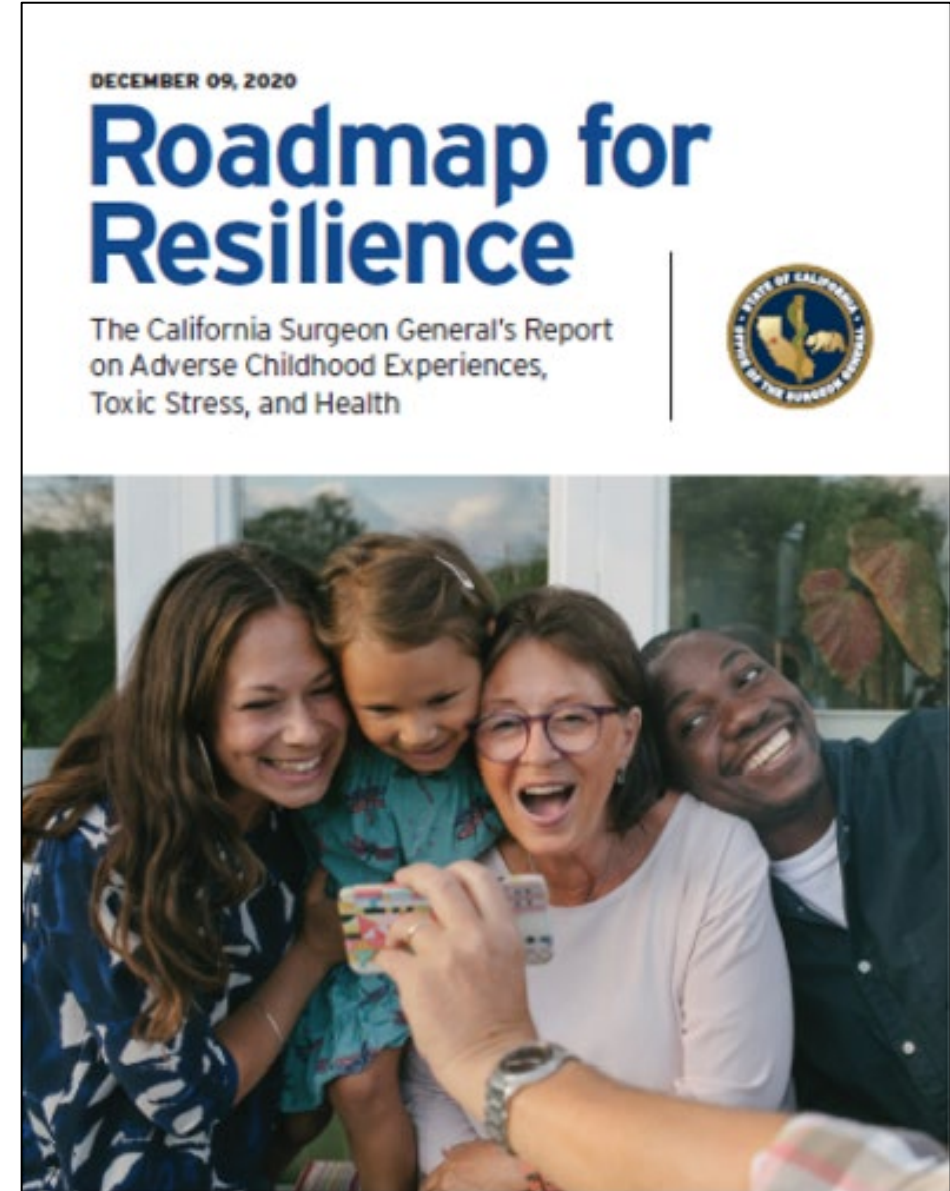
The California Surgeon General's
Report on Adverse Childhood
Experiences, Toxic Stress, and Health

December 10, 2020



Available Now: First California Surgeon General's Report

- Materials available at <https://osg.ca.gov/sg-report/>
 - Full 438-page report
 - Executive Summary
 - 12 briefs summarizing key themes
 - Social Media Toolkit
 - Public webinar



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ACEs and Toxic Stress Are A Public Health Crisis

ACEs and toxic stress are a root cause to some of the most harmful, persistent, and expensive societal and health challenges facing our world today.

2020 Highlights Urgent Need for Effective Buffering Systems and Supports

- Multiple simultaneous public health emergencies
 - COVID-19 pandemic
 - Impacts of climate change—including wildfires
 - Sharper focus on the deep-rooted systemic racism in our society
- Vulnerable and systematically overlooked communities bear the brunt of each new crisis

Trauma-informed systems have never been more important!



Roadmap for Resilience: Guiding Principles

- Rigorous scientific framework serves as a strong foundation for policy action to support a cross-sector, systems-level approach
- Rooted in Core Values of **Prevention, Equity, and Rigor**
- Impact of COVID-19

ABUSE

Physical, emotional,
or sexual



Physical



Emotional



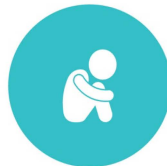
Sexual

NEGLECT

Physical or emotional



Physical



Emotional

HOUSEHOLD CHALLENGES

Growing up in a household with incarceration, mental illness,
substance dependence, absence due to separation or divorce,
or intimate partner violence



Mental Illness



Intimate Partner
Violence



Parental Separation
or Divorce



Incarceration

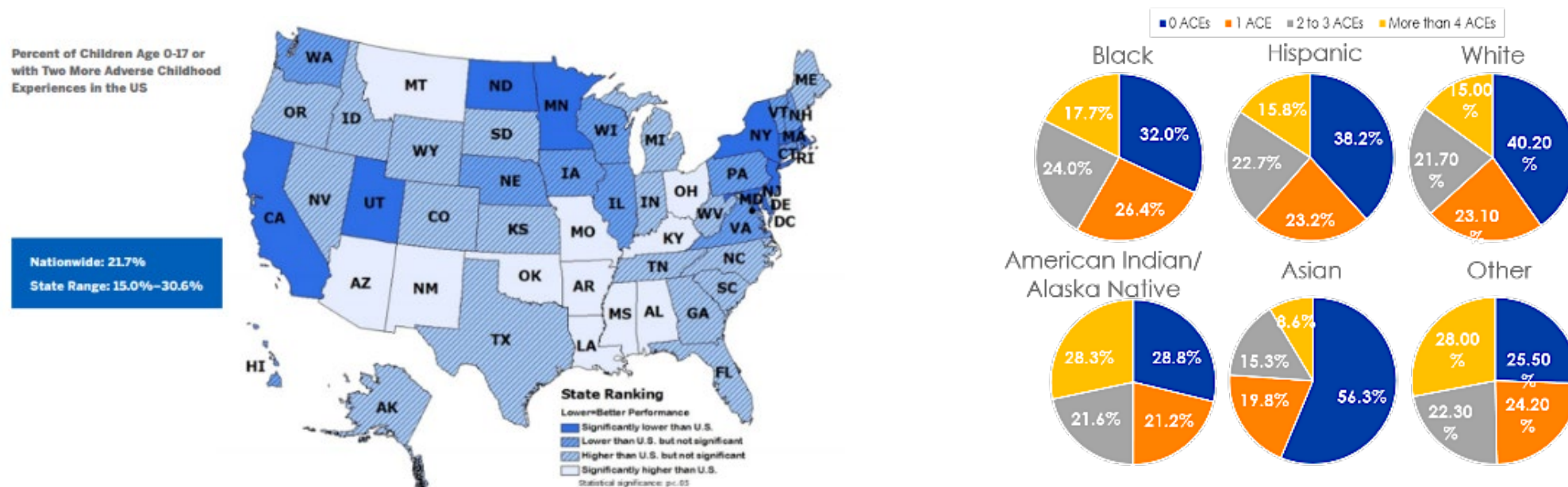


Substance
Dependence

61.6% of US adults have ≥ 1 ACE

15.8% have ≥ 4 ACEs

62.3% Californians have ≥ 1 ACEs 16.3% have ≥ 4 ACEs



Sources: Merrick et al., Prevalence of adverse childhood experiences from the 2011–2014 Behavioral Risk Factor Surveillance System in 23 states. *JAMA Pediatrics* 2018; 172: 1038.; Merrick et al., Vital Signs: Estimated Proportion of Adult Health Problems Attributable to Adverse Childhood Experiences and Implications for Prevention — 25 States, 2015–2017. *MMWR Morb Mortal Wkly Rep* 2019;68:999–1005; Bethell et al., Issue Brief: A national and across state profile on adverse childhood experiences among children and possibilities to heal and thrive. Johns Hopkins Bloomberg School of Public Health, October 2017.

Key Finding:

**ACEs are Causally
Associated with the
Toxic Stress Response**

The Toxic Stress Response Defined

“prolonged activation of the stress response systems that can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment, well into the adult years...”

– National Academies of Sciences, Engineering, and Medicine

In addition to ACEs, **other risk factors for toxic stress** include poverty, exposure to discrimination, and exposure to the atrocities of war.

Bradford Hill Criteria: Causal Inference from Epidemiologic Data

- **Strength of association:** Strong association between ACEs, health, well-being
- **Consistency:** Multiple, long-ranging, well-designed epidemiologic and other studies in different populations have shown similar associations
- **Specificity:** ACEs activate the **toxic stress response**
- **Temporality:** ACEs precede outcomes of interest
- **Biological gradient:** Strong dose-response relationships exist with respect to doses of adversity and outcomes
- **Plausibility:** Many biological mechanisms elucidated
- **Coherence:** Findings fit with extant biomedical knowledge
- **Experiment:** Experimental conditions replicate/reinforce findings
- **Analogy:** Parallel mechanisms exist for similar exposures

ACEs Dramatically Increase Risk for 9 out of 10 Leading Causes of Death in US

	Leading Causes of Death in US, 2017	Odds Ratio Associated with ≥ 4 ACEs
1	Heart Disease	2.1
2	Cancer	2.3
3	Accidents	2.6
4	Chronic Lower Respiratory Disease	3.1
5	Stroke	2.0
6	Alzheimer's	11.2
7	Diabetes	1.4
8	Influenza and Pneumonia	Unknown
9	Kidney Disease	1.7
10	Suicide (Attempts)	37.5

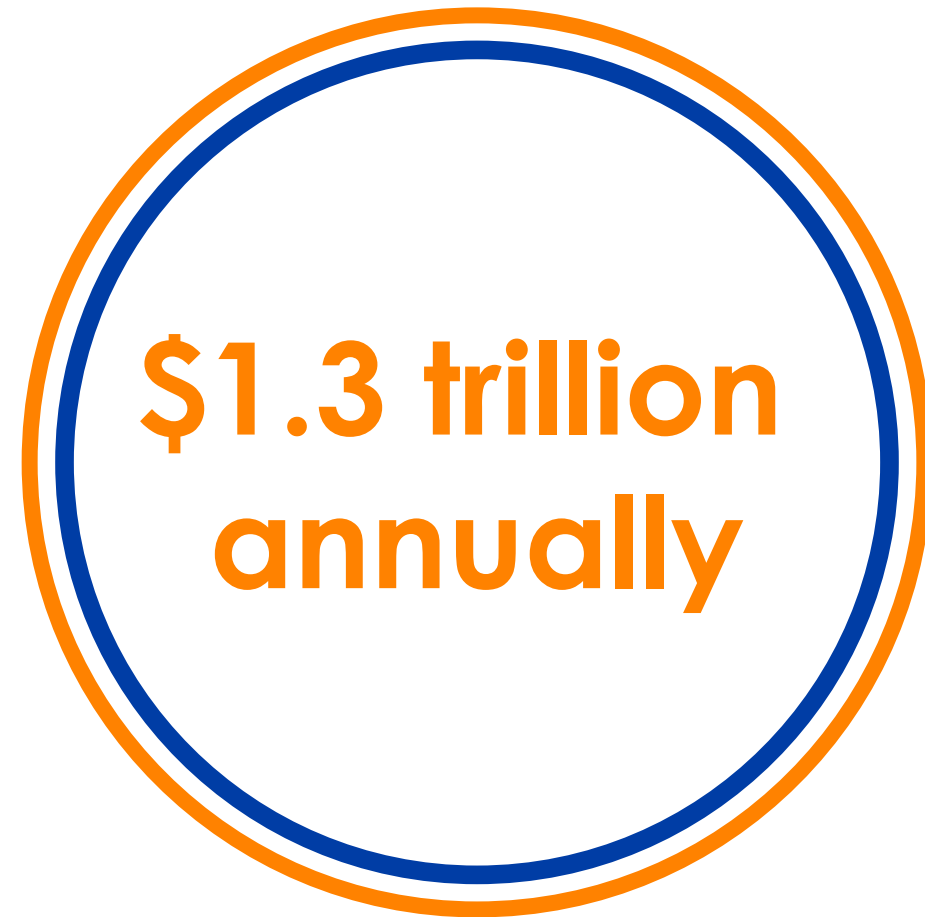
Source of **causes of death**: CDC, 2017¹⁶; Sources of **odds ratios**: Hughes *et al.*, 2017¹² for 1, 2, 4, 7, 10; Petrucelli *et al.*, 2019⁹ for 3 (injuries with fracture), 5; Center for Youth Wellness, 2014¹⁷ for 6 (Alzheimer's disease or dementia); Center for Youth Wellness, 2014¹⁷ and Merrick *et al.*, 2019²⁶ for 9

Annual Cost of ACEs to California

Select Health Conditions	Child Abuse and Neglect: Other Sectors
\$112.5 billion • Asthma • Arthritis • COPD • Depression • Smoking • Cardiovascular disease • Heavy Drinking • Obesity	\$19.3 billion • Education • Welfare • Criminal justice • Lifetime productivity • Healthcare, early death

Sources: Miller TR, et al. (2020) Adult health burden and costs in California during 2013 associated with prior adverse childhood experiences. *PLoS ONE* 15(1): e0228019.; Safe & Sound. *The economics of child abuse: A study of California*: Safe & Sound, 2019.

Cost of ACEs to North America and Europe



**\$1.3 trillion
annually**

Source: Bellis MA, Hughes K, Ford K, Ramos Rodriguez G, Sethi D, Passmore J. Life course health consequences and associated annual costs of Adverse Childhood Experiences across Europe and North America: A systematic review and meta-analysis. *The Lancet Public Health* 2019; **4**(10): e517–e28.

Available in *Roadmap for Resilience*

Part I

The Science, Scope, and Impacts of ACEs and Toxic Stress

- Framing the Public Health Crisis of ACEs and Toxic Stress
- Defining ACEs and Toxic Stress
- The Biology of Toxic Stress
- Intergenerational Transmission of Adversity
- Establishing Causality between ACEs and Poor Health Outcomes
- The Economic Costs of ACEs and Toxic Stress

Part II

The Public Health Approach for Cutting ACEs and Toxic Stress in Half within a Generation

- Primary, Secondary, and Tertiary Prevention of ACEs and Toxic Stress: An Overview
- Individual sections on Primary, Secondary, and Tertiary Prevention Strategies Across six sectors



Available in Roadmap for Resilience

Part III

California's Response to ACEs and Toxic Stress

- State Tools and Strategies for Responding to ACEs and Toxic Stress
- The ACEs Aware Initiative
- Clinical Implementation Case Studies
- Systems-Level Implementation Considerations
- Approach to Environmental Scans of Statewide Trauma-Informed Work

Part IV

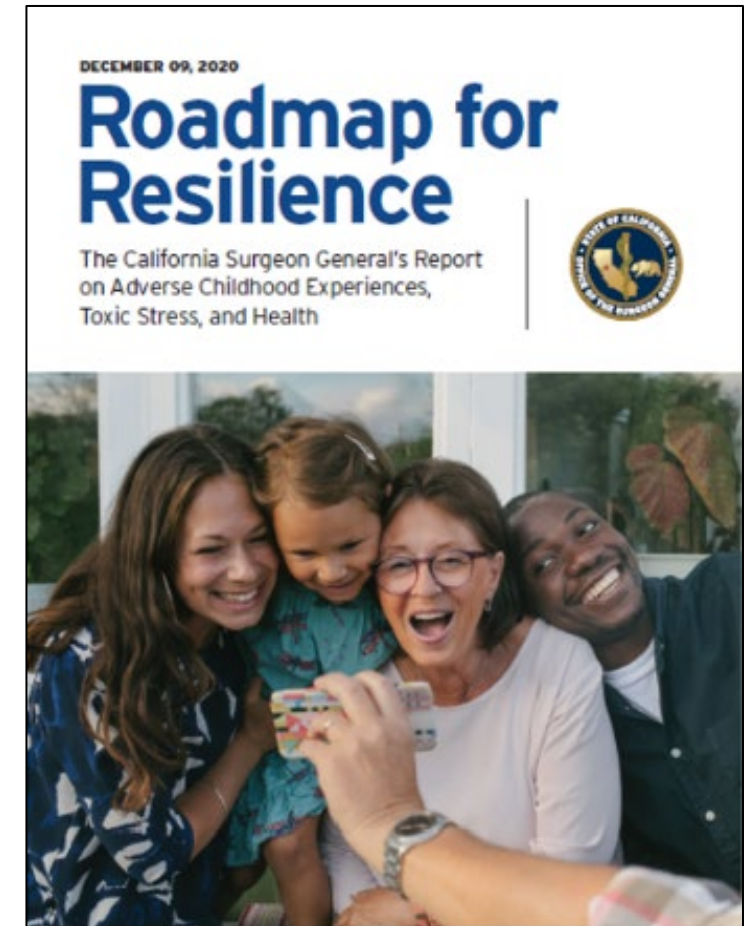
What Lies Ahead

- ACEs Aware Phase IV: Evaluation
- Looking Ahead: California's Next Steps



Critical Takeaways

- Combines perspectives on ACEs and toxic stress from **global experts** across sectors, specialties and disciplines
- **Toxic Stress is a health condition that is amenable to treatment**
- **Prevention at all levels**
 - An effective response requires prevention at all three levels: primary, secondary, and tertiary. None of these strategies is sufficient alone, and each extends the reach of the others.
- **Cross-Sector Approach**
 - Addressing this public health crisis requires shared understanding of the problem, shared language, clarity of roles, shared metrics, and accountability
- **California has foundational leadership** to chart the course for cutting ACEs and toxic stress in half in a generation



Key Finding:

**Toxic Stress is a Health
Condition Amenable to
Treatment**

S T R E S S R E S P O N S E

POSITIVE

Physiological response to mild or moderate stressor

Brief activation of stress response elevates heart rate, blood pressure, and hormonal levels

Homeostasis recovers quickly through body's natural coping mechanisms

Tough test at school, playoff game

TOLERABLE

Adaptive response to time-limited stressor

Time-limited activation of stress response results in short-term systemic changes

Homeostasis recovers through buffering effect of caring adult or other interventions

Immigration, natural disaster

TOXIC

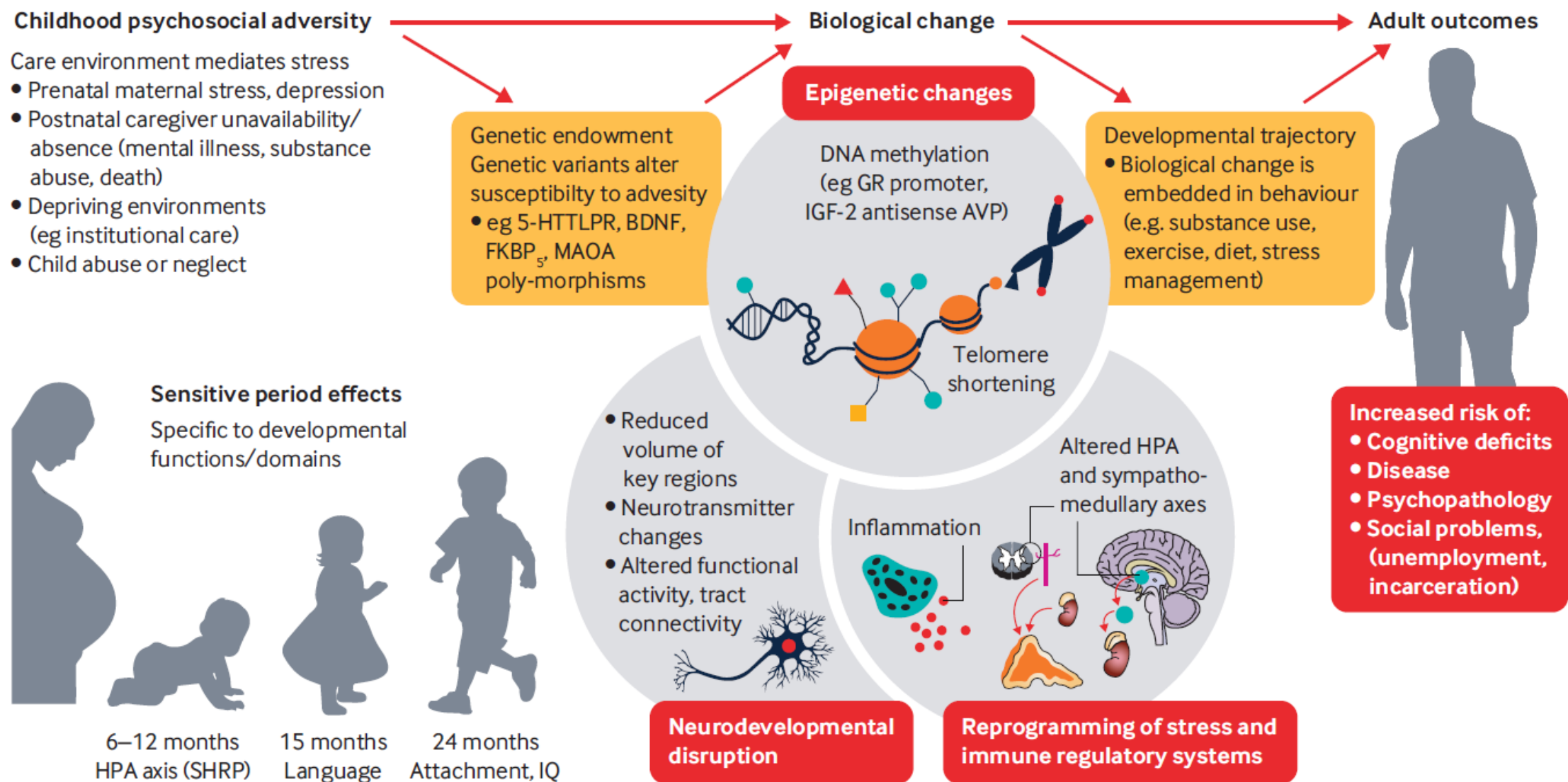
Maladaptive response to intense and sustained stressor

Prolonged activation of stress response in children disrupts brain architecture and increases risk of health disorders

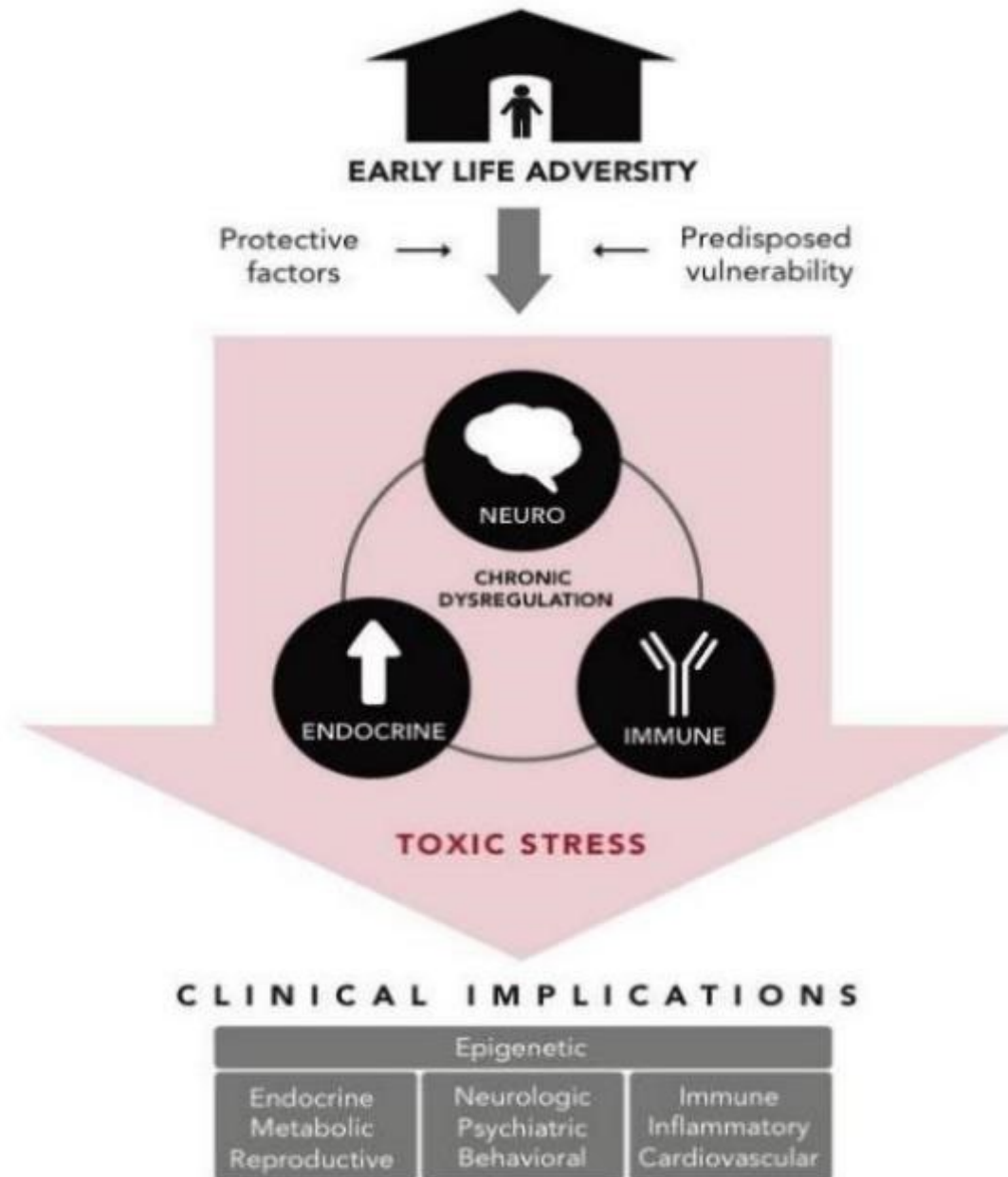
Prolonged allostasis establishes a chronic stress response

Abuse, neglect, household dysfunction

Fig. 2. Spectrum of the stress response: positive, tolerable, and toxic.



Source: Nelson CA, Bhutta ZA, Burke Harris N, Danese A, Samara M. Adversity in childhood is linked to mental and physical health throughout life. *BMJ (Clinical Research Edition)* 2020; 371: m3048.



Source: Bucci, M., S. S. Marques, D. Oh, and N. B. Harris. 2016. Toxic stress in children and adolescents. *Advances in Pediatrics* **63**(1):403–428.

Biological Systems Disrupted by Toxic Stress

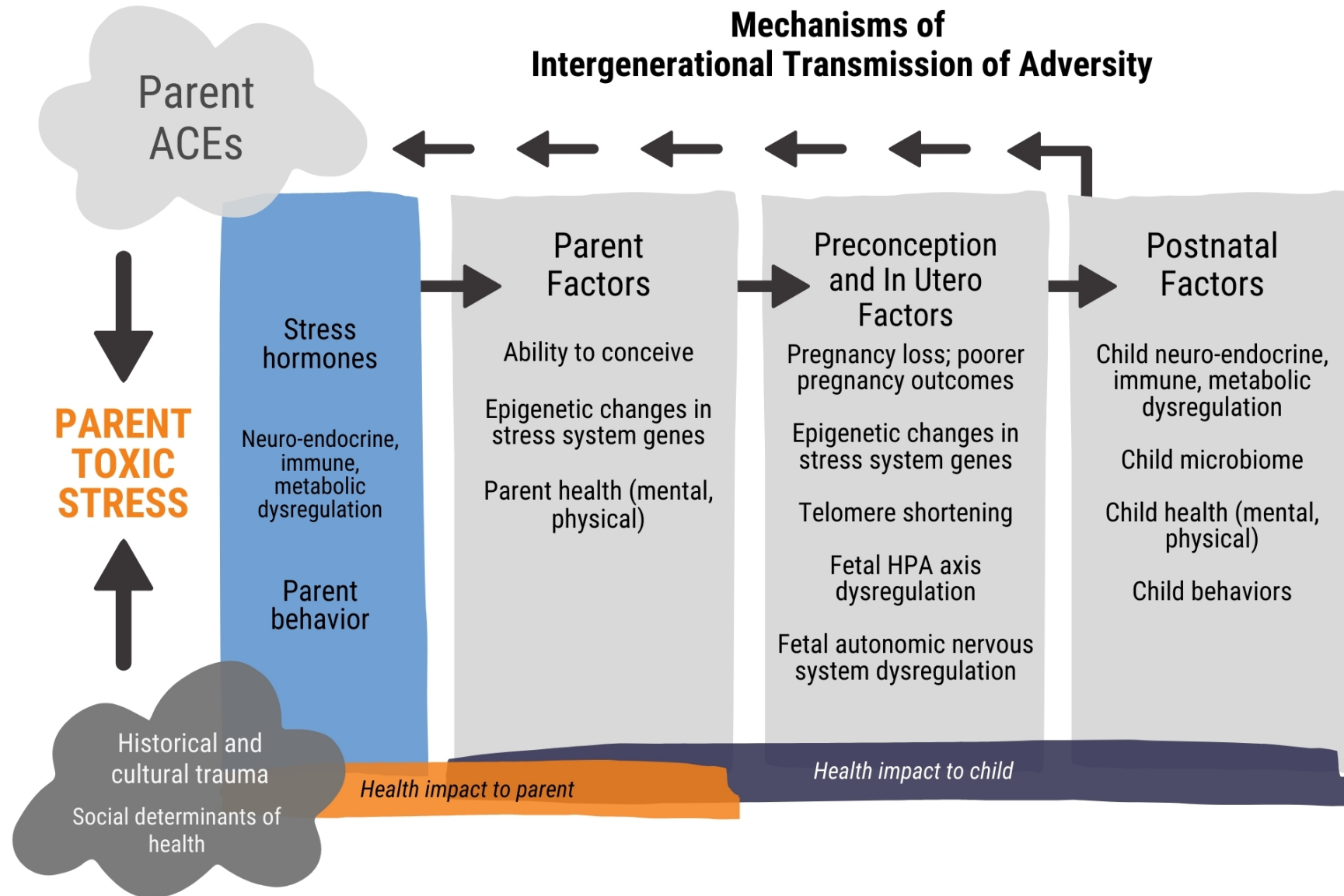
System	Mechanism(s)	Health Impact
Neurologic; Neuroendocrine	Dysregulation of SAM and HPA axes; autonomic imbalance	Difficulty modulating, sustaining, or dampening the stress response; heightened or blunted stress sensitivity
	Altered reactivity and size of the amygdala	Increased fear responsiveness, impulsivity, and aggression
	Inhibition of the prefrontal cortex	Impaired executive function, with poorer planning, decision-making, impulse control, and emotion regulation
	Hippocampal neurotoxicity	Difficulty with learning and memory
	VTA and reward processing dysregulation	Increased risky behaviors and risk of addiction
Immunologic; Inflammatory	Increased inflammatory markers, especially Th2 response; inhibition of anti-inflammatory pathways; gut microbiome dysbiosis	Increased risk of infection, auto-immune disorders, cancers, chronic inflammation; cardiometabolic disorders
Endocrine; Metabolic	Changes in growth hormone, thyroid hormone, and pubertal hormonal axes	Changes in growth, development, basal metabolism, and pubertal events
	Changes to leptin, ghrelin, lipid and glucose metabolism, and other metabolic pathways	Increased risk of overweight, obesity, cardiometabolic disorders, and insulin resistance
Epigenetic; Genetic	Sustained changes to the way DNA is read and transcribed	Mediates all aspects of the toxic stress response
	Telomere erosion, altered cell replication, and premature cell death	Increased risk for disease, cancer, and early mortality

ACE-Associated Health Conditions: Adults

Symptom or Health Condition	Odds Ratio (excluding outliers)
Cardiovascular disease ²¹ (CAD, MI, ischemic heart disease)	2.1
Tachycardia ²⁷	≥ 1 ACE: 1.4
Stroke ²⁰	2.0
Chronic obstructive pulmonary disease (emphysema, bronchitis) ²¹	3.1
Asthma ⁴³	2.2
Diabetes ²¹	1.4
Obesity ²⁰	2.1
Hepatitis or jaundice ¹	2.4
Cancer, any ²¹	2.3
Arthritis ^{22, 7} (self-reported)	3 ACEs, HR: 1.5 ≥ 1 ACE: 1.3
Memory impairment ²⁰ (all causes, including dementias)	4.9
Kidney disease ⁴³	1.7
Headaches ¹¹	≥ 5 ACEs: 2.1
Chronic pain, any ³⁸ (using trauma z-score)	1.2
Chronic back pain ³⁸ (using trauma z-score)	1.3
Fibromyalgia ²⁷	≥ 1 ACE: 1.8
Unexplained somatic symptoms, including somatic pain, headaches ^{20, 2}	2.0 - 2.7
Skeletal fracture ¹	1.6 - 2.6 ²⁰
Physical disability requiring assistive equipment ²³	1.8
Depression ²¹	4.7
Suicide attempts ²¹	37.5
Suicidal ideation ²⁰	10.5
Sleep disturbance ²⁰	1.6
Anxiety ²¹	3.7
Panic and anxiety ²⁰	6.8
Post-traumatic stress disorder ²⁷	4.5
Illicit drug use ²¹ (any)	5.2
Injected drug, crack cocaine, or heroin use ²¹	10.2
Alcohol use ²¹	6.9
Cigarettes or e-cigarettes use ²⁵	6.1
Cannabis use ²⁵	11.0
Teen pregnancy ²¹	4.2
Sexually transmitted infections, lifetime ²¹	5.9
Violence victimization ²¹ (intimate partner violence, sexual assault)	7.5
Violence perpetration ²¹	8.1

ACE-Associated Health Conditions: Pediatrics

Symptom or Health Condition	For $\geq$ X ACEs (compared to 0)	Odds Ratio
Asthma ^{26, 33}	4	1.7 - 2.8
Allergies ³³	4	2.5
Dermatitis and eczema ³⁹	3*	2.0
Urticaria ³⁹	3*	2.2
Increased incidence of chronic disease, impaired management ²⁵	3	2.3
Any unexplained somatic symptoms ²⁵ (eg, nausea/vomiting, dizziness, constipation, headaches)	3	9.3
Headaches ²³	4	3.0
Enuresis; encopresis ⁵	--	--
Overweight and obesity ³	4	2.0
Failure to thrive; poor growth; psychosocial dwarfism ^{5, 2, 41}	--	--
Poor dental health ^{14, 22}	4	2.8
Increased infections ³⁹ (viral, URIs, LRTIs and pneumonia, AOM, UTIs, conjunctivitis, intestinal)	3*	1.4 - 2.4
Later menarche ⁴⁰ ($\geq$ 14 years)	2*	2.3
Sleep disturbances ^{5, 31}	5**	PR 3.1
Developmental delay ³⁰	3	1.9
Learning and/or behavior problems ³	4	32.6
Repeating a grade ¹⁵	4	2.8
Not completing homework ¹⁵	4	4.0
High school absenteeism ²³	4	7.2
Graduating from high school ²⁹	4	0.4
Aggression; physical fighting ²⁸	For each additional ACE	1.9
Depression ²⁹	4	3.9
ADHD ⁴²	4	5.0
Any of: ADHD, depression, anxiety, conduct/behavior disorder ¹⁰	3	4.5
Suicidal ideation ²⁸	For each additional ACE	1.9
Suicide attempts ²⁸	For each additional ACE	1.9 - 2.1
Self-harm ²⁸	For each additional ACE	1.8
First use of alcohol at < 14 years ⁷	4	6.2
First use of illicit drugs at < 14 years ¹⁰	5	9.1
Early sexual debut ²¹ (<15-17 y)	4	3.7
Teenage pregnancy ²¹	4	4.2



Source: Bhushan D, Kotz K, McCall J, Wirtz S, Gilgoff R, Dube SR, Powers C, Olson-Morgan J, Galeste M, Patterson K, Harris L, Mills A, Bethell C, Burke Harris N, Office of the California Surgeon General. *Roadmap for Resilience: The California Surgeon General's Report on Adverse Childhood Experiences, Toxic Stress, and Health*. Office of the California Surgeon General, 2020.

Toxic Stress is Amenable to Treatment

- New opportunities to more precisely **interrupt the toxic stress response**, break the intergenerational cycle of ACEs and toxic stress, and promote an intergenerational cycle of health.
- **Early intervention** can improve brain, immune, hormonal, and genetic regulatory control of development.
- Treatment of toxic stress in adults may **prevent transmission** of neuro-endocrine-immune-metabolic and genetic regulatory disruptions in offspring.

Sources: Gilgoff et al. Adverse Childhood Experiences, outcomes, and interventions. *Pediatric Clinics* 2020; **67**(2): 259-73; Purewal Boparai et al. Ameliorating the biological impacts of childhood adversity: A review of intervention programs. *Child Abuse & Neglect* 2018; **81**: 82-105; National Academies of Sciences, Engineering, and Medicine. Vibrant and healthy kids: Aligning science, practice, and policy to advance health equity. Washington, DC: National Academies Press, 2019. Blaisdell et al. Early adversity, child neglect, and stress neurobiology: From observations of impact to empirical evaluations of mechanisms. *International Journal of Developmental Neuroscience* 2019; **78**: 139-46. ; Jaffee et al. Safe, stable, nurturing relationships break the intergenerational cycle of abuse: A prospective nationally representative cohort of children in the United Kingdom. *Journal of Adolescent Health* 2013; **53**(4): S4-S10.

Buffering the Toxic Stress Response



Neurologic/Neuroendocrine: MRI studies found that institutionalized children randomized to **high-quality nurturant caregiving** showed normalization of the developmental trajectory of white matter structures. **Responsive caregiving** also improves cortisol reactivity in children. **Time in nature** reduces sympathetic nervous system activity and increases parasympathetic activity.



Immunologic: **Meditation** was associated with decreased IFN- γ and NK cell production of IL-10 and with increased T cell production of IL-4 (anti-inflammatory). **Healthy sleep** reduces infection risk and improves vaccination response, increasing NK cell activity, IL-6, and TNF-alpha levels. **Moderate exercise** decreases infection risk.



Endocrine/Metabolic: **Oxytocin** inhibits the stress response, enhances bonding, protects against stress-induced cell death, has anti-inflammatory effects, enhances metabolic homeostasis, and protects vascular endothelium. **Social support** buffers stress-related cardiovascular reactivity and decreases catecholamine levels. The **Mediterranean diet** reduces inflammation and risk for depression, cardiovascular disease, diabetes, and mortality.



Epigenetic: Meany and colleagues found that **nurturant caregiving** was associated with epigenetic changes that led to greater stress tolerance, more normal functioning of the stress response, and improved cognitive performance.

Evidenced-Based Buffering Interventions



Source: Adapted from Burke Harris, Nadine. *The Deepest Well: Healing the Long-Term Effects of Childhood Adversity*. Boston: Houghton Mifflin Harcourt, 2018; Gilgoff et al. Adverse Childhood Experiences, outcomes, and interventions. *Pediatric Clinics* 2020; **67**(2): 259-73;

ACEs, Toxic Stress and COVID-19

- Through the toxic stress response, **ACEs increase the burden of AAHCs**, which predispose to a more severe COVID-19 disease and increased risk of death.
- Those with a history of ACEs may be “**stress sensitized**” or more susceptible to the health effects of acute or chronic stress.
- Widespread infectious disease outbreaks, natural disasters, economic downturns, and other crises have in common a number of well-documented short- and long-term health impacts including **increased cardiovascular, metabolic, immunologic, and neuropsychiatric risk**.

Source: (as summarized in) Bhushan D, Kotz K, McCall J, Wirtz S, Gilgoff R, Dube SR, Powers C, Olson-Morgan J, Galeste M, Patterson K, Harris L, Mills A, Bethell C, Burke Harris N, Office of the California Surgeon General. *Roadmap for Resilience: The California Surgeon General's Report on Adverse Childhood Experiences, Toxic Stress, and Health*. Office of the California Surgeon General, 2020.

Key Finding:

Curbing the intergenerational transmission of ACEs and toxic stress requires a public health approach utilizing a **coordinated, multisector strategy** to advance **prevention, early detection, and evidence-based interventions.**

Strong Work is Already Occurring Across Sectors



**Great
need for
coordination**



**Work must
be rooted in
the science**

Key Finding:

An Effective Response to ACEs and Toxic Stress Requires Prevention at All Levels

Sources: Centers for Disease Control and Prevention, National Center for Environmental Health. Picture of America—Our health and environment: Prevention. 2014; Kisling LA, M Das J. Prevention Strategies. Treasure Island, FL: StatPearls, 2020.



Primary Prevention efforts target healthy individuals and aim to prevent harmful exposures from ever occurring.

Secondary Prevention efforts involve screening to identify individuals who have experienced an exposure and aim to prevent the development of symptoms, disease, or other negative outcomes.

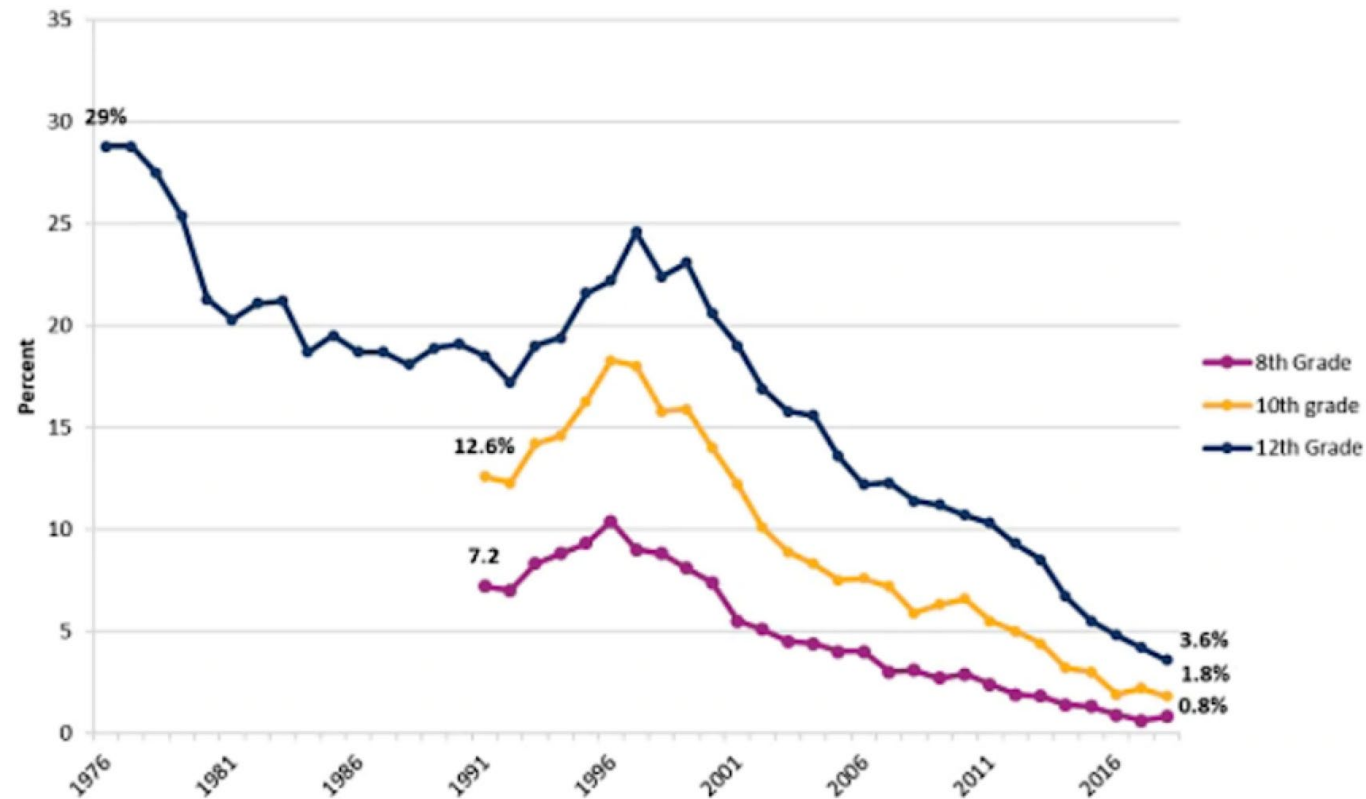
Tertiary Prevention efforts target individuals who have already developed a disease or social outcome, and aim to lessen the severity, progression, or complications associated with that outcome.

No single sector or category of prevention is sufficient alone.



Healthcare	Public Health	Social Services	Early Childhood	Education	Justice
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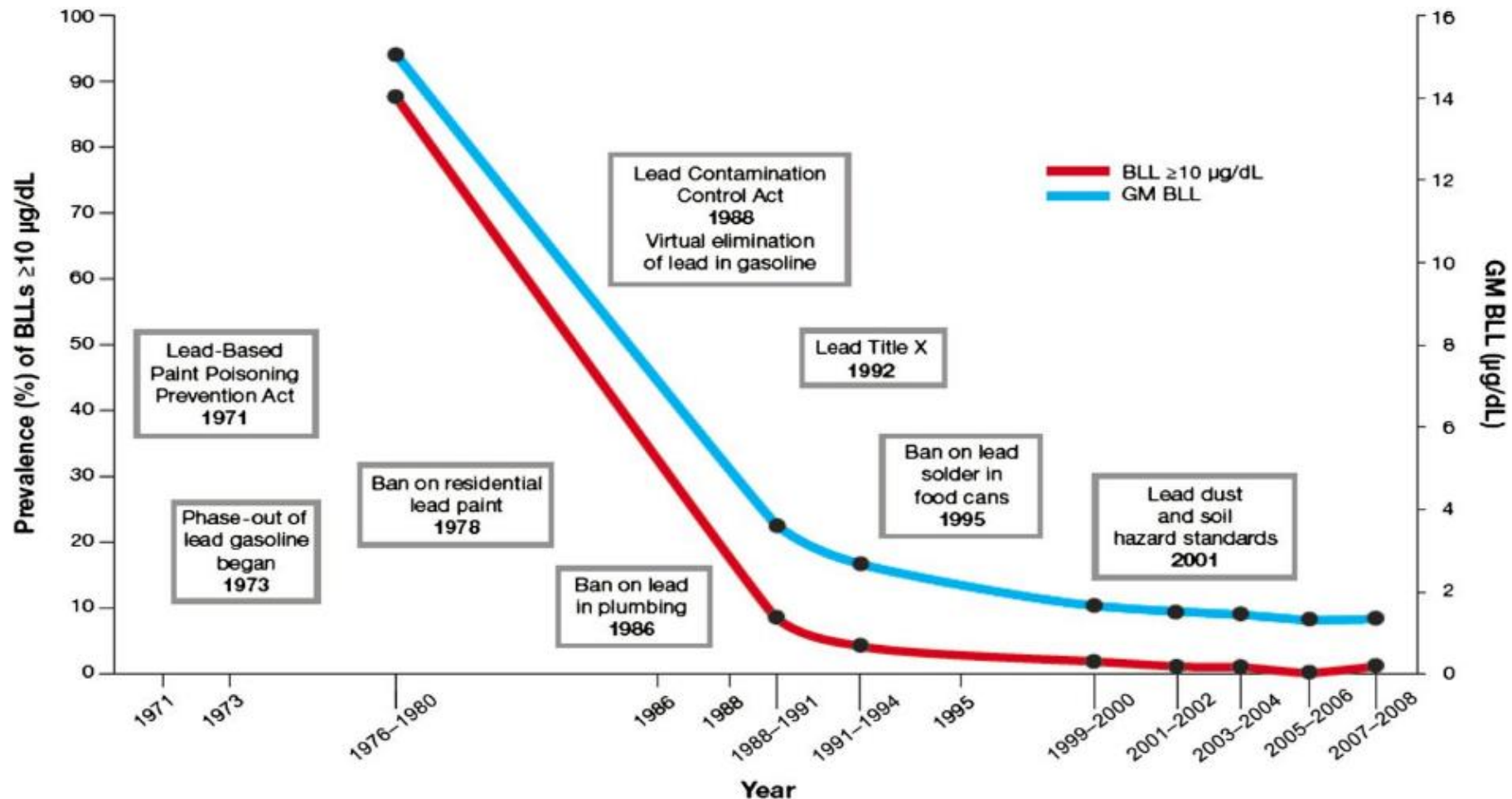
Figure 1: 30-Day Prevalence of Daily Use of Cigarettes, by Grade, 1976-2018



Source: Johnston, L.D., Miech, R.A., O'Malley, P.M., Bachman, J.G., Schulenberg, J.E., & Patrick, M.E. (2019). *Monitoring the Future national survey results on drug use 1975-2018: Overview, key findings on adolescent drug use*. Ann Arbor: Institute for Social Research, University of Michigan.

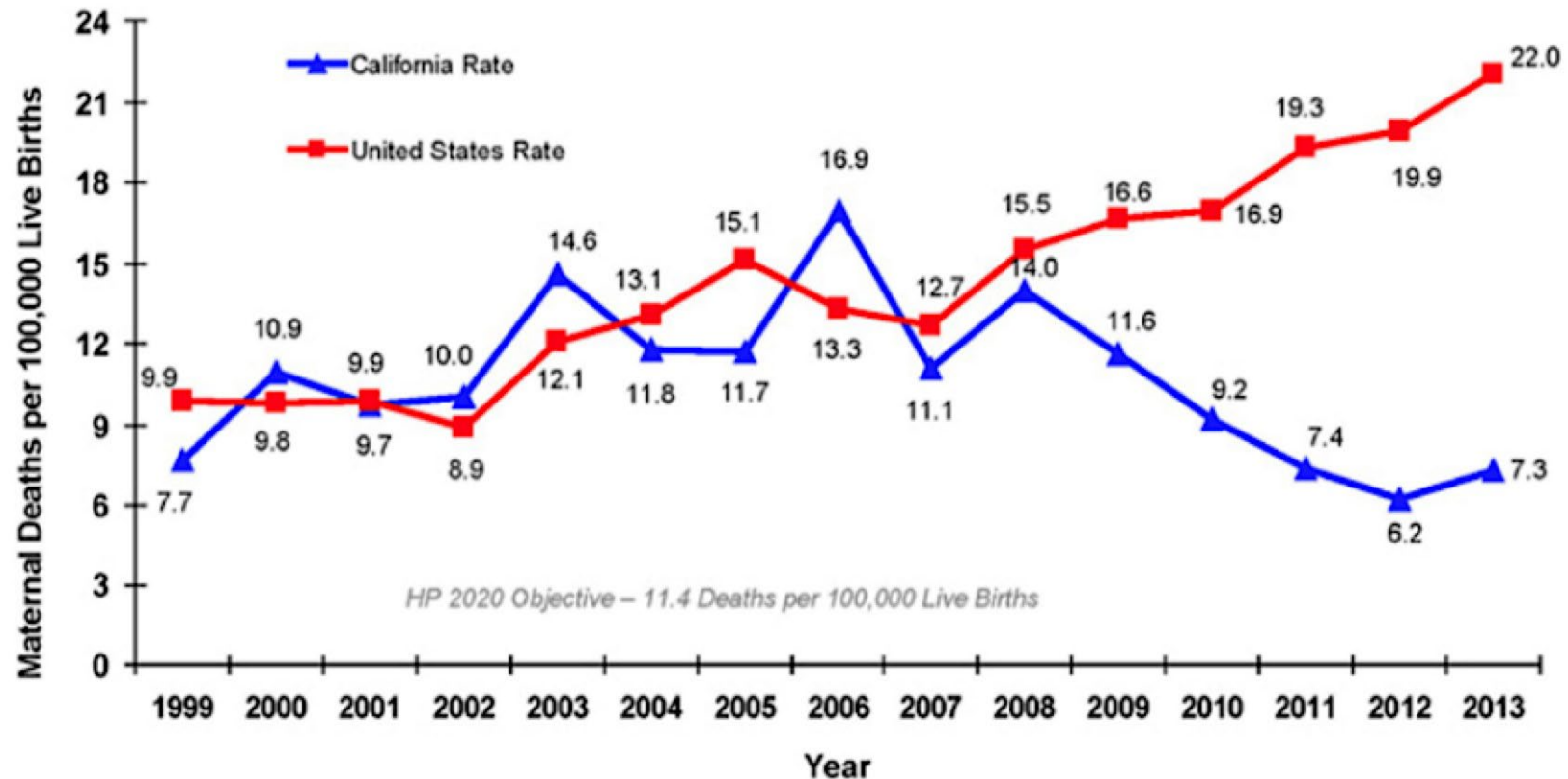
<http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2018.pdf>

Lead Exposure: Prevention Approaches



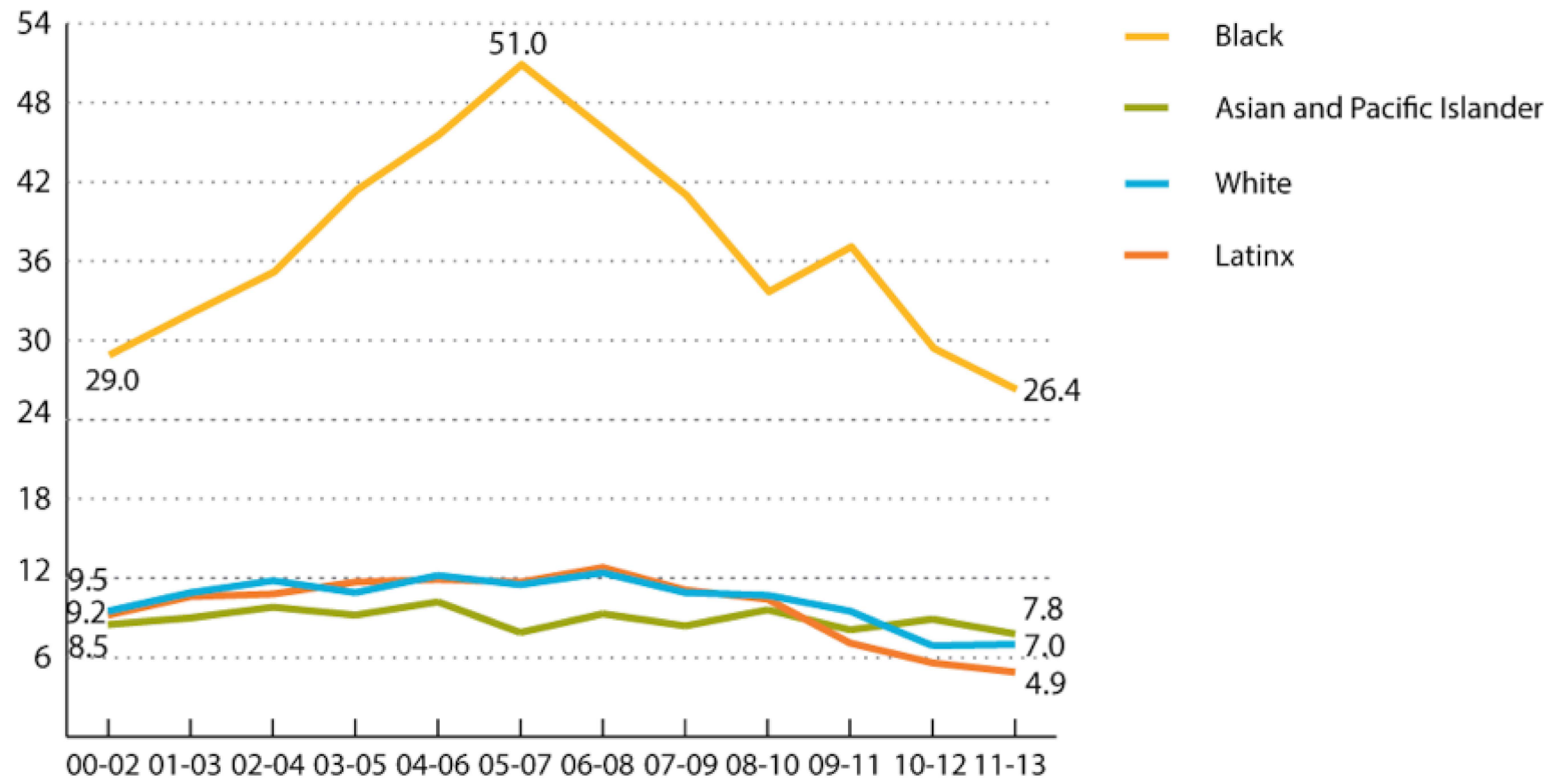


Maternal Mortality Rate, California and United States; 1999-2013



Sources: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013; California Maternal Quality Care Collaborative. Who we are. n.d. <https://www.cmqcc.org/who-we-are> (accessed Aug 25, 2020).

Maternal Deaths per 100,000 Live Births



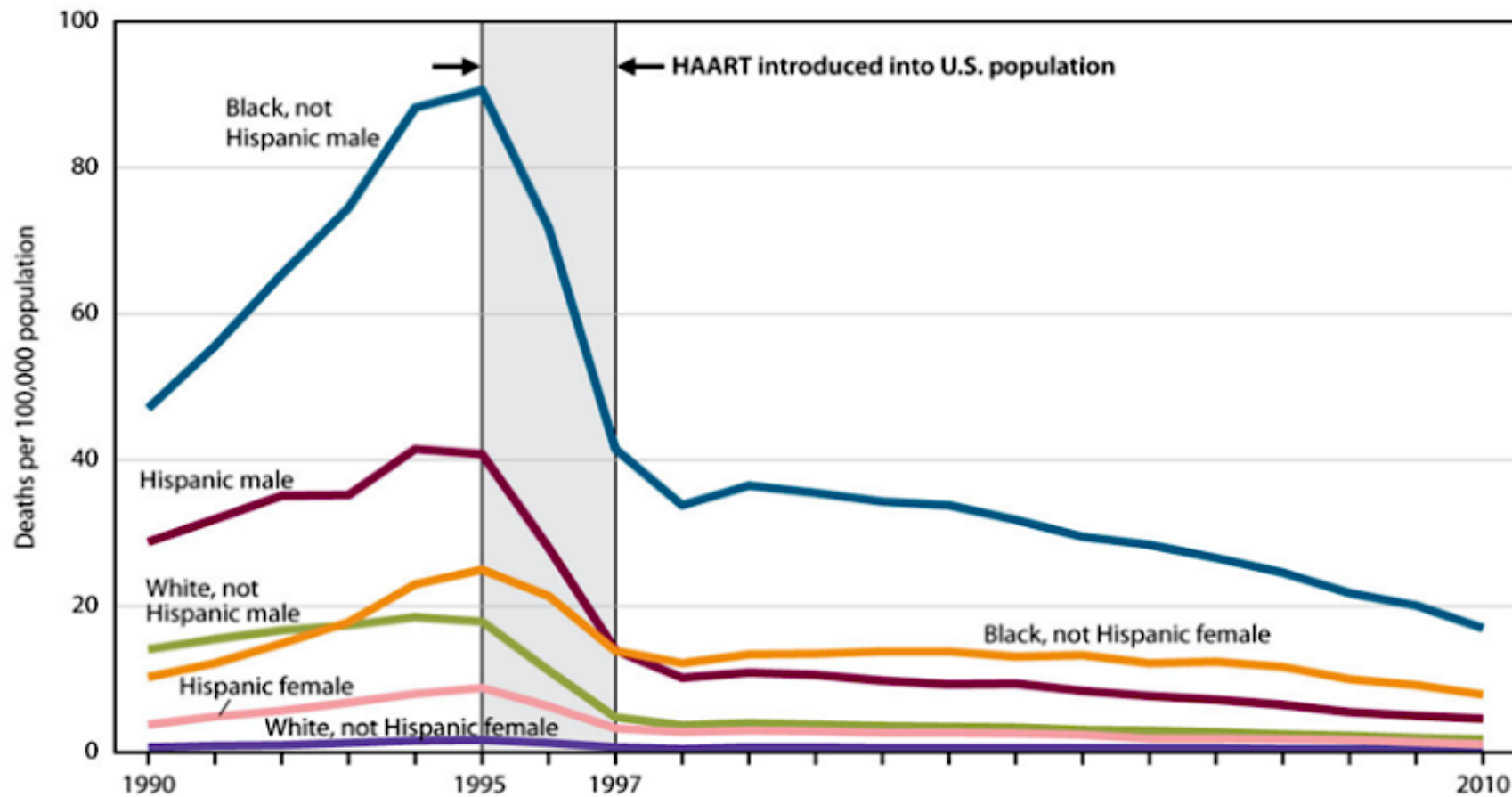
Note: Data reflect a three-year moving average. Race and ethnicity categories are mutually exclusive. Maternal mortality is defined as the death of a woman while pregnant or within 42 days of the end of pregnancy.

Source: California Department of Public Health



California Budget
& Policy Center
Independent Analysis. Shared Prosperity.

Death Rates for HIV Disease for All Ages



NOTE: HAART is highly active antiretroviral therapy.

SOURCE: CDC/NCHS, Health, United States, 2013, Figure 24. Data from the National Vital Statistics System.

Demonstrating Cross-Sector Approaches

- Individual briefs and report section available for six sectors
 - Clear articulation of how the science of toxic stress shows up within the population it supports
 - The role of each sector in addressing/combatting ACEs and toxic stress
 - **Robust list of specific Primary, Secondary and Tertiary prevention strategies that can be implemented**
- Case studies of programs that highlight strong use of cross-sector integration and all three prevention strategies.



From Adversity to Resilience in the Early Childhood Sector



Findings from *Roadmap for Resilience: The California Surgeon General's Report on Adverse Childhood Experiences, Toxic Stress, and Health*

How Adversity Can Impact Early Childhood Outcomes

Recent estimates suggest that **62%** of California adults have experienced at least one **Adverse Childhood Experience (ACE)**, and **16%** have experienced four or more (2011-2017 data).¹ In a dose-response fashion, ACEs can lead to serious health risks, such as heart disease, stroke, cancer, dementia, mental health and substance use disorders, and premature mortality, including by suicide.²⁻¹² ACEs and other adversities experienced early in life without adequate buffering protections of safe, stable, and nurturing relationships and environments can lead to activation of the **toxic stress response**,¹³⁻¹⁹ defined as "prolonged activation of the stress response systems that can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment, well into the adult years... For children, the result is the disruption of the development of brain architecture and other organ systems and an increase in lifelong risk for physical and mental disorders."²⁰

The Role of the Early Childhood Sector in Preventing and Mitigating Toxic Stress

In the early childhood sector, many programs provide services that braid primary, secondary, and tertiary prevention. **Primary prevention** of ACEs and toxic stress in the early childhood sector centers on preventing adverse experiences and strengthening buffering influences, typically by creating policies and programs that promote safe, stable, nurturing early relationships and environments.^{20,30,31} Universal programs may encourage positive parenting, amplify access to high-quality support services, and provide parent education and supports for healthy child development and relationships.

For more detail and information, read *Roadmap for Resilience: The California Surgeon General's Report on Adverse Childhood Experiences, Toxic Stress, and Health* at <https://osq.ca.gov/>

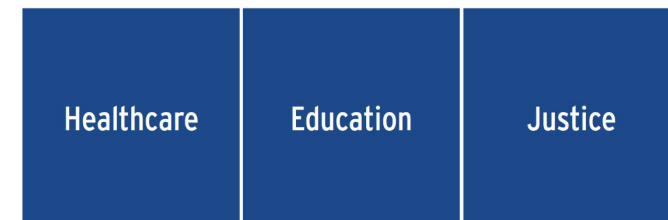
Critical for Success:

Cross-sector coordination requires
**shared language, shared metrics, role clarity,
and clear lines of accountability.**

Cross-Sector Response in Practice: Handle With Care program



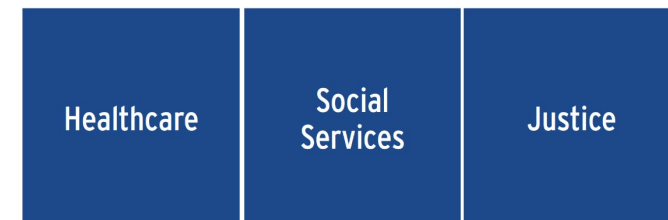
- 2013 pilot at Mary C. Snow West Side Elementary School in Charleston, WV
- **Law Enforcement:** provides the school or child care agency with a “heads up” when a child has been identified at the scene of a traumatic event.
- **Schools:** Teachers have been trained on the impact of trauma on learning, and are incorporating many interventions to mitigate the negative impact of trauma for identified students.
- **Counseling:** When identified students exhibit continued behavioral or emotional problems in the classroom, the counselor or principal refers the parent to a counseling agency which provides trauma-focused therapy.
- **Other Adoption:** New Jersey recently announced Handle With Care. Last year—Yolo County, CA announced FOCUS program modeled after Handle with Care.



Cross-Sector Response in Practice: Adverse Childhood Experiences Response Team



- Program originated in Manchester, NH
- ACERT includes a trained multidisciplinary team made up of a family advocate, crisis advocate, and a plain-clothes detective
- Deployed when a child has witnessed violence in the form of ACEs or other traumatic exposures – such as at the scene of an intimate partner violence episode or a drug overdose - to which law enforcement is called
- ACERT performs a home visit immediately after the incident and provides education on ACEs and linkages to necessary health and support services
- First 3.5 years—1,454 children (ages 0-17), from 994 families were contacted 1,048 total referrals made





A State Response to ACEs and Toxic Stress

California's Foundational Response: Key Tools

- **Establishing the Office of the California Surgeon General (CA-OSG)**
 - Provides a rigorous scientific foundation to guide Cross-Sector Coordination
 - Convened cross-governmental effort – ACEs Reduction Leadership Team
- **Significant Budgetary Investments in Allied Cross-Sector Work**
 - Strengthening Economic Supports for Families
 - Supporting Parents and Children
 - Investments in Early Learning and Care
 - Expansions in Healthcare Coverage
 - Research in Biomedical Advances

California's Key Tools

- **Scientific Framework Supporting Routine Screening**
 - CDC, NASEM, and AAP recommend screening for precipitants of toxic stress
- **Statutory Framework Supporting Screening and Provider Training**
 - AB 340 – Trauma Screening Advisory Group to provide recommendations on specific trauma screening tools which could be utilized by Medi-Cal
- **Establishing the ACEs Aware initiative (CA-OSG and DHCS)**
 - Approximately \$143.1 million over two fiscal years allocated to support routine ACE screening in primary care through Medi-Cal
 - Train healthcare providers on how to screen for ACEs and treat toxic stress
 - Reimburse providers for conducting ACE screening of children and adults in Medi-Cal

State-Level Cross-Sector Response in Practice: ACEs Aware Initiative



Healthcare Sector

- First-in-the nation initiative—most comprehensive approach for enacting large-scale screening and intervention for toxic stress
- Trained 15k+ healthcare providers since January 2020
- CA ACEs Learning and Quality Improvement Collaborative (CALQIC)—qualitative and quantitative data on best practices in screening and response from 53 clinics in 7 regions over 18 months.

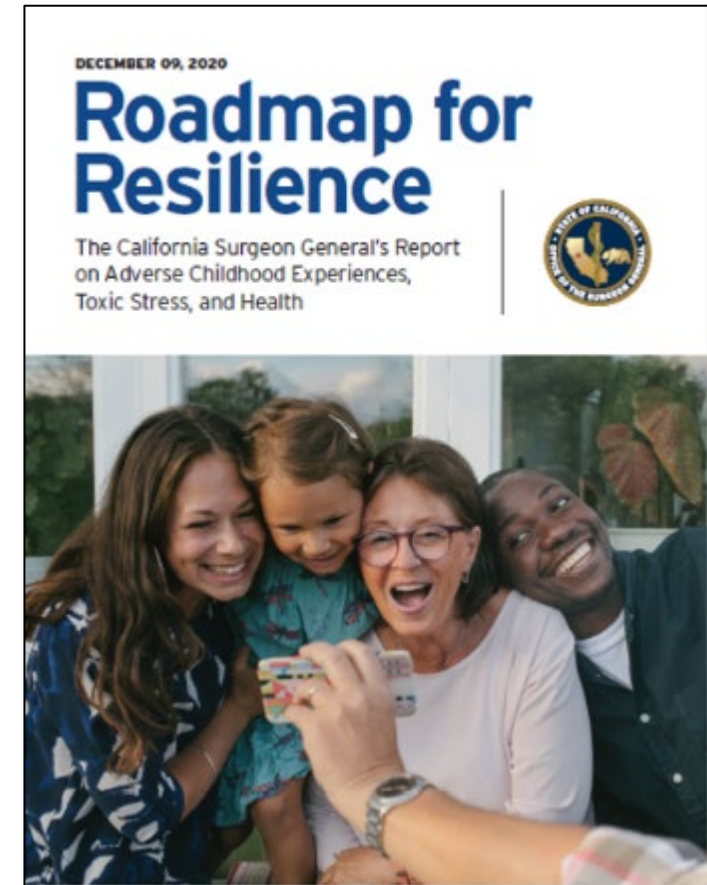
Cross-Sector Integration in progress

- Trauma Informed Primary Care committee—ACEs Aware advisors
- Network of Care Roadmap
 - Brings alignment to share language, roles, accountability, metrics
 - Local referral systems for cross-sector providers
- Healthcare Provider Directory allows cross-sector responses to refer families in need to ACEs Aware healthcare providers



Critical Takeaways

- **California has foundational leadership** to chart the course on cutting ACEs and toxic stress in half in a generation
- **Toxic Stress is a health condition that is amenable to treatment**
- **Prevention at all levels**
 - An effective response requires prevention at all three levels: primary, secondary, and tertiary. None of these strategies is sufficient alone, and each extends the reach of the others.
- **Cross-Sector Approach**
 - Addressing this public health crisis requires shared understanding of the problem, shared language, clarity of roles, shared metrics, and accountability



Further Research is Necessary

Next steps for the movement include advancing a robust toxic stress research agenda. Key objectives should include:

1. Development of **clinically relevant biomarkers** to help more precisely diagnose, classify, and assess treatment efficacy for toxic stress in clinical settings.
2. **Guidelines for clinical management** of ACE-Associated Health Conditions (AAHCs) in the setting of toxic stress.
3. Identification of **therapeutic targets** for regulating the toxic stress response.
4. Elucidation of the complex interactions of how **individual differences** in underlying biological susceptibility or exposures (including timing, severity, duration and developmental interactions) might affect clinical presentation or inform individualized treatment strategies.
5. **Longitudinal studies** are needed to better understand the specific and longer-term impacts of clinical interventions that target the toxic stress response.

Next Steps for the Movement

To Cut ACEs and Toxic Stress in Half in a Generation:



**Must
Raise Public
Awareness**

**Cross-Sector
Training is
Imperative**

**Cross-Sector
Coordination
& Alignment
Required**

**Continued
Research
Needed**



**Thank you
for your
dedication**



Available Now: First California Surgeon General's Report

- Materials available at <https://osg.ca.gov/sg-report/>
 - Full 438-page report
 - Executive Summary
 - 12 briefs summarizing key themes
 - Social Media Toolkit
 - Public webinar

