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 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

NEGLECT
Physical or emotional

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

Physical

Emotional

Sexual

Physical

Mental Illness

Emotional

Intimate Partner Violence

Sexual

Substance Dependence

Parental Separation or Divorce

61.6% of US adults have $\geq$ 1 ACE
15.8% have $\geq$ 4 ACEs

62.3% Californians have $\geq$1 ACEs 16.3% have $\geq$ 4 ACEs

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

<table>
<thead>
<tr>
<th>Leading Causes of Death in US, 2017</th>
<th>Odds Ratio Associated with ≥ 4 ACEs</th>
</tr>
</thead>
<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\textsuperscript{16}; Sources of odds ratios: Hughes et al., 2017\textsuperscript{12} for 1, 2, 4, 7, 10; Petrucelli et al., 2019\textsuperscript{9} for 3 (injuries with fracture), 5; Center for Youth Wellness, 2014\textsuperscript{17} for 6 (Alzheimer’s disease or dementia); Center for Youth Wellness, 2014\textsuperscript{17} and Merrick et al., 2019\textsuperscript{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>
<tr>
<td>• Asthma</td>
<td>• Education</td>
</tr>
<tr>
<td>• Arthritis</td>
<td>• Welfare</td>
</tr>
<tr>
<td>• COPD</td>
<td>• Criminal justice</td>
</tr>
<tr>
<td>• Depression</td>
<td>• Lifetime productivity</td>
</tr>
<tr>
<td>• Smoking</td>
<td>• Healthcare, early death</td>
</tr>
<tr>
<td>• Cardiovascular disease</td>
<td></td>
</tr>
<tr>
<td>• Heavy Drinking</td>
<td></td>
</tr>
<tr>
<td>• Obesity</td>
<td></td>
</tr>
</tbody>
</table>

Cost of ACEs to North America and Europe

$1.3 trillion annually

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
### 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 allostasis establishes a chronic stress response</td>
</tr>
<tr>
<td>Tough test at school, playoff game</td>
<td>Immigration, natural disaster</td>
<td>Abuse, neglect, household dysfunction</td>
</tr>
</tbody>
</table>

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

Childhood psychosocial adversity
Care environment mediates stress
- Prenatal maternal stress, depression
- Postnatal caregiver unavailability/absence (mental illness, substance abuse, death)
- Depriving environments (e.g., institutional care)
- Child abuse or neglect

Biological change
Epigenetic changes
- Genetic endowment
  - Genetic variants alter susceptibility to adversity
    - e.g., 5-HTTLPR, BDNF, FKBP5, MAOA polymorphisms
- DNA methylation
  - (e.g., GR promoter, IGF-2 antisense AVP)
- Telomere shortening

Sensitive period effects
- Specific to developmental functions/domains
- 6–12 months: HPA axis (SHRP)
- 15 months: Language
- 24 months: Attachment, IQ

Inflammation
Neurodevelopmental disruption
Reprogramming of stress and immune regulatory systems

Developmental trajectory
- Biological change is embedded in behaviour (e.g., substance use, exercise, diet, stress management)

Increased risk of:
- Cognitive deficits
- Disease
- Psychopathology
- Social problems, (unemployment, incarceration)

# Biological Systems Disrupted by Toxic Stress

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

<table>
<thead>
<tr>
<th>Symptom or Health Condition</th>
<th>Odds Ratio (excluding outliers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular disease(^1) (CAD, MI, ischemic heart disease)</td>
<td>2.1</td>
</tr>
<tr>
<td>Tachycardia(^2)</td>
<td></td>
</tr>
<tr>
<td>Stroke(^3)</td>
<td>2.0</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease (emphysema, bronchitis)(^3)</td>
<td>3.1</td>
</tr>
<tr>
<td>Asthma(^3)</td>
<td>2.2</td>
</tr>
<tr>
<td>Diabetes(^3)</td>
<td>1.4</td>
</tr>
<tr>
<td>Obesity(^3)</td>
<td>2.1</td>
</tr>
<tr>
<td>Hepatitis or jaundice(^1)</td>
<td>2.4</td>
</tr>
<tr>
<td>Cancer, any(^1)</td>
<td>2.3</td>
</tr>
<tr>
<td>Arthritis(^6, 7) (self-reported)</td>
<td>3 ACEs, HR: 1.5</td>
</tr>
<tr>
<td>Memory impairment(^8) (all causes, including dementias)</td>
<td>4.9</td>
</tr>
<tr>
<td>Kidney disease(^9)</td>
<td>1.7</td>
</tr>
<tr>
<td>Headaches(^1)</td>
<td>≥ 5 ACEs: 2.1</td>
</tr>
<tr>
<td>Chronic pain, any(^9) (using trauma z-score)</td>
<td>1.2</td>
</tr>
<tr>
<td>Chronic back pain(^9) (using trauma z-score)</td>
<td>1.3</td>
</tr>
<tr>
<td>Fibromyalgia(^9)</td>
<td>≥ 1 ACE: 1.8</td>
</tr>
<tr>
<td>Unexplained somatic symptoms, including somatic pain, headaches(^1, 5)</td>
<td>2.0 - 2.7</td>
</tr>
<tr>
<td>Skeletal fracture(^1)</td>
<td>1.6 - 2.6(^7)</td>
</tr>
<tr>
<td>Physical disability requiring assistive equipment(^2)</td>
<td>1.8</td>
</tr>
<tr>
<td>Depression(^1)</td>
<td>4.7</td>
</tr>
<tr>
<td>Suicide attempts(^1)</td>
<td>37.3</td>
</tr>
<tr>
<td>Suicidal ideation(^2)</td>
<td>10.5</td>
</tr>
<tr>
<td>Sleep disturbance(^2)</td>
<td>1.6</td>
</tr>
<tr>
<td>Anxiety(^2)</td>
<td>3.7</td>
</tr>
<tr>
<td>Panic and anxiety(^2)</td>
<td>6.8</td>
</tr>
<tr>
<td>Post-traumatic stress disorder(^2)</td>
<td>4.5</td>
</tr>
<tr>
<td>Illicit drug use(^2) (any)</td>
<td>5.2</td>
</tr>
<tr>
<td>Injected drug, crack cocaine, or heroin use(^2)</td>
<td>10.5</td>
</tr>
<tr>
<td>Alcohol use(^2)</td>
<td>6.9</td>
</tr>
<tr>
<td>Cigarettes or e-cigarettes use(^2)</td>
<td>6.1</td>
</tr>
<tr>
<td>Cannabis use(^2)</td>
<td>11.0</td>
</tr>
<tr>
<td>Teen pregnancy(^2)</td>
<td>4.2</td>
</tr>
<tr>
<td>Sexually transmitted infections, lifetime(^2)</td>
<td>5.9</td>
</tr>
<tr>
<td>Violence victimization(^2) (intimate partner violence, sexual assault)</td>
<td>7.5</td>
</tr>
<tr>
<td>Violence perpetration(^2)</td>
<td>8.1</td>
</tr>
</tbody>
</table>
ACE-Associated Health Conditions: Pediatrics

<table>
<thead>
<tr>
<th>Symptom or Health Condition</th>
<th>For ≥ X ACEs (compared to 0)</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma⁶, ²³</td>
<td>4</td>
<td>1.7 - 2.8</td>
</tr>
<tr>
<td>Allergies⁶</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Dermatitis and eczema²⁹</td>
<td>3*</td>
<td>2.0</td>
</tr>
<tr>
<td>Urticaria⁹</td>
<td>3*</td>
<td>2.2</td>
</tr>
<tr>
<td>Increased incidence of chronic disease, impaired management⁵⁰</td>
<td>3</td>
<td>2.3</td>
</tr>
<tr>
<td>Any unexplained somatic symptoms (e.g., nausea/vomiting, dizziness, constipation, headaches)</td>
<td>3</td>
<td>9.3</td>
</tr>
<tr>
<td>Headaches²³</td>
<td>4</td>
<td>3.0</td>
</tr>
<tr>
<td>Enuresis; enopresis⁴</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Overweight and obesity⁴</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Failure to thrive; poor growth; psychosocial dwarfism⁵, ⁴¹</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Poor dental health¹⁶, ²²</td>
<td>4</td>
<td>2.8</td>
</tr>
<tr>
<td>Increased infections⁹⁰ (viral, URIs, LRTIs and pneumonia, AOM, UTIs, conjunctivitis, intestinal)</td>
<td>3*</td>
<td>1.4 - 2.4</td>
</tr>
<tr>
<td>Later menarche⁶⁰ (≥ 14 years)</td>
<td>2*</td>
<td>2.3</td>
</tr>
<tr>
<td>Sleep disturbances¹, ²⁵</td>
<td>5**</td>
<td>PR 3.1</td>
</tr>
<tr>
<td>Developmental delay²⁰</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Learning and/or behavior problems³</td>
<td>4</td>
<td>32.6</td>
</tr>
<tr>
<td>Repeating a grade⁷⁵</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Not completing homework¹⁵</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>High school absenteeism¹²</td>
<td>4</td>
<td>7.2</td>
</tr>
<tr>
<td>Graduating from high school²⁹</td>
<td>4</td>
<td>0.4</td>
</tr>
<tr>
<td>Aggression; physical fighting²⁸</td>
<td>For each additional ACE</td>
<td>1.9</td>
</tr>
<tr>
<td>Depression²⁰</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td>ADHD²⁰</td>
<td>4</td>
<td>5.0</td>
</tr>
<tr>
<td>Any of: ADHD, depression, anxiety, conduct/behavior disorder²⁹</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Suicidal ideation³⁹</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Suicide attempts³⁹</td>
<td>For each additional ACE</td>
<td>1.9 - 2.1</td>
</tr>
<tr>
<td>Self-harm³⁹</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>First use of alcohol at &lt; 14 years⁷</td>
<td>4</td>
<td>6.2</td>
</tr>
<tr>
<td>First use of illicit drugs at &lt; 14 years¹⁹</td>
<td>5</td>
<td>9.1</td>
</tr>
<tr>
<td>Early sexual debut²⁷ (&lt;15-17 y)</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Teenage pregnancy³</td>
<td>4</td>
<td>4.2</td>
</tr>
</tbody>
</table>
Mechanisms of Intergenerational Transmission of Adversity

Parent ACEs

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

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

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.

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:** Meaney 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

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**.

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

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.
Figure 1: 30-Day Prevalence of Daily Use of Cigarettes, by Grade, 1976-2018

Lead Exposure: Prevention Approaches

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

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
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/combating 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.
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