Roadmap for Resilience

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

April 22, 2021
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
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.

Stress Response

<table>
<thead>
<tr>
<th>POSITIVE</th>
<th>TOLERABLE</th>
<th>TOXIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological response to mild or moderate stressor</td>
<td>Adaptive response to time-limited stressor</td>
<td>Maladaptive response to intense and sustained stressor</td>
</tr>
<tr>
<td>Brief activation of stress response elevates heart rate, blood pressure, and hormonal levels</td>
<td>Time-limited activation of stress response results in short-term systemic changes</td>
<td>Prolonged activation of stress response in children disrupts brain architecture and increases risk of health disorders</td>
</tr>
<tr>
<td>Homeostasis recovers quickly through body’s natural coping mechanisms</td>
<td>Homeostasis recovers through buffering effect of caring adult or other interventions</td>
<td>Prolonged allostatics establishes a chronic stress response</td>
</tr>
<tr>
<td><strong>Tough test at school, playoff game</strong></td>
<td><strong>Immigration, natural disaster</strong></td>
<td><strong>Abuse, neglect, household dysfunction</strong></td>
</tr>
</tbody>
</table>

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

Mechanisms of Intergenerational Transmission of Adversity

Parent ACEs

- Parent behavior
- Neuro-endocrine, immune, metabolic dysregulation

Stress hormones

Parent Factors
- Ability to conceive
- Epigenetic changes in stress system genes
- Parent health (mental, physical)

Preconception and In Utero Factors
- Pregnancy loss; poorer pregnancy outcomes
- Epigenetic changes in stress system genes
- Telomere shortening
- Fetal HPA axis dysregulation
- Fetal autonomic nervous system dysregulation

Postnatal Factors
- Child neuro-endocrine, immune, metabolic dysregulation
- Child microbiome
- Child health (mental, physical)
- Child behaviors

Health impact to parent

Health impact to child

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

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

Source of causes of death: CDC, 2017\(^6\); Sources of odds ratios: Hughes et al., 2017\(^{12}\) for 1, 2, 4, 7, 10; Petrucelli et al., 2019\(^9\) for 3 (injuries with fracture); 5; Center for Youth Wellness, 2014\(^{17}\) for 6 (Alzheimer’s disease or dementia); Center for Youth Wellness, 2014\(^{17}\) and Merrick et al., 2019\(^{26}\) for 9
# Annual Cost of ACEs to California

<table>
<thead>
<tr>
<th>Select Health Conditions</th>
<th>Child Abuse and Neglect: Other Sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>$112.5 billion</td>
<td>$19.3 billion</td>
</tr>
</tbody>
</table>

- Asthma
- Arthritis
- COPD
- Depression
- Smoking
- Cardiovascular disease
- Heavy Drinking
- Obesity
- Education
- Welfare
- Criminal justice
- Lifetime productivity
- Healthcare, early death

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
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

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 (2017 data). ACEs can lead to serious health risks, such as heart disease, stroke, cancer, asthma, mental health and substance use disorders, and premature mortality, including by suicide.7 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.8 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, into the adult years. For children, the result is the stunting of the development of brain architecture and other organ systems and an increase in lifelong risk for physical and mental disorders.9,10 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.10,11 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 headaches and abdominal pain.12 Early childhood is a time of heightened biological plasticity 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.
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