

# Adverse Childhood Experiences: The Role of Philanthropy

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I am a pediatrician, and I was originally the founder and Medical Director of the Bayview Child Health Center, which was started by California Pacific Medical Center in San Francisco. I am currently Founder and CEO of the Center for Youth Wellness (CYW). CYW is a new organization dedicated to improving the health of children exposed to adverse childhood experiences (ACEs) and toxic stress.

Our mission is threefold:

- to prevent, by raising national awareness among those who have the power to make the difference that includes parents, practitioners (including pediatricians), and policymakers;
- to screen all children that come through our doors, and to train other practitioners on how to screen; and
- to heal by developing best practice interventions, which include mental health, holistic wellness, mindfulness, movement, nutrition, etc., all integrated with the primary care home.

I'd like to start by just talking about ACEs and toxic stress, but it's really about sharing my story, how I came to be talking about this and have this as my passion, and why we created CYW.

## ACEs AND TOXIC STRESS

My goal is that you will recognize that ACEs and toxic stress are not only a social issue, as most of us have tended to think of it, but squarely as a health issue. This falls right under the purview of the health and medical community. And as such, they require a clinical and a public health response. You will understand the urgency and also the great hope for developing evidence-based interventions, and hopefully commit to including ACEs and toxic stress treatment into your portfolio.

I want to share a bit about my story. This started when I finished my residency and worked with California Pacific Medical Center to open the Bayview Child Health Center. To give you an understanding of what our community is like, Bayview-Hunters Point is a neighborhood of families. It has the highest density of children and the highest density of African Americans in the city of San Francisco. It has the highest rate of homeownership, but it is also a place with the worst health disparities and a place where violence is the leading cause of early mortality. That's what we're dealing with.

At the time we opened the Bayview Child Health Center, despite the fact that San Francisco has one of the highest physician per capita ratios in the nation, Bayview was a federally designated medically underserved area. There was only one pediatrician in practice to serve a neighborhood of more than 10,000 children. When we opened our doors, the first thing I did was say, "OK, let's create a clinic in the community." The second thing we did was look at the data and what our families needed. I got some great data on immunization rates—worst immunization rate in the city. We implemented some protocols. We brought our immunization rate to consistently between 96 and 100 percent. We looked at asthma hospitalization rates and implemented protocols. No asthma hospitalizations within the first two years. But what was interesting was that I had all of these teachers and principals and heads of after-school programs saying to me, "Dr. Burke, can you please look at Jimmy? Jimmy's got ADHD."

He's falling out in class. He can't sit still. He's hitting the kid next to him. Please put him on some Ritalin."

But when I did my job and a thorough history and physical, I found that the majority of these kids did not have ADHD or attention deficit/hyperactivity disorder; most of these kids were manifesting the effects of exposure to trauma. When I heard their histories, over and over and over and over again, I was hearing the histories of kids who were being exposed to terrible trauma at home or in the community, and then were demonstrating behavioral symptoms or sometimes physical symptoms. As I think any doctor would do, if I was working in a community and I had a whole pile of kids and they all drank from the same well and then they all got diarrhea, I'd go and figure out what the heck is in that well. What is going on that is affecting the health of my children? So when I started diving into the science of how exposure to trauma and adversity affects the developing brains and bodies of children, what I found was something that transformed my clinical practice and pretty much changed the trajectory of my career. That was the *Adverse Childhood Experiences Study*.

This was a study by Vince Feliti and Robert Anda at Kaiser San Diego. They asked 26,000 adults about their history, and they got responses from about 17,500 people. Now, this was Kaiser San Diego, not Bayview-Hunters Point. This was a population that was 70 percent college-educated, 70 percent Caucasian, and they asked about categories of adversity in childhood, what they called "adverse childhood experiences." That included physical, emotional, or sexual abuse; someone in the house who was substance-dependent, incarcerated, mentally ill; domestic violence; one or no parents; or parental divorce.

When they looked at those categories and then correlated them against health outcomes, they found two things that were incredibly striking. One was how incredibly common it was. Two-thirds of their respondents experienced at least one ACE, and 12.6 percent of their population had four or more ACEs. That's one in eight people with four or more ACEs.

The second thing that they found was a dose-response relationship between these adverse childhood events and health outcomes like chronic obstructive pulmonary disease. So a person with four or more ACEs as compared to someone with none has 260 percent the risk of having chronic obstructive pulmonary disease. That's two and a half times. If you were a young woman and you got pregnant during that time, your risk of having fetal demise, your risk of miscarriage was almost double, 180 percent. Your risk of developing hepatitis, 240 percent; sexually transmitted infections, 250 percent; depression, four and a half times; suicidality, 12 times.

As a pediatrician, when I see this data, and I see that there is a risk factor that increases all of these different health outcomes, immediately if there was a way to poke a kid's heel and send off a blood test, we'd be screening every kid across the state. But the detection for this, the screening for this, has to happen simply by asking. That was the thing that I took home in terms of how we are going to change national practice.

When I sit in my clinic and I screen a kid for ACEs, I know that if they have an ACE score of four or more, their relative risk of chronic obstructive pulmonary disease is 260 percent, and I know I need to start doing some interventions. Now, those are just the health outcomes. When you look at the behavioral risks, it gets even worse. After seeing all this data, I asked myself: How does this work? What is the mechanism? The reason that's important is because understanding the mechanism helps us create targets for intervention.

It's like when we figured out HIV—it's a virus; wait, wait, no, it's a retrovirus; and then we were able to develop anti-retrovirals. Understanding how this works in the body is critically important to being able to develop solutions so I'm going to talk a little bit about the neurobiology.

There are certain parts of the brain that are involved: the prefrontal cortex, which is responsible for executive function; the hypothalamic-pituitary-adrenal axis, and that's where the hypothalamus talks to the pituitary gland, which talks to your adrenal gland, which sits on top of your kidney, which releases adrenaline; the hippocampus, which is important for memory and learning; the amygdala, which is important for fear responses; and something called the locus coeruleus, which is your within-the-brain stress response.

How does this all work? You're walking in the forest, and you see a bear. What happens? Your hypothalamus talks to your pituitary, sends a signal to your adrenal gland, and says, "Release adrenaline." So your heart starts beating really fast. Your pupils dilate. Your airways open up. You shunt blood away from the places that don't need it, like that little tiny muscle holding your bladder closed, which is why you pee yourself. Shunt it to your skeletal muscles so that you can fight that bear or run from the bear. That's your fight-or-flight system. Your prefrontal cortex, which is supposed to do your executive function, disengages because if you were to think about it, you'd look at the bear and think, "Hmm, bear big, me small, bear big teeth, me not so much, claws. That bear's going to kick my behind." So you shut down the thinking part of your brain, and the amygdala turns up your fear response reactivity of the brain. Your impulse control goes way down, and your locus coeruleus, which is your within-the-brain stress response, amps you up so you believe that you can fight that bear. I liken this to Raiders fans after a game.

All of this happens so that you can survive this encounter in the woods with a bear. And that is awesome if you're in a forest and there's a bear. The problem is what happens when the bear comes home every night. This process is repeated over and over and over and over again for a child living in a household with domestic violence, for a child living in a community like Bayview where there are gunshots ringing out night after night after night, for a child who witnesses a friend or a cousin gunned down in the street. This physiologic process goes from being adaptive or life-saving to being maladaptive or health-damaging.

### MULTISYSTEMIC IMPACTS

What we see are multisystemic impacts: changes in the structure and function of the brain; changes in that fight-or-flight stress response system, the hypothalamic-pituitary-adrenal axis; changes in the reward center of the brain, which is responsible for addiction and substance dependence; changes in the hippocampus, which is responsible for learning and memory. All of a sudden we start to see a clinical picture of Johnny sitting in class, and we understand why his teacher is asking me, "Dr. Burke, can you do something?"

Not only are there these neurologic changes; it turns out that when you have activation of the stress response system, it also activates your immune system. That is part of the reason why we see folks with an ACE score of seven or more have a relative risk of ischemic heart disease that is 360 percent, because with your immune system you have chronic inflammation and disregulation of your immune system. Early trauma, ACEs, and toxic stress are a disease of chronic inflammation.

In addition, we see changes to the hormonal system, leading to long-term changes in cortisol, adrenaline, and other hormones. We're beginning to understand now that exposure to trauma changes the way our DNA is read and transcribed. That leads to long-term changes in the way that the brain responds to stress.

What did this mean for me as a pediatrician in clinical practice? The first thing we did was figure out how much this was affecting our patients. We did a retrospective chart review and looked through the charts of every single patient that we had seen in the first two years, and we found very similar results to the ACEs Study: 67 percent of our kids had experienced at least one ACE, and 12 percent of our kids had experienced four or more.

The big difference is the ACEs Study asked adults which of these things had happened to them before age 18, and in our population we were looking at children with a mean age of seven years. For kids who had four or more ACEs as compared to those who had none, they were twice as likely to be overweight or obese and 32.6 times as likely to have learning and behavior problems in school.

When we looked at the effect of ACEs on educational outcomes, we found if our kids had an ACE score of zero, only 3 percent of them had learning and behavior problems and 97 percent of them did not, as compared to those with an ACE score of four or more, 51.2 percent of them had learning and behavior problems and 48.8 percent didn't.

We got an odds ratio of 32.6, and we were very proud of ourselves. But there's something that we almost missed the first time we did it. For our kids with an ACE score of zero, for our black and brown

children growing up in Bayview-Hunters Point, if they had no adversity, 97 percent of them were doing fine in school. That's a really powerful statement.

### **SCOPE OF THE CHALLENGE**

We came to understand the scope of the challenge. This is huge. In the words of Dr. Robert Block, past president of the American Academy of Pediatrics, ACEs are the single greatest unaddressed public health threat that our nation is facing today. The impacts are pervasive and long-lasting. They affect development, physical and mental health, social and educational impacts, and they have huge economic impacts. The prevalence is high, and there is strong evidence relating the risk. The good news is that we know that early intervention improves outcomes. For me this was a complete game changer. This was the reason why we created CYW. I am hoping to consign you all in the movement to do something about this. Philanthropy is the bridge. Philanthropic investment is necessary to get proof of concept to compel a change in policy and practice.

At the CYW there are three things that we do. We have our clinical arm where we are doing best practice interventions. We have our research arm where we're evaluating those outcomes. And we have our policy arm where we are lifting up what we find to be able to change policy and practice nationally. Our goal is to raise national awareness, to promote universal screening for ACEs in primary care, and to develop effective interventions and document improvement in long-term health outcomes, as well as cost savings.

When I'm invited to testify before Congress about this massive public health issue, ACEs, all the congressional folks say to me, "That's very powerful, Dr. Burke Harris. What do we do about it?" The truth is that we have a lot of work to do.

### **WHAT WE NEED NOW**

There are a couple things that we need right now. We need a public awareness campaign so that not only physicians, practitioners, and policymakers, but also parents, moms and dads, grandmas, and aunts and uncles understand the impact of ACEs and toxic stress. We need public policy intervention, and we need the educational, financial, logistical, administrative, and system support for both basic science and translational research for the development of best practice interventions, for the training of clinicians and researchers to develop and implement effective interventions. We also need community-based participatory research so that the communities that are most affected can be part of creating solutions, and we need the infrastructure for data collection and analysis.

What we need is catalytic capital to get us to the next place, and here are some great examples of catalytic capital that are going on right now all over the United States.

- **Investing in Innovation:** CYW was born out of an investment from the Tipping Point Community in the Bay Area. They raised \$4.2 million in 2010 to support a colocated partnership for the CYW to be colocated with the Bayview Child Health Center and a children's advocacy center so that we can do everything from primary prevention to treatment of kids who are exposed to adversity all under one roof in San Francisco.
- **Telling the Story:** Another part of this work is telling the story. The Pritzker Foundation has sponsored a documentary by filmmaker Jamie Redford about ACEs and their impacts. Telling the story is so important.
- **Raising Awareness and Seeding Solutions:** The Robert Wood Johnson Foundation cosponsored the first *National Summit on Adverse Childhood Experiences* in May 2013, bringing together national and local leaders to explore effective strategies to address ACEs across systems and also made a significant investment in the ACEs Connection Network, which is an online community of pioneering practitioners, resources, news, and breakthrough information.
- **Piloting Interventions:** The Annie E. Casey Foundation is working with us at CYW to support validation of our clinical screening tool. Pediatricians all across the country ask, "Dr. Burke Harris,

can I get a copy of your screening tool?" I say every single time, "It's not validated yet." Casey is helping us get to the point where we can validate our tool so that we can share it with others across the country.

- **Building the Evidence Base:** The JPB Foundation in New York has provided a planning grant, a joint grant between CYW and the Harvard Center on the Developing Child, to assess the feasibility of creating a national research consortium for toxic stress, bringing together the brightest minds in basic science research and clinical research to develop clinical strategies for how we're going to create treatment protocols for toxic stress in primary care.
- **Building Alliances:** The Mid-Iowa Health Foundation is another fantastic example of building alliances. They played a critical role in forming the Iowa ACEs Steering Committee. They partnered with the Iowa Department of Public Health, and the United Way of Central Iowa to provide strategic leadership and support a statewide ACEs summit, as well as statewide data collection.

## TAKEAWAYS

There's one thing I want to leave you with as we're thinking about how to build a movement. In 1983 the time from diagnosis to death from AIDS was six months, the mean mortality six months. Fifty percent of people who were diagnosed in 1983 with AIDS were dead six months later. Today the life expectancy on standard anti-retroviral therapy is over 50 years. How did we get there?

It's this: basic science research, community-based research, policy and practice change, training of clinicians, all of these things. When we think about how we as a community can create the infrastructure to create that type of public health change, there are a couple of things that I think are really, really important. One is a recognition that we are at the beginning of a movement, so infrastructure investments are required. One of the things that I heard from Bob Ross, who is CEO of The California Endowment, is he makes urgent grants and patient grants. Some of these things are necessary immediately in terms of capital projects, in terms of leadership training, and investments in short-term projects, and some of the investments that you make are not going to bear fruit for 7 or 10 years. We need your patience in terms of getting this movement to move forward. Multidisciplinary and cross-sectoral work can be slower, it can be challenging, but it is absolutely necessary in finding solutions that work.

Investment in two-generation approaches is critical. When you are talking about ACEs, by necessity you have to address the parent and the child. The Aspen Institute is a leader in talking about two-generation approaches. We need to advance the science, transform practice, and heal communities. We need to do all of those things if we are going to see the day when people say, "Johnny had exposure to X, Y, and Z. He's living in Bayview-Hunters Point." There are challenging things happening, but that doesn't mean a 20-year difference in his life expectancy. It doesn't mean that he is more than twice as likely to develop ischemic heart disease. It doesn't mean that he's three times as likely to develop lung cancer. It doesn't mean that he's two and a half times as likely to develop chronic obstructive pulmonary disease. It doesn't mean that he's 12 times as likely to attempt suicide in his lifetime, because we have developed effective interventions to give him the chance, that equal chance to grow up healthy and run and leap and giggle and do all those things along the way.

## ABOUT NADINE BURKE HARRIS

Nadine Burke Harris is Founder and CEO of the Center for Youth Wellness in San Francisco. Also the Founding Physician of California Pacific Medical Center's Bayview Child Health Center, Dr. Burke Harris has earned international attention for her innovative approach to addressing toxic stress as a risk factor for adult diseases.