Reframing Violence Prevention—Preventing the Life Course Health Effects of Trauma and Toxic Stress

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Reframing Violence Prevention: Life Course Health Effects of Trauma

The Big Cities Health Coalition has identified violence prevention as a cross-cutting challenge for our members. While violence is a public health issue, the role of public health in violence prevention varies by location. From our survey the most common current activities included:

- Childhood toxic stress (including adverse childhood experiences)
- Youth violence
- Gun violence

In the paragraphs that follow I am proposing that by reframing we will be in a better position to leverage our expertise in the population health and prevention sciences, and raise awareness about the following:

- Inter-generational transmission of the effects of trauma to the most vulnerable
- Life course effects of toxic stress from trauma, racism, and poverty
- Childhood roots of adult health inequities, including chronic diseases
- 4Ps of public health: prevention, protection, preparedness, and promotion
- Prioritization of social policies affecting the social determinants of health

In July 2014, the Centers for Disease Control and Prevention (CDC) and the Prevention Institute (PI) recently published "Connecting the Dots: An Overview of the Links Among Multiple Forms of Violence." Here are selected excerpts:
Violence takes many forms, including intimate partner violence, sexual violence, child maltreatment, bullying, suicidal behavior, and elder abuse and neglect. These forms of violence are interconnected and often share the same root causes. They can also all take place under one roof, or in a given community or neighborhood and can happen at the same time or at different stages of life. Understanding the overlapping causes of violence and the things that can protect people and communities is important, and can help us better address violence in all its forms.¹

This report summarized the scientific basis of these topics:

1. Vulnerability and resilience: risk factors and protective factors
2. The impact of violence on development
3. Community context and the co-occurrence of multiple forms of violence
4. Violence can lead to more violence

How can public health reframe the discussion on violence? One possibility is to focus on the life course health effects of trauma starting with the impact on the most vulnerable—children ages 0 to 5. Here is the CDC/PI summary:

The Impact of Violence on Development: People’s brains develop in response to their environments. When children grow up in safe, stable, and nurturing relationships and environments, they learn empathy, impulse control, anger management and problem-solving—all skills that protect against violence. When children grow up in environments where they don’t feel safe, their brain cells form different connections with each other to better recognize and respond to threats. Children in these environments may misinterpret neutral facial expressions as anger, for example, and more situations may trigger a fight-or-flight response. Children living in a persistently threatening environment are more likely to respond violently (fight) or run away (flight) than children who grow up in safe, stable, and nurturing environments. Fight-or-flight responses are survival skills that people are born with and often override other skills that enable non-violent conflict resolution, such as impulse control, empathy, anger management, and problem-solving skills.

Childhood abuse, neglect, and exposure to other traumatic stressors, termed adverse childhood experiences (ACEs),² are common. In the Adverse Childhood Experiences Study, over 17,000 adults from a Health Maintenance Organization (HMO) were asked about their experiences in childhood and subsequent behavioral and health outcomes. Almost two-thirds of participants reported at

least one ACE, and more than one in five reported three or more ACEs. The
short- and long-term outcomes of these childhood exposures include multiple
health and social problems. ACEs contribute to stress during childhood and
put individuals at higher risk for health problems such as alcoholism and alco-
hol abuse, depression, illicit drug use, intimate partner violence, and suicide
attempts. The impact of ACEs is also cumulative, meaning the more ACEs a
child is exposed to, the higher likelihood they will experience some of these
health and social problems later in life. The life expectancy of people with six
or more ACEs is 20 years shorter than those without any ACEs.

Repeated ACEs results in toxic stress—"extreme, frequent or extended activation of the
body’s stress response without the buffering presence of a supportive adult." A child’s brain,
especially between ages 0 to 5, is being developed and shaped by positive, interactions
with other human beings. This neurodevelopment lays the foundation for future learning,
memory, and judgement. Toxic stress changes brain architecture resulting in loss of brain
cells, damage to brain cell connections, and abnormal growth, shrinkage, or hyperactivity
of selective brain areas. Toxic stress leads to impaired memory, judgement, critical thinking,
focus, mood control, and emotional reactions.

In short, toxic stress changes the brain and body resulting in higher risk behaviors and
adult chronic diseases. A person with 4 or more ACEs is 12.2 times as likely to attempt
suicide, 10.3 times as likely to use injection drugs, and 7.4 times as likely to be an alcoholic.
A person with 4 or more ACEs is 2.2 times as likely to have ischemic heart disease, 2.4
times as likely to have a stroke, 1.9 times as likely to have cancer, and 1.6 times as likely to
have diabetes. Figure 1 summarizes ACEs and their lifelong impacts.

In the United States, African Americans experience repeated toxic stress from racism,
discrimination, poverty, and violence. Toxic stress contributes to mental illness, alcohol and
substance abuse, and crime and incarceration. In effect, the social and economic conditions
of African Americans in the US promote the continuation and transmission of toxic stress
from one generation to the next. Toxic stress from ACEs is a public health crisis, and may
begin to explain the large and persistent health inequities suffered by African Americans.

LIFE COURSE TRAUMA: THE CHILDHOOD ROOTS OF ADULT HEALTH INEQUITIES

Children 0 to 5 are totally dependent on adult caregivers to ensure safe, positive environ-
ments and relationships for optimal neurodevelopment. When adults are not available
(regardless of reason), do not or cannot promote safe, positive relationships and environ-
ments, do not or cannot prevent ACEs, do not or cannot protect children from ACEs, do not
or cannot prepare children to be resilient in the face of adversity, these children may suffer
long term cognitive, behavioral, and physical consequences into adulthood.

Addressing toxic stress from ACEs requires a population health approach. /Population
health is more than the health of a population it is a systems framework for studying
and improving the health of populations through collective action and learning/. The
population health approach uses the 4Ps of public health as a simple framework to bring together stakeholders align and coordinate existing efforts, and to design new solutions:

1. *promote* healthy, positive environments and relationships for all children, especially ages 0 to 5;

2. *prevent* the leading causes of toxic stress ("primary prevention"), and its consequences ("secondary prevention");

3. *protect* children from existing toxic stresses; and

4. *prepare* children to adapt and be resilient in the face of adversity.

Addressing toxic stress from ACEs requires a life course approach. The Trauma-informed Life Course (TLC) model (Figure 2) summarizes two counterfactuals: the life course of Child A (Path A: maximal multi-level support) and Child A’ (Path C: maximal multi-level contributors to toxic stress). The responsibility for ensuring the 4Ps (promotion, prevention, protection, and preparation) is distributed to caregivers, community, and society. In spite of adversity, some children move towards better health via Path C. In general, a child moves towards good health or towards poor health as a result of the net multi-level, interdependent forces (toxic stress, support, resilience). With limited resources and support, primary caregivers face difficult choices with opportunity costs. If a loving caregiver must work three jobs to provide basic needs, they may unintentionally neglect the neurodevelopment needs of their child. From the life course perspective early childhood exposures results in lifelong consequences. These children eventually become caregivers and contribute, along with communities and society, to the neurodevelopment of the next generation of children.

Proposed interventions, including public policies impacting social determinants of health (e.g., minimum wage, paid maternity leave), can be prioritized by how likely the proposed change supports the healthy neurodevelopment of children.
Figure 2: Trauma-informed Life Course (TLC) Model: The TLC model depicts that a newborn child rises to better health and well-being over his or her life course by a combination of multilevel, interdependent forces that promote safe, nurturing relationships for healthy brain and body development, prevent toxic stress (chronic psychological, physiological, or physical trauma from exposure to neglect, abuse, violence, discrimination, extreme poverty), protect against unavoidable toxic stress, and prepare children to be resilient in the face of chronic toxic stress (e.g., discrimination). Children ages 0 to 5, who are totally dependent on adult caregivers for the 4Ps, are most vulnerable to the lifelong effects of toxic stress that permanently alter brain structure and body physiology leading to diminished executive function, higher risk behaviors, and adult chronic diseases.