ACE'S 101

What are ACEs?

ACEs are adverse childhood experiences that harm children's developing brains so profoundly that the effects show up decades later; they cause much of chronic disease, most mental illness, and are at the root of most violence.

"ACEs" comes from the CDC-Kaiser Adverse Childhood Experiences Study, a groundbreaking public health study that discovered that childhood trauma leads to the adult onset of chronic diseases, depression and other mental illness, violence and being a victim of violence. The ACE Study has published about 70 research papers since 1998. Hundreds of additional research papers based on the ACE Study have also been published.
The 10 ACEs the researchers measured:

— Physical, sexual and verbal abuse.

— Physical and emotional neglect.

— Witnessing a mother being abused.

— Losing a parent to separation, divorce or other reason.

— A family member who is:

- depressed or diagnosed with other mental illness;
- addicted to alcohol or another substance;
- in prison.

Of course, there are many other types of childhood trauma — such as witnessing a sibling being abused, witnessing violence outside the home, witnessing a father being abused by a mother, being bullied by a classmate or teacher – but only 10 types were measured. They provide a useful marker for the severity of trauma experienced. Other types of trauma may have a similar impact.

Resources:

CDC ACE Study site
Wikipedia — Adverse Childhood Experiences Study
The 10 ACE Questions (and 14 resilience survey questions)

Why are ACEs significant?

1. The ACE Study revealed five main discoveries:

- ACEs are common…nearly two-thirds (64%) of adults have at least one.
- They cause adult onset of chronic disease, such as cancer and heart disease, as well as mental illness, violence and being a victim of violence
- ACEs don't occur alone….if you have one, there's an 87% chance that you have two or more.
- The more ACEs you have, the greater the risk for chronic disease, mental illness, violence and being a victim of violence. People have an ACE score of 0 to 10. Each type of trauma counts as one, no matter how many times it occurs. You can think of an ACE score as a cholesterol score for childhood trauma. For example, people with an ACE score of 4 are twice as likely to be smokers and seven times more likely to be alcoholic. Having an ACE score of 4 increases the risk of emphysema or chronic bronchitis by nearly 400 percent, and suicide by 1200 percent. People with high ACE scores are more likely to be violent, to have more marriages, more broken bones, more drug prescriptions, more depression, and more autoimmune diseases. People with an ACE score of 6 or higher are at risk of their lifespan being shortened by 20 years.
- ACEs are responsible for a big chunk of workplace absenteeism, and for costs in health care, emergency response, mental health and criminal justice. So, the fifth finding from the ACE Study is that childhood adversity contributes to most of our major chronic health, mental health, economic health and social health issues.

What's particularly startling is that the 17,000 ACE Study participants were mostly white, middle- and upper-middle class, college-educated, and all had jobs and great health care (they were all members of Kaiser Permanente).

Resources:

ACE Study video (three minute trailer)
How childhood trauma affects health across a lifetime (16-minute TED Talk by Dr. Nadine Burke Harris)
The Adverse Childhood Experiences Study – the largest public health study you never heard of – started in an obesity clinic

What's the neurobiology of toxic stress?

Brain science shows that, in the absence of protective factors, toxic stress damages children's developing brains. Stress is the body's normal response to challenging events or environments. Positive stress — the first day of school, a big exam, a sports challenge — is part of growing up, and parents or caregivers help children prepare for and learn how to handle positive stress, which is moderate and doesn't last long. It increases heart rate and the amount of stress hormones in the body, but they return to normal levels quickly.

But when events or the environment are threatening or harmful – we stumble across a bear in the woods – our brains instantly zap into fight, flight or freeze mode and bypass our thinking brains, which can be way too analytical to save us (Is the bear really mean? Is it more interested in berries or killing me? Should I wait until I see it charge?). With help from caring adults, children also recover from this tolerable stress.

Too much stress – toxic stress – occurs when that raging bear comes home from the bar every night, says pediatrician Nadine Burke Harris. Then a child's brain and body will produce an overload of stress hormones — such as cortisol and adrenaline — that harm the function and structure of the brain. This can be particularly devastating in children, whose brains are developing at a galloping pace from before they are born to age three. Toxic stress is the kind of stress that can come in response to living for months or years with a screaming alcoholic father, a severely depressed and neglectful mother or a parent who takes out life's frustrations by whipping a belt across a child's body.

Resources:
Harvard University Center on the Developing Child
Video: Toxic Stress Derails Healthy Development (2 min)
An Unhealthy Dose of Stress (Center for Youth Wellness white paper)
The Science Behind PTSD Symptoms: How Trauma Changes the Brain

What are the biomedical effects of toxic stress?

Chronic toxic stress—living in a red alert mode for months or years—can also damage our bodies. In a red alert state, the body pumps out adrenaline and cortisol continuously. Over time, the constant presence of adrenaline and cortisol keep blood pressure high, which weakens the heart and circulatory system. They also keep glucose levels high to provide enough energy for the heart and muscles to act quickly; this can lead to type 2 diabetes. Too much adrenaline and cortisol can also increase cholesterol.

Too much cortisol can lead to osteoporosis, arthritis, gastrointestinal disease, depression, anorexia nervosa, Cushing's syndrome, hyperthyroidism and the shrinkage of lymph nodes, leading to the inability to ward off infections.

If the red alert system is always on, eventually the adrenal glands give out, and the body can't produce enough cortisol to keep up with the demand. This may cause the immune system to attack parts of the body, which can lead to lupus, multiple sclerosis, rheumatoid arthritis, and fibromyalgia.

Cortisol is also extremely important in maintaining the body's appropriate inflammation response. In a normal response to a bee sting or infection, the body rushes antibodies, white

blood cells and other cell fighters to the site and the tissues swell while the battle rages. But too much swelling damages tissue. Cortisol controls this fine balance. So without the mediating effects of cortisol, the inflammatory response runs amok and can cause a host of diseases.

If you're chronically stressed and then experience an additional traumatic event, your body will have trouble returning to a normal state. Over time, you will become more sensitive to trauma or stress, developing a hair-trigger response to events that other people shrug off.

Biomedical researchers say that childhood trauma is biologically embedded in our bodies: Children with adverse childhood experiences and adults who have experienced childhood trauma may respond more quickly and strongly to events or conversations that would not affect those with no ACEs, and have higher levels of indicators for inflammation than those who have not suffered childhood trauma. This wear and tear on the body is the main reason why the lifespan of people with an ACE score of six or higher is likely to be shortened by 20 years.

Resources:

Scared Sick: The Role of Childhood Trauma in Adult Disease by Robin Karr-Morse with Meredith S. Wiley

Biological Embedding of Early Social Adversity, Proceedings of the National Academy of Sciences, 2012

PubMed childhood adversity research publications

Childhood Disrupted: How Your Biography Becomes Your Biology and How You Can Heal, by Donna Jackson Nakazawa

(Excerpted from https://acestoohigh.com/aces-101/)