

Primary, Secondary, and Tertiary Prevention Strategies in Public Health

The public health sector's long-standing mission is to promote and protect the health and well-being of entire populations, to seek to prevent disease and injuries before they happen, and to mitigate health consequences once disease, injury, or disaster does strike. In general, the professional field is led by the network of national, state, and local governmental public health agencies and supported by a wide range of academic, public, and private partners conducting research, implementing and evaluating population-level interventions and advocating for public health solutions. The public health field emphasizes a broad perspective that includes the social, economic, and political determinants of health and recognizes and prioritizes the non-medical contextual factors influencing health outcomes. To carry out its mission, the public health field strives to deliver 10 essential public health services:^{1081,1082}

1. Assess and monitor population health, factors that influence health, and community needs and assets;
2. Investigate, diagnose, and address health hazards and root causes;
3. Communicate effectively to inform and educate about health, factors that influence it and, how to improve it, for the public at large, and for specific sectors about their roles in prevention, early detection, and treatment;
4. Strengthen, support, and mobilize communities and partnerships to improve health, including strong cross-sector referral networks and community partnerships to respond to health risks;
5. Create, champion, and implement policies, plans, and laws that impact health, including equitable access to resources needed for health promotion, prevention of health risks, and to early identification and treatment of recognized health conditions;
6. Utilize legal and regulatory actions designed to improve and protect the public's health;
7. Assure an effective system that enables equitable access to the individual services and care needed to be healthy, including for primary, secondary, and tertiary prevention of health risks;

8. Build and support a diverse and skilled public health workforce, including training for sector-specific personnel to understand their role in preventing and intervening on health risks, and strategies for cross-sector coordination, including across the justice, healthcare, public health, social services, early childhood, and education sectors;
9. Improve and innovate public health functions through ongoing surveillance, evaluation, research, and continuous quality improvement—in the field of toxic stress, these include the work of consortia such the [Bay Area Research Consortium on Toxic Stress and Health](#); the [JPB Research Network on Toxic Stress](#), and the [PALS research network](#),¹⁰⁸³⁻¹⁰⁸⁵ and
10. Build and maintain a strong organizational infrastructure for public health.

These essential public health services provide the framework for public health to protect and promote the health of all people in all communities. Specifically, the framework utilizes a systematic approach to problem-solving with four general components:

1. Define and monitor the health problem to be prevented or mitigated,
2. Assure widespread adoption of known effective prevention principles and strategies,¹⁰⁸⁶⁻¹⁰⁸⁸
3. Develop and test further prevention strategies, and
4. Identify and seek to reduce risks and increase protective factors at each social-ecological level (individual, relationships, community, and society) across the life cycle.¹⁰⁸⁹

This framework also offers a roadmap for public health work to address Adverse Childhood Experiences and toxic stress through primary, secondary, and tertiary prevention strategies. For example, public health surveillance (i.e., tracking health and disease patterns over time) and epidemiologic study (i.e., investigating risk and protective factors and evaluating effectiveness of interventions) provide critical data to inform policy, program, and practice decisions at all prevention levels. In 2008, California became the first state to include the ACE module, adapted from the ACE Study by Kaiser Permanente and the Centers for Disease Control and Prevention (CDC), in the state's Behavioral Risk Factor Surveillance System (BRFSS).¹⁰⁹⁰ Since then, most states have integrated an ACE module into their BRFSS.¹⁰⁹¹ California currently collects ACE information on eight out of the 10 ACEs (neither type of neglect is included) in the BRFSS every other year (so far, 2009, 2011, 2013, 2015, 2017, and 2019).²⁷ In December 2012, California added ACEs as an indicator for "Healthy Beginnings" in the *Let's Get Healthy California* report.¹⁰⁹² The BRFSS ACEs module collects information based on adult recollections of their

childhood experiences during the first 17 years of life and allows California to compare ACE prevalence with population-level data on other health outcomes, such as heart disease, cancer, and stroke.

However, because the BRFSS ACE module is based on adults' recollections of their childhoods, it is a lagging indicator of ACE exposure that doesn't provide direct information about the current status of ACEs in California's children. Therefore, public health surveillance seeks additional data sources to expand its monitoring of child adversity. The National Survey of Children's Health (NSCH), a population-based survey conducted by the US Census Bureau on behalf of the Maternal and Child Health Bureau of the Department of Health and Human Services, provides the most direct and timely assessment of childhood resilience and adversity.¹⁰⁹³ It asks about five of the original 10 ACEs; in total, the NSCH uses a set of eleven family, economic, and community indicators to ask parents about current adverse experiences to which their children (ages 0-17) have been exposed.¹⁰⁹⁴ The NSCH confirms that childhood adversity is common among California children. Among all California children, 28.1% have experienced at least one of the ACEs assessed in the NSCH that align with the ACEs evaluated in the original ACE Study. Out of California children with public insurance, ACE prevalence goes up to 37.4%. Fewer than half (46.6%) of California's publicly insured school-age children without ACEs demonstrate the qualities of flourishing assessed in the NSCH, including being curious and interested in learning new things, working to complete tasks begun (persistence), and staying calm when facing challenges (regulating emotions and behavior). For children experiencing two or more ACEs, this fraction is reduced to 26.7%.³²

The Maternal Infant Health Assessment (MIHA) survey adds an intergenerational perspective on early hardships and adversities, and asks about four of the original 10 ACEs, among eight total adversities. MIHA surveys postpartum women (15 years and older) who deliver a live birth about their own childhood hardships prior to age 14 and their contemporaneous challenges during the current pregnancy. It is a collaborative effort of the Maternal, Child, and Adolescent Health Division and the Women, Infant, and Children Division of the California Department of Public Health and the Center on Social Disparities in Health at the University of California, San Francisco. According to the 2013-2014 MIHA survey, one in four California women with a recent birth (25%) experienced two or more childhood hardships before age 14. Among young mothers ages 15-19, one-third (33%) experienced two or more hardships as children, compared with fewer than one-fifth (19%) of mothers ages 35 and older. Statewide, an estimated 34% of postpartum women living at or below the federal poverty guideline were exposed to at least two childhood hardships, more than double the estimate (16%) for women with higher family incomes (above 200% of the federal poverty guideline).¹⁰⁹⁵ See **Appendix A** for a

summary comparison of the three kinds of ACE surveys used in California.

Taken together, these three public health surveillance data sources provide a rich and conceptually related perspective that looks at child adversity across the lifespan, and useful data to inform and facilitate interventions. However, more timely community-level data are needed to provide detailed, integrated, and real-time information on risk and protective factors to inform policymakers and local community action. In addition, a more robust state and local data infrastructure is needed to move from population-level data to actionable community and clinical data on prevalence, treatment resources, and treatment implementation and efficacy to improve the assessment and treatment of toxic stress, including tracking locally relevant clinical data on rates of ACE-Associated Health Conditions (AAHCs) and available cross-sector services to address toxic stress.¹⁰⁹⁶

Public health practitioners also serve as catalysts and conveners to align stakeholder efforts to pursue the multi-level, multi-faceted approaches, promote cross-sector collaboration, community engagement, and increased efficiency in implementing effective, evidence-based interventions and policies to build healthy communities and enhance equity in outcomes. A collaborative “collective impact” approach can mobilize efforts around the shared goal of reducing ACEs and toxic stress in half within a generation and recognizes the power of aligning cross-sector agency actors and community partners in mutually reinforcing policy, systems, and programmatic change activities.

CONCEPTUAL FRAMEWORKS FOR UNDERSTANDING AND ADDRESSING ACEs AND TOXIC STRESS

The public health field has also developed several conceptual models that provide insights and capture the complexities of understanding the wide range of childhood adversities and addressing toxic stress. As characterized by the World Health Organization’s (WHO) framework, for example, social determinants of health (SDOH) are identified as “the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.”¹⁰⁹⁷ These macro forces often create the context in which families struggle and children are challenged with the traditional ACEs (10 categories of child abuse, neglect, and household challenges) and other risk factors for toxic stress.³⁻⁵

One of the most comprehensive conceptual models for understanding SDOH is the framework from California’s own Bay Area Regional Health Inequities Initiative (BARHII), which is focused on reducing health inequities.¹⁰⁹⁸ As highlighted in the

BARHII model (Figure 10), the public health approach identifies the structural social, economic, cultural, and institutional forces that shape the living conditions through which the odds for optimal early child development are set. These structural drivers are grounded in the inequitable distribution of power, money, and resources. They create the structural stratifications that shape income, education, occupation, housing, gender, and race/ethnicity social hierarchies, exposure to

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adversities like violence and environmental toxins, as well as the dominant social norms that support these hierarchies.

Health inequities are the unjust and avoidable differences in health status seen within and between population groups. They are conceptualized as the result of past discriminatory actions

and present-day policies, laws, practices, and procedures within government, institutions, and businesses: systems that, whether deliberate or inadvertent, shape the unequal distribution of these determinants. Examples include displacement and gentrification, loss of economic engines or jobs, school funding formulas, toxic exposures, the criminalization of mental illness and substance abuse, and targeted enforcement of immigration laws.¹⁰⁹⁹ Thus, public health embraces health equity as a foundational guiding principle, and seeks the eradication of unjust and remediable differences in health among and between social groups.

These public health and health equity approaches thus compel us not only to address the impacts of ACEs and other childhood adversities at the individual and family levels, but equally importantly for large-scale systemic change and

SOCIAL DETERMINANTS OF HEALTH

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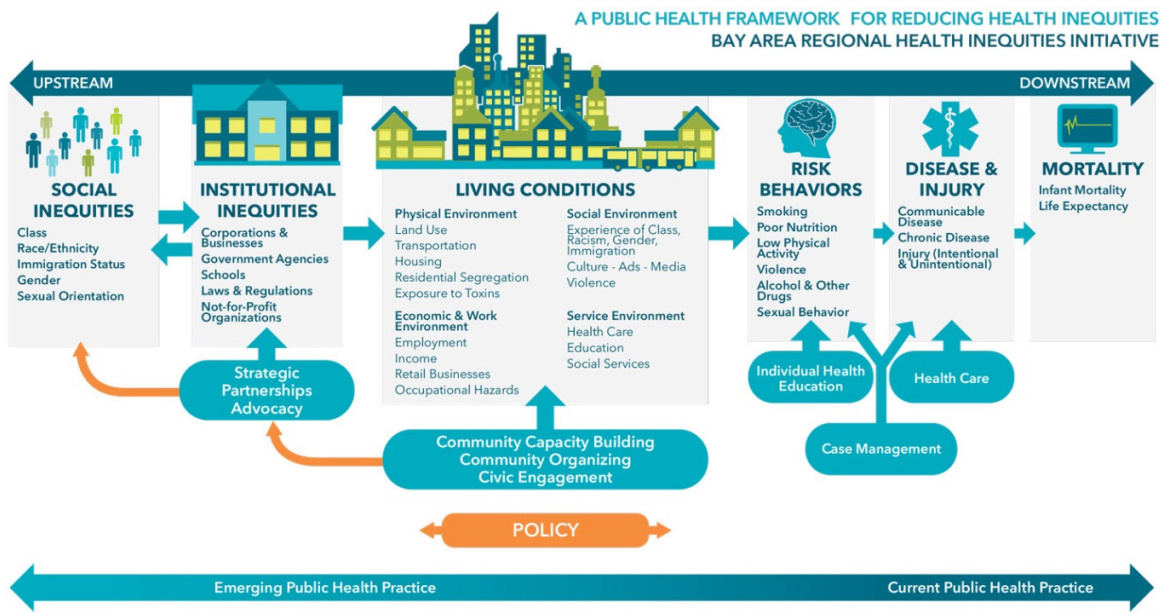


Figure 10. A public health framework for reducing health inequities. Reproduced with permission from the Bay Area Regional Health Inequities Initiative (BARHII).¹⁰⁹⁸

prevention of these impacts, to focus on the social, economic, and policy contexts in which people live, grow, learn, and work (see **THE BUILT ENVIRONMENT AND SMART GROWTH**).²³

At each stage of the life course and at each societal level, public health posits three types of prevention interventions—primary, secondary, and tertiary—all of which are needed to achieve a meaningful degree of prevention and change. The factors that are highlighted below pertain primarily to the structural conditions that need to be addressed, at the level of primary prevention, to reduce or eliminate systemic risks for ACEs and toxic stress.

Poverty

Poverty is one of the most powerful and well documented socioeconomic determinants of health, as well as a known risk factor for ACEs and independently, for toxic stress.^{10,23,31,60,61,78,510,1100,1101} It increases family stresses and creates child adversities that, in turn, can trigger toxic stress and negative child health and social outcomes, especially when exposure to poverty begins early or is deep or prolonged.¹¹⁰² Further research has documented some of the potential underlying mechanisms through which spatially concentrated neighborhood disadvantage acts to produce bio-physiological consequences. For example, analyses from the Fragile Families and Child Well-being Study have found that neighborhood disadvantage was associated with shorter telomere length for both Black and

White mothers, but with a unique role of racial segregation.¹¹⁰³ (Telomeres are protective sequences of DNA capping the ends of chromosomes that shorten over time. Chronic stress exposure leads to accelerated telomere length shortening,

THE BUILT ENVIRONMENT AND SMART GROWTH

The health and well-being of California's populations are shaped in large part by the policies and programs that inform land use and planning, housing, transportation, economic development and infrastructure. These **built environment** factors profoundly influence how well the state is able to address health and access to opportunity for all Californians, particularly low-income residents.

The public health field plays an important role in ensuring that communities have healthy environments that support healthy behaviors and reduce risk of harmful exposures. For example, changes to the built environment are considered a promising strategy for creating population-wide access to stress-buffering factors such as nutrition and physical activity. The characteristics of our communities, such as proximity of facilities, street design, density of housing, and availability of public transit and of pedestrian and bicycle facilities, play a significant role in promoting or discouraging physical activity.

A public health approach to reducing ACEs and toxic stress includes addressing these structural forces and building community resilience factors that strengthen the capacity to mitigate the stress response and

counteract the negative effects of ACEs. Implementation of positive environmental changes such as transit-oriented development and increased active transportation (walking, biking, and public transportation) can improve access to health-promoting factors, especially for vulnerable or historically disenfranchised communities.

The [California Health in All Policies \(HiAP\) Task Force](#) was established in 2010 through Executive Order S-04-10.¹¹⁵⁴ It was charged with identifying strategies to improve the health of Californians while advancing existing goals around air and water quality, natural resources and land protection, affordable housing availability, infrastructure, public health, sustainable communities, and climate change. The HiAP initiative is a collaborative approach designed to improve the health of Californians by incorporating health, equity, and sustainability considerations into policymaking across sectors. The approach recognizes that chronic illness, climate change, health inequities, and rising healthcare costs are interrelated and influenced by policies, programs, and investments across sectors. HiAP, at its core, is an approach to addressing the social determinants of health that are the key drivers of health outcomes and health inequities.

which has been linked to increased susceptibility to and faster progression of aging-related diseases.)^{12,310-314} However, despite this theoretical basis and the growing literature on the impact of neighborhood conditions, income, and social position, there is limited empirical evidence on how, where, and for whom these effects influence childhood development and health, making it hard to translate into policy-friendly actions.¹¹⁰⁴

Using the California Poverty Measure, the Public Policy Institute of California reports that in 2018, 17.6% of Californians (about 6.8 million) lacked enough resources to meet basic needs (\$34,200 per year for a family of four, on average).⁴⁹ Families with children have even higher rates of poverty, at 18.8%, representing about 1.7 million children. Another 17.6% of California residents live in near poverty (up to one and a half times above the official poverty level). Poverty is often present despite family members working full-time. In California, 79% of poor children lived in families with at least one working adult. There are also significant disparities in child poverty among different racial/ethnic groups. In 2018, the percentage of Latinx children in poverty was 22.9%, nearly double that of White (12.8%) children. The poverty rates among Black (18.2%) and Asian American/Pacific Islander (15.9%) children were also high.⁴⁹

Racism and discrimination

The American Academy of Pediatrics (AAP) recently recognized historical and institutionalized racism as a crucial SDOH.⁶⁸¹ AAP outlines three levels through which racism operates: (1) institutional, (2) personally mediated, and (3) internalized. According to the Prevention Institute's framework,

"On a community level, institutional racism, expressed through the implicitly or explicitly discriminatory policies and practices of social institutions (e.g., governmental organizations, schools, banks, and courts of law), has segregated communities of color from health-promoting resources and exposed these communities to health threats like environmental hazards, disinvestment, and violence."¹¹⁰⁵

Increased cumulative adversity over the lifetime related to interpersonal and structural racism is documented to lead to increased biological "weathering" involving neuro-endocrine-immune-metabolic dysregulation and accelerated aging.^{12,58,404,556,557,563,681,1106,1107} For example, analyses of data from the Coronary Artery Risk Development in Young Adults Telomere Ancillary Study documented that racial discrimination contributes to accelerated physiologic weathering and health declines among Black Americans through multiple negative impacts on biological systems, including telomere attrition.¹¹⁰⁷ This has implications for susceptibility to acute and chronic health conditions (for example, see [COVID-19: INTERSECTIONS WITH PLACE AND RACE](#)).

Historical redlining, the practice of making it difficult to lend money to people in neighborhoods with a higher proportion of people of color, is one way in which systemic racism has contributed to both social and environmental stressors.¹¹⁰⁸ Institutional and personally mediated racism can result in trauma and chronic stress, as well as internalized racism and a diminished sense of self in youth of color.⁶⁸¹ In California, the complex, cumulative health impacts of racism are manifest across the life span, resulting in disproportionately lower life expectancy based on race and place. In Oakland, for example, a Black child who lives in the low-income flatlands will, on average, die 14 years earlier than a White child who lives in the affluent hills.¹⁰⁹⁸

There are other examples of oppression and discrimination that also produce adverse individual and community impacts. For example, lesbian, gay, bisexual, and transgender individuals report experiencing disproportionately higher prevalence of ACEs (e.g., parental abuse)^{15,1051} and public discrimination and violence. Gender-nonconforming individuals also report higher levels of family and community abuse, and poorer health and well-being.^{1109,1110}

COVID-19: INTERSECTIONS WITH PLACE AND RACE

It is now well established in the United States that racial and ethnic populations have been disproportionately affected by coronavirus disease 2019 (COVID-19) in hospitalizations, ICU admissions, and deaths.¹¹¹¹ Nationally, for example, Black residents are more than twice as likely to die of the coronavirus as their White counterparts. In California specifically, minority populations have disproportionately high coronavirus death rates, relative to their percentage of the California population: 1.3 times as high for Black, 1.2 times for Latinx, and 1.7 times for Pacific Islander Californians.¹¹¹² A number of factors likely contribute to these inequalities. First, this differential coronavirus impact has been exacerbated by the socioeconomic inequalities

documented above that contribute to the co-occurring health conditions (e.g., asthma, chronic obstructive pulmonary disease, diabetes) that increase the risks of serious disease and death from COVID-19. Black and Latinx populations are disproportionately located in neighborhoods with more poverty, air pollution, and extreme heat, less access to healthcare and food, and experience higher unemployment than white neighborhoods. Jobs are often low-wage and, related to COVID-19, are more likely to be deemed “essential,” with many working as hospital and emergency support staff, security guards, bus drivers, and delivery drivers. Workers in these roles are more likely to be exposed to the coronavirus and pass it on to friends and family, especially if

COVID-19: INTERSECTIONS WITH PLACE AND RACE

they are living with multiple family members in small or densely packed homes. In addition, a recent study confirmed and strengthened the finding that increased chronic multi-air-pollutant exposure, even at levels below expected impact thresholds, is associated with higher COVID-19 mortality rates when controlling for known socioeconomic and behavioral health influences.¹¹¹³ The study models suggested an increase in the respiratory hazard index that was associated with a 9% increase in COVID-19 mortality. Although differing in magnitude, this association held for individual hazardous air pollutants, acetaldehyde, and diesel particulate matter. All these factors make these residents more vulnerable to the coronavirus.

In addition, once exposed, it is known that members of marginalized communities face increased risk of serious infection and death, for complex reasons. For example, Black Americans have a higher risk of morbidity and mortality from COVID-19 due to greater rates of pre-existing chronic conditions that promote more serious infection (such as heart disease, high blood pressure, chronic lung diseases, diabetes, or kidney disease), decreased access to care, and increased cumulative adversity over the lifetime, leading to increased biological “weathering” and accelerated aging, which are known risks for greater complications from COVID-19.^{12,58,404,556,557,563,681,1106,1107}

COVID-19 Responses

A recent Johns Hopkins COVID-19 update provides an example of how some states have implemented measures that specifically aim to address the racial and ethnic disparities related to COVID-19.¹¹¹⁴ Black residents in Michigan, who represented 15% of the state’s population, represented 29.4% of cases and 40.7% of deaths at the beginning of the pandemic. In September, Black residents represent just 8.2% of cases and 9.9% of deaths. Michigan credited its Coronavirus Task Force on Racial Disparities for this decrease in racial disparities. The Task Force implemented several targeted initiatives, including widespread distribution of masks and enhanced testing in communities of color.

In October of 2020, California became the first state to launch an equity metric as part of the state’s reopening plan. In order to advance to the next less restrictive tier, each county is required to meet an equity metric or demonstrate targeted investments to eliminate disparities in levels of COVID-19 transmission, depending on its size. The California Health Equity Metric was designed to help guide counties in their continuing efforts to reduce COVID-19 cases in all communities and requires more intensive efforts to prevent and mitigate the spread of COVID-19 among Californians who have been disproportionately impacted by the pandemic. To facilitate an equitable

COVID-19: INTERSECTIONS WITH PLACE AND RACE

reopening, California also invested in a state-run testing laboratory capable of doubling statewide coronavirus testing capacity, launched in November of 2020. California Health and Human Services Secretary, Dr. Mark Ghaly, specifically targeted bringing greater testing capacity to the communities most impacted, along with contact tracing and supports for quarantining: “We’ve been tracking

the disproportionate impact of COVID on communities of color, on older Californians, on people who are living in more crowded living conditions... and this represents an opportunity to get one of those key tools in there to reduce transmission.”¹¹⁵

Michigan and California’s efforts are examples of targeted measures to mitigate the elevated risks faced by racial and ethnic minorities.

Distressed neighborhoods with underinvestment

Sufficient data already exist to identify neighborhoods where economic, physical, social, and educational capital are insufficient to counter these stresses and provide necessary protective factors to buffer children from ACEs and other childhood adversities. Multiple studies have shown that neighborhood characteristics (e.g., segregated and concentrated poverty) affect the level of violence, crime and delinquency, education performance, psychological distress, and various health problems. The stressors of living in neighborhoods with inadequate or inequitable access to economic and educational opportunities are indicative of community-level trauma. Researchers have highlighted that:

“Distressed neighborhoods are places where families are under the greatest stress and ACEs in the home are more likely to occur. They also are places where there are more environmental hazards, such as exposure to lead, mold, and airborne pollutants, which jeopardize health. They are places where families often must struggle to find safe and supportive environments outside the home for their children to grow and explore the world.”¹¹⁶

This often means families who live in distressed neighborhoods face a higher cumulative dose of adversity and a lower cumulative dose of buffering relationships and environments, resulting in increased allostatic load (the cumulative biological impacts of repeated exposure to adversity) and increased risk for toxic stress.^{60,61,101} In terms of health inequalities, it has been further demonstrated that “place and race are highly intertwined and the poorest neighborhoods often are racially segregated and distant from sources of economic opportunity and support.”¹¹⁶ Thus, distressed neighborhoods create the conditions in which ACEs and other childhood adversities are more likely both to occur and to have more severe consequences. These conditions contribute to cumulative allostatic load and development of the

toxic stress response.^{6,10,12,61,178,1100,1101,1116-1118}

Environmental pollution exposure

Children who are highly exposed to adversity, including ACEs, often also have higher exposure to environmental toxicants like air pollution, heavy metals, and toxic chemicals.¹¹¹⁹ Low-income communities and communities of color in the United States often reside in neighborhoods with worse air quality and greater environmental hazards.¹¹²⁰ Specifically, schools in California attended by Latinx, Black, or low-socioeconomic-status students are more likely to be close to a heavily trafficked highway than those attended by White students.¹¹²¹ The result is that children of color are more likely to be exposed to higher levels of traffic-related airborne pollutants. Lead is another example of a specific environmental exposure that can interact with toxic stress, with similar detrimental impacts on the brain and nervous system, including lower IQ (see [LEAD EXPOSURE](#)).¹¹²²⁻¹¹²⁴ Exposures to lead and other toxic stressors (like ACEs) together can result in enhanced neurotoxicity.¹⁷⁰

In California, neighborhood districts that were historically classified as being “non-desirable” (with a D rating) have been documented to have higher diesel exposures (39.7 kg/day, compared to 22.6 kg/day) than districts with an A rating. These districts also have a higher proportion of people of color—only 18% of “non-desirable” districts consisted of non-Hispanic White people, compared to 67% in other districts. These districts, in turn, have more asthma-related emergency department visits (15.6 per 100,000 population, age-adjusted, 95% confidence interval, CI, 8.8-23.3) than “desirable” districts.¹¹²⁵

As another example, in utero exposure to both stress and air pollution can increase oxidative stress, which may affect the development of the fetal lungs, including increased airways inflammation and simplification of the normally complex lung structures.^{235,236} An increased risk of asthma was found in children co-exposed in utero to fine particulate matter (PM_{2.5}) and maternal stress (odds ratio, OR 1.15; 95% CI, 1.03-1.26) during the phase of lung development when many of the peripheral airways important in asthma develop (the canalicular phase).²³³ In childhood, air pollutants and stress interactions are associated with changes in specific inflammatory mediators that are associated with worse asthma outcomes, including interleukin-5, IgE (allergic-type antibodies), and eosinophil counts (allergic-type immune cells, [AIR POLLUTION AND ASTHMA](#)).¹¹²⁶

PRIMARY PREVENTION STRATEGIES

The public health field recognizes that ACEs and other child adversities, and resultant toxic stress, are preventable, and that primary, secondary, and tertiary

AIR POLLUTION AND ASTHMA

Air pollution is also associated with decreased lung function growth and both development and exacerbation of childhood asthma. Exposure to and impacts of air pollution are inequitably distributed in ways that mirror the populations at greatest risk for ACEs and toxic stress. For example, living near or attending a school near a heavily trafficked highway is associated with an increased risk of children developing asthma or bronchitis. Asthma incidence is highest for children growing up in poverty (10.2% of children below the poverty line compared to 5.4% of those at greater than 4.5 times the poverty line) and in non-Hispanic Black children (14.2%, compared to 6.8% of non-Hispanic white children).¹¹⁴²

The impacts of air pollution on asthma also interact with total exposure to adversity or buffering factors. Children who grow up in households with greater psychosocial stress are more susceptible to the detrimental effects of air pollution on asthma

outcomes. In a birth cohort followed from pregnancy, exposure to nitrogen dioxide, a common traffic-associated air pollutant, was associated with increased risk of developing asthma (OR 1.63, 95% CI 1.14, 2.33), but only in those children who also experienced higher levels of intimate partner violence (IPV) (one of the original ACEs) and community-level violence (an additional risk factor for toxic stress).¹¹⁴³ Children whose parents are stressed and are exposed to air traffic pollution have larger decreases in lung function (~5% decrease)⁹⁶⁷ and increased risk of asthma (hazard ratio 1.5; 95% CI 1.16-1.96)²³² than those without both risk factors. Higher parental stress interacted with exposure to nitric oxide, nitric dioxide, and total oxides of nitrogen to more strongly reduce lung function in children with asthma in households with high parental stress. For example, FEV1 was reduced by 4.5% in high-stress households after exposure to a 21.8 ppb increase in total oxides of nitrogen at home.⁹⁶⁷

prevention strategies must work synergistically to improve outcomes at public health scale. Primary prevention approaches require cross-sector collaboration working “upstream” on the structural determinants of health to prevent child adversity from happening in the first place. Primary prevention interventions address the fundamental root causes of health status, such as housing security, economic supports, community development funds, living wage policies, family-friendly business policies, access to education, and employment opportunities. They tend to have the greatest population health impact because these social and economic stratification structures shape the whole population’s access to and opportunities for employment, mobility, success, and health. They reduce the overall dose of adversity and enhance access to buffering resources, should

exposure to ACEs occur.

The CDC created the Essentials for Childhood (EfC) initiative to focus on the primary prevention of ACEs, and more specifically, of child abuse and neglect.⁶¹⁹ The initiative focuses on raising awareness and commitment to promote safe, stable, nurturing, relationships, and environments and creating the broader societal conditions for healthier children and families through policies and programs (i.e., changing social norms).¹¹²⁷ California was selected for five-year CDC grants in both 2014 (among five states chosen) and 2019 (among seven states) and has made significant progress towards these aims.^{1128,1129} The CDC's suite of technical materials, including the EfC Technical Package, highlights the growing body of scientific evidence supporting primary prevention strategies and approaches for effective prevention of ACEs (**Figure 11**).^{1130,42}

In order to focus more attention at the community level, the Prevention Institute (PI) developed a useful framework for detailing the dynamics of community adversity


 Preventing ACEs	
Strategy	Approach
Strengthen economic supports to families	<ul style="list-style-type: none"> • Strengthening household financial security • Family-friendly work policies
Promote social norms that protect against violence and adversity	<ul style="list-style-type: none"> • Public education campaigns • Legislative approaches to reduce corporal punishment • Bystander approaches • Men and boys as allies in prevention
Ensure a strong start for children	<ul style="list-style-type: none"> • Early childhood home visitation • High-quality child care • Preschool enrichment with family engagement
Teach skills	<ul style="list-style-type: none"> • Social-emotional learning • Safe dating and healthy relationship skill programs • Parenting skills and family relationship approaches
Connect youth to caring adults and activities	<ul style="list-style-type: none"> • Mentoring programs • After-school programs
Intervene to lessen immediate and long-term harms	<ul style="list-style-type: none"> • Enhanced primary care • Victim-centered services • Treatment to lessen the harms of ACEs • Treatment to prevent problem behavior and future involvement in violence • Family-centered treatment for substance use disorders

Figure 11. Strategies and approaches to preventing ACEs. Note: All but the last strategy listed represent primary prevention approaches; the last item represents secondary and tertiary prevention. Reproduced under open access from the CDC.¹¹³⁰

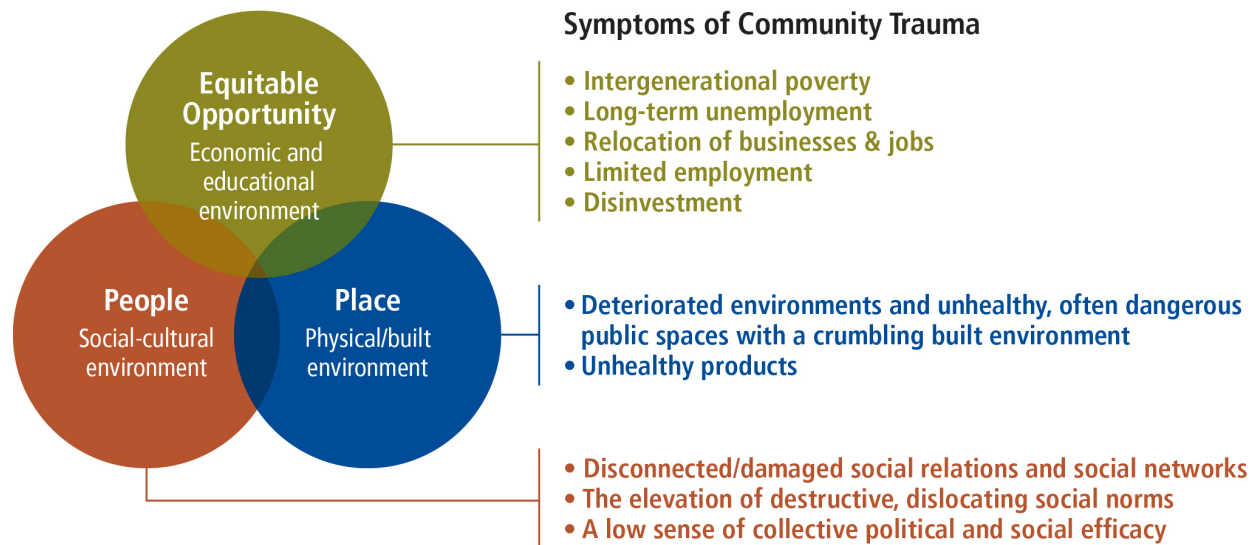


Figure 12. Community symptoms of trauma. Reproduced with permission from the Prevention Institute.¹⁰⁹⁹

and resilience and developing strategies to address and prevent community adversity.¹⁰⁹⁹ Community symptoms of adversity are displayed in **Figure 12**. At the community level, adversity manifests in three interrelated clusters: people (the social-cultural environment), place (the physical/built environment) and equitable opportunity (the economic environment).

In response to the community symptoms, a framework for creating community solutions and resilience is shown in **Figure 13**. In the context of community adversity, building resilience means putting the conditions in place in which the community can heal from past traumas and be protected against the impact of future adversity. The successful implementation of strategies for community healing build on existing community assets and are dependent on community engagement that connects young people and adults together in a supportive community.

Strengthening economic supports

The state budget (2019-2020 and 2020-2021) put forward by Governor Newsom and the California legislature has made significant investments in promoting a “parents’ agenda” to make life easier for California families.^{1131,1132} It has begun to expand the reach and coverage of existing economic support mechanisms to increase the economic well-being of families and children. These include the state Earned Income and Child Tax Credits (EITC and CTC), CalWorks (cash assistance for families with children, including a suite of economic support opportunities like job skills, child care, and educational supports), CalFresh (California’s main food

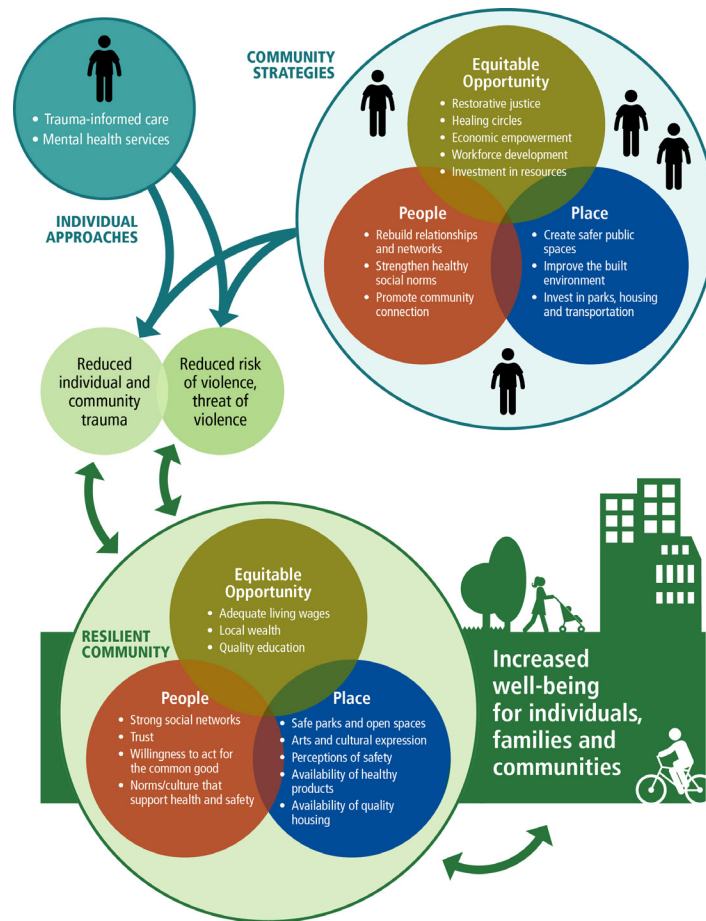


Figure 13. Promoting community resilience: from trauma to well-being. Reproduced with permission from the Prevention Institute.¹⁰⁹⁹

assistance program), and financial/economic literacy training (e.g., the Economic Empowerment grants of the Office of Child Abuse Prevention, Department of Social Services). Paid family leave is an economic strengthening policy available to parents who need time to bond with a new child entering their life either by birth, adoption, or foster care placement. It also provides benefits to individuals who need to take time off work to care for a seriously ill family member. Paid family leave is an important policy strategy for primary prevention of ACEs and toxic stress in that it both strengthens economic supports and facilitates parent-child bonding. California was the first state in the nation to implement a comprehensive paid family leave program (in 2004) and has continued to expand its reach. Additional federal food and nutrition policies and programs that address child poverty include the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). (See **Primary, Secondary, and Tertiary Prevention Strategies in Early Childhood**

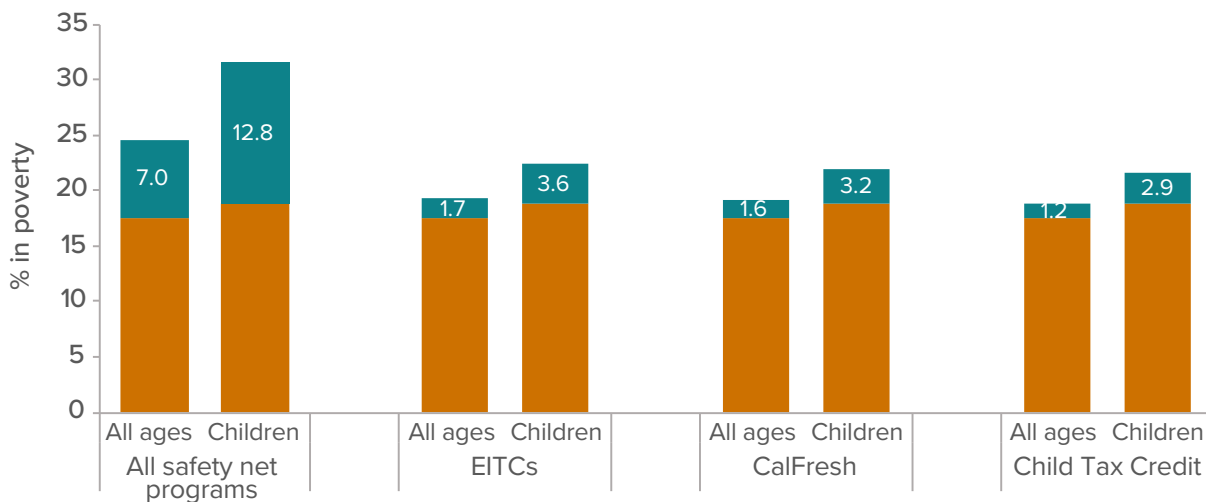


Figure 14. Poverty would be even higher in the absence of the social safety net, especially for children. Reproduced with permission from the Public Policy Institute of California.⁴⁹

Supports, later in Part II, for more information.)

Most safety net programs are designed to prioritize children. Child poverty rates are high in California (18.8%), but would be even higher without the state's strong social safety net. Analyses by the Public Policy Institute of California demonstrate that California's social safety net kept an additional 12.8% of children out of poverty in 2018 (**Figure 14**).⁴⁹ California's largest social safety net programs for children continue to be the federal and state EITCs, which together lowered the child poverty rate by 3.6%; CalFresh, which lowered it by 3.2%; and the federal CTC, which lowered it by 2.9%.

Other primary prevention strategies are aimed at creating supportive and stable early living conditions through policies and programs that promote positive, nurturing relationships, environments, and communities. These additional strategies include:

- Enabling community opportunities for play and physical activity;
- Promoting parenting efficacy, resilience, attachment, and family bonds, including reducing family violence;
- Providing high-quality learning opportunities for children, including social-emotional learning, executive function skills, and responding to challenges; and
- Providing access to high-quality mental and physical healthcare, including enhancing access to family planning resources.

Public education

Policy- and systems-level efforts to prevent ACEs and toxic stress also depend on the awareness and engagement of the general public and governmental decision-makers. The “political will” to implement pro-child, pro-family policies and budgets is influenced by social norms about the status of children and the loci of responsibility for their well-being. The dominant public narrative about child abuse and neglect, for example, has been characterized by an individual focus on “bad” parents and government interference. Based on research findings, the FrameWorks Institute has created a social counter-narrative that can help engage the public in understanding early child development as it applies to child abuse and neglect prevention, understanding potential policy directions, and supporting solutions to pressing problems.⁴⁹

Changing social norms is an important aspect of primary prevention for ACEs and toxic stress. Thus, the EfC initiative is promoting a social narrative grounded in shared values and a shared responsibility to enact proactive solutions that support safe, stable, nurturing relationships and environments for all parents and children. Educational efforts underway (primarily at the professional and practitioner level) are using ACE prevalence data to make the case for policy-level solutions such as expanded paid family leave, living wage policies, family-friendly business policies, access to home visitation services, and family resource centers.¹¹²⁹ In partnership with First 5 California’s educational campaign Talk. Read. Sing.[®], the Office of the California Surgeon General is promoting public education messaging on concrete behavioral actions families can take to mitigate the effects of stress and adversity and enhance resilience.^{1133,1134} The ACEs Connection movement has also played a central role in reframing the dominant social norms about risky behaviors (e.g., smoking, obesity, violence, substance use, and sexual assault) and AAHCs, among other chronic health outcomes.¹¹³⁵

However, broader-scale public education awareness campaigns to enhance understanding and shift public discourse around ACEs, toxic stress, and their impacts are needed to expand current state and local efforts and to create a resilient, trauma-informed state. Public health messaging and public education campaigns can be utilized to enhance public knowledge about ACEs, toxic stress, and their health impacts, and to bolster acquisition of concrete interventions and skills individuals can learn to regulate their stress responses, including improving sleep, nutrition, exercise, healthy relationships, access to nature, mindfulness practices, and when needed, mental healthcare, to build resilience.

Past public education campaigns have been effective at reducing the prevalence of health conditions and risk factors, such as smoking (see [THE TRUTH INITIATIVE](#)), lead poisoning, and motor vehicle deaths. These campaigns are most effective when

partnered with concrete public policy efforts such as those limiting indoor use of tobacco products, restricting use of lead in industrial products, or requiring seat belt use.

THE TRUTH INITIATIVE

The 1998 Master Settlement Agreement between tobacco product manufacturers and states required the tobacco companies to pay billions of dollars to compensate states and territories for tax dollars that had gone to combat tobacco-related diseases. The agreement created the American Legacy Foundation, later renamed the Truth Initiative, as the first national public health organization dedicated to ending tobacco use among youth and young adults.¹¹³⁶ In 2000, the Truth Initiative launched its first

national public education campaign and brought information to teens at music and sports venues. The initiative also invested in state-level grants supporting youth empowerment, and targeted campaigns funding prevention and quitting projects among racial, ethnic, and lesbian, gay, bisexual, and transgender youth. The initiative also funded the 2007 report of the Institute of Medicine's *Ending the Tobacco Problem: A Blueprint for the Nation*, which offered recommendations for action by

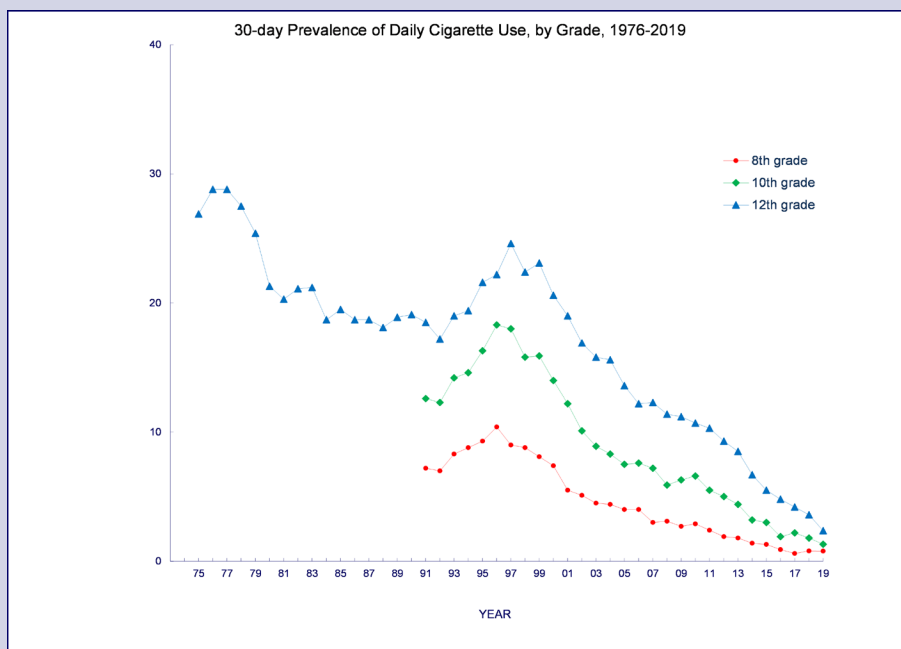


Figure 15. Thirty-day prevalence of daily cigarette use, by grade, 1976-2019. Reproduced under an open license.¹¹³⁸

THE TRUTH INITIATIVE

federal, state, local, non-profit, and for-profit entities.¹¹³⁷ Over its two-decade history, the Truth Initiative has continued to launch multiple campaigns focused on refreshing messages for populations at the highest risk, such as those with mental

illness, and for new generations of youth. The initiative has been credited as being a major driver of the decline in teen cigarette use from its peak of 25% in 1998 to just 3.6% in 2019 (Figure 15).¹¹³⁸

A critical part of interventions at all levels of prevention is providing widespread trauma-informed and ACEs-aware training for all child- and family-serving sectors, including all healthcare personnel, as well as all allied cross-sector workforces.^{623,1133} The ACEs-informed lens can help providers and practitioners reframe the question from, “What is wrong with you?,” to more root cause inquiry, instead asking “What happened to you?”⁶³⁵ Prevention efforts also crucially depend on allied cross-sector initiatives and funding across systems that support children, families, other caregivers, and communities, including healthcare, behavioral health, public health, home visitation, supports for parenting, supports for adults living with toxic stress, trauma-informed social services, welfare, criminal justice, early care, immigration, insurance, first responders, and education.

SECONDARY PREVENTION STRATEGIES

Secondary prevention aims to reduce the impact of ACEs that have already occurred, before or early in the course of development of toxic stress and AAHCs. This is done by identifying ACEs as soon as possible and intervening to halt or slow the development of the toxic stress response, keeping it in the tolerable stress zone. The tolerable stress response is characterized by return to homeostasis and normal physiologic function as a result of adequate buffering care and other interventions.⁶

It also includes the use of surveillance of population-level indicators of exposure to ACEs and impacts of toxic stress to guide screening and secondary prevention strategies. For example, for heart disease and stroke prevention, the CDC conducts laboratory standardization, surveillance, and vital statistics activities, as well as more recently, public health program coordination and implementation.¹¹³⁹

Environmental solutions

Secondary prevention for common environmental exposures includes early screening and intervention for toxic exposures, as is done with lead among vulnerable populations (see [LEAD EXPOSURE](#)).

Asthma, an AAHC, remains a major public health concern in California, and the environmental remediation tactics employed by public health programs to address root causes for asthma are an example of public health-oriented secondary prevention strategies. Low-income Californians enrolled in Medi-Cal, the state's Medicaid program, have higher asthma severity, poorer asthma control, and higher

LEAD EXPOSURE

Both lead exposure and toxic stress can lead to life-long health risks by altering the developmental trajectory of neurological and biological circuits. Many of the actions of lead poisoning affect the same physiologic systems as toxic stress, with some symptoms and outcomes being shared between the two conditions. Both lead exposure and the toxic stress response are associated with changes to the structure and function of children's developing brains, especially the prefrontal cortex, and both may present clinically with executive functioning impairments, including inattention, irritability, learning impairments, and behavioral concerns.^{1155,1156} Toxic stress and lead are both also associated with increased cellular oxidative stress and early cell death,^{12,186,310,312-314,1156-1159} as well as increased risk for cardiovascular disease and impaired reproductive outcomes later in life.^{2,429,430,443-446,457,1156,1160-1163} In the case of lead exposure, some mechanisms have only been established at higher exposure levels,^{1158,1162} the impacts of early adversity on health are also known to be dose-dependent.² Thus, lead exposure and toxic stress may be synergistic in leading to

negative health and developmental outcomes. In addition, they also share similar demographic profiles, disproportionately impacting low-income communities and communities of color.³⁰

Many of the public health strategies to reduce or eliminate lead poisoning have been driven by scientific advances that demonstrate that there is no safe level of lead exposure. Lead leads to irreversible neurocognitive damage, so any exposure must be avoided, but the harms that result once exposure has occurred cannot be reversed.¹¹⁵⁵

Many important policies have strengthened primary prevention-related regulation of lead-based contaminants and exposures and have dramatically reduced lead exposure among children since 1971.¹¹⁵⁵ After the ban of lead-based paint in 1971, lead in gasoline starting in 1973, lead in residential paint in 1978, and lead in plumbing in 1986 (all primary prevention efforts), the number of children who had blood lead levels of at least 10 µg/gL fell by about 80%.¹¹⁵⁵ However, it is now recognized that no lead level is safe for children.

The California Environmental Health Tracking Program estimates that

LEAD EXPOSURE

eliminating lead exposure would result in \$8-11 billion in additional lifetime earnings for all children born in California during a single year.³¹ Experts recommend home lead abatement before a family with children moves in, using specific tools to sample house dust, soil, and water for lead, and removing its sources where possible.¹¹⁶⁴

Despite this progress and the growing body of evidence of independent and synergistic harm, childhood lead exposure in California remains common, and leads to poor behavioral and neurocognitive outcomes.^{1155,1165,1166} Even with limited screening, in 2017, California identified around 10,000

children with blood lead levels above 4.5 $\mu\text{g}/\text{dL}$, the California Department of Public Health's threshold for education and specific remediation interventions.²⁹ Sources of lead include lead-contaminated dust, soil, and water, lead-acid battery recycling, certain imported toys, foods, ceramics, and cosmetics.^{1155,1166}

Secondary prevention strategies, after exposure has occurred, include testing public water sources, and these strategies involve case-finding after impacts have occurred, to prevent further exposure. Screening children for blood lead levels enables early detection and early intervention to prevent further lead exposure, as no

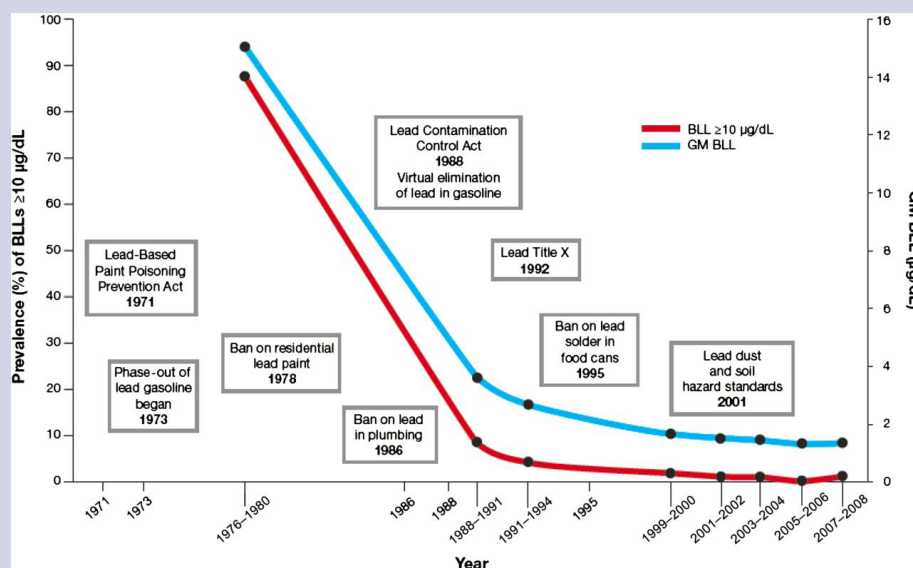


Figure 16. A timeline of the prevalence of children's blood lead levels (BLLs) $> 10 \mu\text{g}/\text{dL}$, as various lead prevention policies were passed. Reproduced with permission from journal *Pediatrics*, volume 38 (1), page e20161493; copyright © 2016, by the American Academy of Pediatrics.¹¹⁵⁵

**LEAD
EXPOSURE**

non-zero blood lead level is safe.

California has also enacted multiple laws to prevent and intervene on childhood lead poisoning and has established detailed requirements for implementing these laws, including establishing The Childhood Lead Poisoning Prevention Branch (CLPPB).¹¹⁶⁷ The CLPPB prevention and lead abatement program offers home visitation, environmental home inspections, and nutritional assessments to families of children found to be severely lead-exposed, as part of a tertiary prevention approach. The CLPPB provides telephone contacts and educational materials to families of lead-poisoned and lead-exposed children. It also provides education to the general public, medical providers, and community-based organizations. There are local Childhood Lead Poisoning Prevention Programs in most California counties.

Efforts to support children with a history of lead exposure include many of the same interventions employed to buffer toxic stress,¹¹⁶⁸ including

high-quality child development interventions and enriched environments. Following the Flint water crisis, in which thousands of people were exposed to water contaminated with high levels of lead, a blend of government and philanthropic sources came together to support expanded mother-infant programs, universal home-based early intervention, high-quality early education, family and parenting support programs, early literacy and two-generation literacy initiatives, universal preschool, school health services, mindfulness programming, breastfeeding support, nutrition prescriptions, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) co-location with primary care, mobile grocery stores, and trauma-informed care.¹¹⁶⁹ Given the synergistic effects of lead poisoning and toxic stress, tertiary prevention strategies to mitigate the impacts of lead exposure should include education and efforts to prevent ACEs and reduce the risk of toxic stress.

rates of asthma emergency department visits and hospitalizations.⁹ Although there is no cure, it can be controlled, including using remediating environmental interventions (item four below). The National Asthma Education and Prevention Program (NAEPP)'s best practice guidelines describe the four vital components of asthma management:

1. Assessment of disease severity and control;
2. Comprehensive pharmacologic therapy;
3. Patient education; and crucially,
4. Environmental control measures to avoid or eliminate factors that

contribute to asthma.¹¹⁴⁰

The Public Health Institute's Regional Asthma Management and Prevention program has reported that education and environmental remediation programs targeting high-risk children demonstrate returns on investment of between \$7.69 and \$11.67 for every \$1 spent.¹¹⁴¹ Implementing these national guidelines to reduce the burden of asthma should also address the environmental and social inequities that perpetuate disparities in asthma symptoms.

The Office of Environmental Health Hazard Assessment, within the California Environmental Protection Agency, has developed and maintains the CalEnviroScreen, a mapping tool designed to help decision-makers identify California communities and vulnerable populations with high levels of exposure to the cumulative burden of multiple sources of pollution.¹¹⁴⁴ The current version of the tool, CalEnviroScreen 3.0, uses 20 statewide indicators of pollution burden and population characteristics associated with increased vulnerability to pollution's health effects. For example, the tool includes data on air quality, drinking water quality, the presence of contaminated sites, and public health conditions such as low infant birth weight rates and asthma rates, as well as socioeconomic information such as poverty, educational attainment, and linguistic isolation. The data in CalEnviroScreen has been used to analyze the relationship between places with high cumulative pollution burdens and the racial/ethnic and age distribution of the community. Specifically, Latinx and Black individuals reside in highly impacted communities, while other groups reside disproportionately in less impacted communities. These inequities are especially stark in children, with one in three Latinx and Black children living in the most disadvantaged communities (that score in the highest 20% for cumulative exposures to pollution and community vulnerability characteristics) while the fraction is one in 14 for Whites, one in eight for Asians, and one in seven for Native Americans.

Public health efforts for secondary prevention of toxic stress should enable early detection and early intervention on both the individual and community levels. The first-in-the-nation ACEs Aware Initiative currently being implemented in California (see **The ACEs Aware Initiative** in Part III) is taking the lead in bringing to scale a comprehensive ACEs and toxic stress screening and intervention program by training healthcare providers throughout the state to facilitate routine screening among the California Medi-Cal population, coupled with thoughtful cross-sector linkages to intervene on risk of toxic stress.¹¹³³

The public health sector can support individuals identified by their health provider as being at intermediate or high risk for toxic stress and facilitate connections to resources to reduce the severity and prevent the transmission of toxic stress to

subsequent generations (as discussed in the **Intergenerational Transmission of Adversity** in Part I). Additionally, public health efforts should target preventing or reducing environmental factors that worsen toxic stress physiology, such as exposure to lead and air pollution. Key components of secondary prevention include:

1. Assessment and monitoring of rates of ACEs and toxic stress (in the absence of clinical diagnostic criteria for toxic stress, clinical assessment of intermediate or high risk for toxic stress may be utilized).
2. Improvement of diagnostic criteria for toxic stress.
3. Support of networks of care for individuals identified as being at intermediate or high risk of toxic stress.
4. Patient education and public communication to raise awareness of effective interventions for those at intermediate or high risk of toxic stress.
5. Engagement of core public health functions, including surveillance, evaluation, research, and continuous quality improvement to improve outcomes, for individuals and communities impacted by ACEs and toxic stress.

TERTIARY PREVENTION STRATEGIES

Tertiary prevention aims to soften the long-term effects of ACEs and toxic stress across the life span, once their impacts are already underway, and includes interventions for homelessness, criminal justice involvement, and other sequelae of toxic stress (see [HOMELESSNESS](#) and **Primary, Secondary, and Tertiary Prevention Strategies in Justice** section later in Part II). Strategies to address childhood trauma and adversity include efforts to help people regulate toxic stress physiology, a root cause of longer-term, often complex health consequences (e.g. more severe or earlier onset AAHCs, more permanent impairments), in order to improve their ability to function, quality of life, and life expectancy.

Additionally, public health programming that seeks to address health or social conditions that are strongly associated with ACEs and toxic stress, such as asthma, obesity, diabetes, heart disease, homelessness, teen pregnancy, HIV/AIDS, and mental and behavioral health concerns (among others), should include training and competencies for providers, as well as education for patients or clients about the role of toxic stress as a driver of these conditions. In addition, these programs should work to incorporate strategies to mitigate the toxic stress response, including social supports, regular exercise, mindfulness interventions, sleep hygiene, nutrition, and mental or behavioral health interventions, as indicated (see the previous section, **Tertiary Prevention Strategies in Healthcare**, for details).

The use of population-level data collection and analysis to inform evidence-based screening, intervention, and evaluation of outcomes around ACEs, toxic stress, and AAHCs is also crucial. For example, in the National Program of Cancer Registries deploys data monitoring systems to aid in the systematic collection and analysis of data on cancer risk factors, incidence, and mortality, for the purposes of program monitoring, evaluation, and research.¹¹⁴⁵ A thoughtful public health tertiary prevention approach also includes policy and programmatic investments in expansion of evidence-based interventions, such as the \$9 million California Initiative to Advance Precision Medicine state investment to research precision medicine approaches to identifying and intervening on toxic stress.³³⁷

HOMELESSNESS

According to the US Department of Housing and Urban Development, in 2019, there were 151,278 homeless individuals in California, a nearly 17% increase over 2018. Over 108,000 of these individuals were unsheltered—living on the street or in a car.¹¹⁴⁶ There is a strong dose-response relationship between the number of ACE categories experienced and risk of housing insecurity, overcrowding, and homelessness.^{1,1147,1148} In a large nationally representative survey, the National Epidemiologic Survey of Alcohol and Related Conditions (N = 34,653, 2001-2002 and 2004-2005), the lifetime homelessness risk that could be attributed to any given ACE was 45% in men and 60% in women, independent of any substance

use disorder or mental health comorbidities. Among men who were homeless, 85% had experienced at least one ACE; among women, 77% had experienced at least one ACE.¹ In another large population-based study (N = 2,323,340, of whom 5.6% were homeless) in Washington state, each cumulative ACE predicted a 40% increase in the probability of being homeless.¹¹⁴⁹ In addition, very high rates of intergenerational transmission of ACEs have been documented among homeless families.¹¹⁵⁰ In one study of 215 parents, an ACE score of 4 or more predicted homelessness in their children with an odds ratio of **10.4**.¹¹⁵¹ Since taking office in 2019, Governor Newsom has directed the state to

HOMELESSNESS

invest more than \$2 billion in new, direct aid as part of a comprehensive state response to homelessness, including the creation of the California Access to Housing and Services Fund (\$750 million), Emergency Homelessness Aid, and availability of state land assets.¹¹⁵² These investments respond to the long-term impacts of toxic stress and should be paired with training and education about the role of toxic stress as a key driver of homelessness. As noted throughout this report, tertiary prevention of toxic stress in current or future parents is a key tool for primary prevention in the next generation. Investments to reduce homelessness, especially when paired with supportive services to mitigate the toxic stress response, can help to prevent the intergenerational transmission of ACE and toxic stress.

These new investments to combat homelessness represent a multi-pronged effort including early intervention: moving individuals and families off the streets; creating new temporary housing to effectively reduce street homelessness; and providing homeless individuals and families with needed services, including comprehensive care to address their health needs, including those related to toxic stress, such as targeted and coordinated treatment of AAHCs like heart disease, chronic obstructive pulmonary disease, cancer, depression, and substance use disorders, and comprehensive referrals and services to address any

co-occurring social determinants of health. Programs and organizations who serve homeless individuals and families can refer clients to a healthcare provider trained in assessing for ACEs, identifying toxic stress and supporting patients with trauma-informed care through the [ACEs Aware Provider Directory](#).¹¹⁵³

As part of the plan, Governor Newsom has also launched 100-day challenges for California cities and counties, replicating a successful national model to jumpstart action to fight homelessness. In direct response to the COVID-19 pandemic, the Project Roomkey initiative was launched to provide non-congregate shelter for people experiencing homelessness and for front-line healthcare workers. This initiative has been expanded through project Project Homekey, California's nation-leading \$600 million program to purchase and rehabilitate housing—including hotels, motels, vacant apartment buildings and other properties—and convert it into permanent, long-term housing for people experiencing or at risk of experiencing homelessness.

Through these comprehensive efforts, state, and local partners are working together across systems to collaborate, innovate, and execute to create a coordinated community response to end homelessness, with special attention to specific populations for whom toxic stress poses special risks, including veterans, youth, and families with young children.