



HealthySteps Participates in Groundbreaking Research with the Harvard Center on the Developing Child: The HERO Study

There are new and emerging opportunities to use biological information to help assess how adverse experiences and preventive interventions affect young children's healthy development before serious problems arise. HealthySteps is a proud collaborator in the Health's Early Roots & Origins (HERO) Study, led by Jack Shonkoff, MD, at the Harvard Center on the Developing Child and The JPB Research Network on Toxic Stress.

What is the HERO Study?

The HERO Study is a multi-site, feasibility trial to **prevent disease and impairment due to toxic stress**.

The goal of the HERO Study is to develop a fully validated, final battery of biomarkers that will make it possible to:

1. Identify child stress effects and resilience, family assets and stressors, and key behavioral indicators in children as young as two months of age
2. Target preventive services before overt problems emerge
3. Measure short-term impacts of interventions on learning, behavior, social-emotional development, and health indicators to facilitate rapid-cycle learning and iteration

What are the early findings?

Early pilot data show that babies whose families are experiencing more stressful events (reported by their mothers) had lower electrical activity in the brain at age two months.

A biomarker of stress in the urine at age two months is associated with a change in electrical activity in the brain.

Who's involved in the HERO Study?

Dr. Jack Shonkoff and colleagues at Harvard University's Center on the Developing Child are leading the study with The JPB Network on Toxic Stress. The JPB Network on Toxic Stress includes developmental scientists, community leaders, and primary care practices working collaboratively to prevent disease and impairment due to toxic stress.

What is HealthySteps?

HealthySteps, a program of ZERO TO THREE, is an evidence-based, team-based pediatric primary care program that promotes the health, well-being and school readiness of babies and toddlers, with an emphasis on families living in low-income communities.

Why is HealthySteps involved?

At the end of 2019, it is estimated HealthySteps served more than 250,000 young children in 164 pediatric primary care practices in 23 states, Washington, D.C. and Puerto Rico. The types of pediatric practices that bring HealthySteps onboard are innovative, thoughtful and progressive practices, making them great partners for the HERO study. Multiple HealthySteps sites are participating in the collection of biosamples to validate the biomarker panel to identify evidence of toxic stress and its impacts on the development of young children.

Within six participating HealthySteps sites, we are engaged in the validation and feasibility work that will eventually lead to the ability to identify children at risk and measure the impact of an intervention like HealthySteps.

What are you measuring?

- **Hair samples** to test cortisol levels, which are linked to a person's ability to learn and adapt to stress
- **Inflammatory markers** found in saliva and cheek swabs to assess stress activation as a physiological response in the immune system
- **Eye-tracking** to measure attention in babies as young as two months
- **Brain scans** to measure the effects of stress since children who have experienced significant neglect tend to have less electrical activity
- **Executive function skills**
- **Family social context**, e.g., where families live and work, social stressors, life events

What phase is the research in?



How can I learn more?

To learn more about the Harvard Center on the Developing Child and The JPB Research Network on Toxic Stress, visit developingchild.harvard.edu. To learn more about HealthySteps and its collaboration with the HERO study, visit healthysteps.org/HERO.

About HealthySteps

HealthySteps is an evidence-based program of ZERO TO THREE, the nation's leading nonprofit working to ensure all babies and toddlers have a strong start in life. HealthySteps transforms the promise of pediatric primary care through a unique team-based approach that integrates a HealthySteps Specialist, a child development expert, into the health care team. All children ages 0-3 and their families receive a tiered model of services, from universal screening to risk-stratified supports, including care coordination and onsite intervention, as needed. HealthySteps practices serve as trusted and valuable partners as families foster their children's healthy development. Together, the national network of HealthySteps sites aims to reach more than 1 million young children annually by 2032. Visit healthysteps.org or contact ZERO TO THREE to learn more.