

# ***Roadmap for Resilience***

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

April 22, 2021



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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.



## *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

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## **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.

# 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

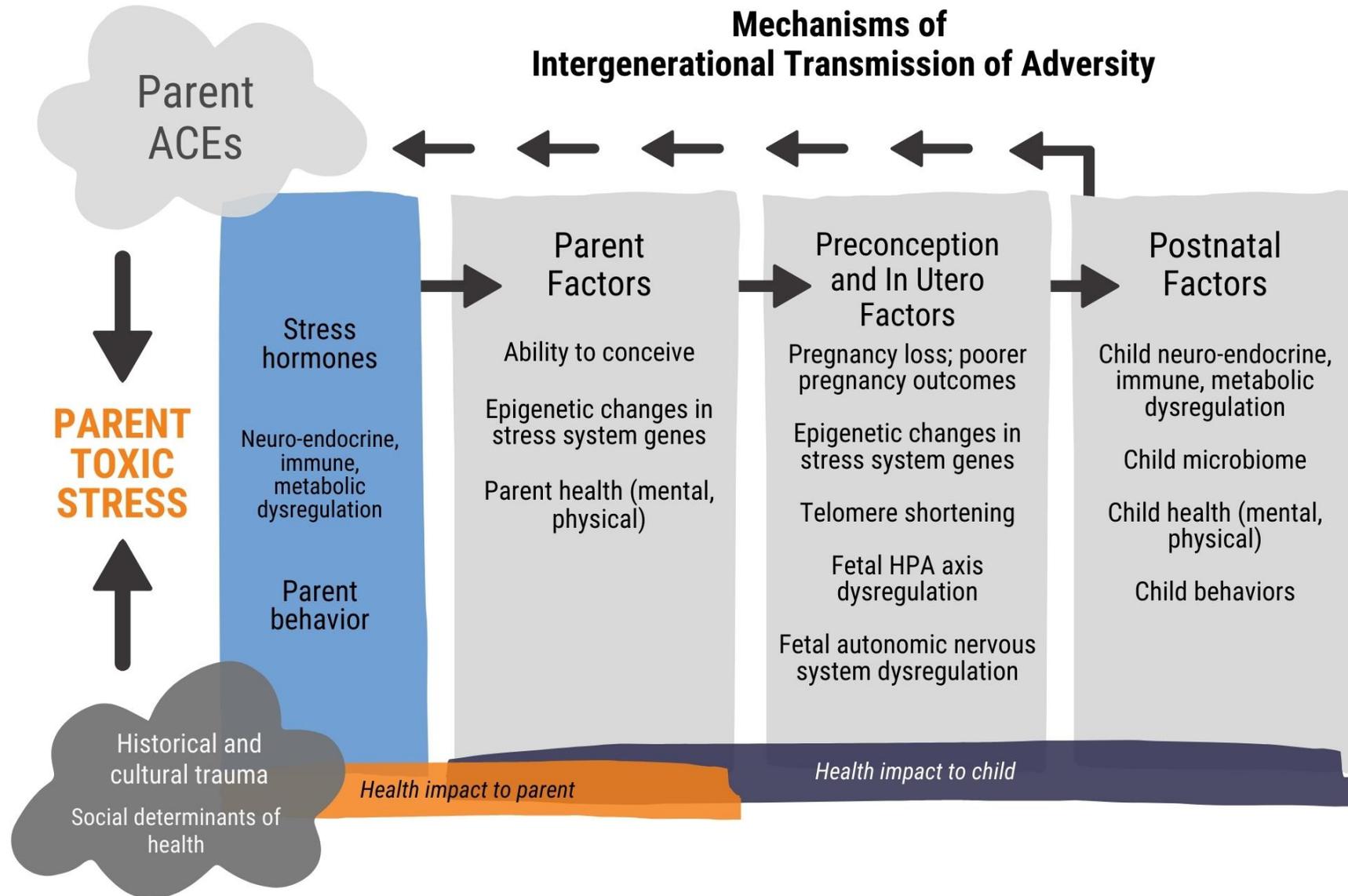
Maladaptive response to intense and sustained stressor

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: 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.

# 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 $\geq 4$ 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, 2017<sup>16</sup>; Sources of **odds ratios**: Hughes *et al.*, 2017<sup>12</sup> for 1, 2, 4, 7, 10; Petrucelli *et al.*, 2019<sup>9</sup> for 3 (injuries with fracture), 5; Center for Youth Wellness, 2014<sup>17</sup> for 6 (Alzheimer's disease or dementia); Center for Youth Wellness, 2014<sup>17</sup> and Merrick *et al.*, 2019<sup>26</sup> for 9

# Annual Cost of ACEs to California

Select Health Conditions	Child Abuse and Neglect: Other Sectors
<b>\$112.5 billion</b>	<b>\$19.3 billion</b>
<ul style="list-style-type: none"><li>• Asthma</li><li>• Arthritis</li><li>• COPD</li><li>• Depression</li><li>• Smoking</li><li>• Cardiovascular disease</li><li>• Heavy Drinking</li><li>• Obesity</li></ul>	<ul style="list-style-type: none"><li>• Education</li><li>• Welfare</li><li>• Criminal justice</li><li>• Lifetime productivity</li><li>• Healthcare, early death</li></ul>

# Recent Events Highlight Urgent Need for Effective Buffering Systems and Supports

- Trauma-informed systems have never been more important for recovery from:
  - **COVID-19** - ACEs increase the burden of AAHCs, which predispose to a more severe COVID-19 disease and increased risk of death
  - **Natural Disasters** – including record-setting wild fires
  - Deep-rooted systemic **racism** in our society
- Vulnerable and systematically overlooked communities bear the brunt of each new crisis

# A Public Health Approach

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**

# **Strong Work is Already Occurring Across Sectors**

**Great  
need for  
coordination**

**Work must  
be rooted in  
science**

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## **Key Finding:**

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

# No Single Sector or Category of Prevention is Sufficient Alone



**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).<sup>1</sup> 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.<sup>2,19</sup> 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**,<sup>19,19</sup> 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."<sup>20</sup>

The toxic stress response can impair regions of the brain responsible for learning, memory, impulse control, attention, attachment, and emotional regulation, making learning and forming healthy relationships more difficult.<sup>21,23</sup> Further, the immune, metabolic, and inflammatory changes that result from toxic stress may increase the risk of infections, asthma and other atopic conditions, poor dental health, and somatic complaints, such as headache and abdominal pain.<sup>24-28</sup> Early childhood is a time of heightened biological plasticity;<sup>29</sup> when interventions are likely to be more effective and economical. Thus, the early childhood sector plays a critical role in the primary, secondary, and tertiary prevention of toxic stress.

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://osg.ca.gov>

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# Primary Prevention Strategies

- Raise public awareness
- Expand supply and improve access to affordable child care and home visitation services
- Promote safe and stable home environments, especially ones that promote early learning and optimal development
- Promote social norms that protect against violence and adversity
- Improve integration of healthcare, early childhood supports, and related programs like social services across programs
- Offer universal parenting education and resources
- Expand licensing and accreditation of child care facilities and other early childhood workers to include trauma-informed competencies
- Provide widespread trauma-informed training and support self-care for all early childhood personnel

# Secondary Prevention Strategies

- Provide parent education regarding ACEs and toxic stress and teach parenting skills to prevent intergenerational transmission
- Promote positive family relationship approaches
- Refer children and caregivers to ACEs Aware health providers
- Increase targeted early child home visitation services for at-risk families
- Support teen parents in graduating from school and supporting their children
- Reduce stigma surrounding ACEs, and seeking help for mental and behavioral health conditions
- Provide resources to meet specific family needs, such as through Family Resource Centers

# Tertiary Prevention Strategies

- Emphasize buffering care strategies in home visitation, early care, and education
- Promote self-care strategies that buffer toxic stress, including healthy relationships, sleep, nutrition, mindfulness practices, mental healthcare, exercise, and access to nature
- Enhance access to high-quality healthcare services that address toxic stress
- Facilitate parent mentorship programs and support groups, especially for parents suffering from toxic stress
- Provide intensive support for families in crisis

# 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 for Success:

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

# 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



# 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

