Early Physical and Chemical Influences on Child Health Outcomes—the ECHO Program

Matthew W. Gillman, MD, SM
Director, Environmental Influences on Child Health Outcomes (ECHO)
Office of the Director, NIH

ECHO's observational research brings together 72 ongoing maternal-child cohort studies into one large ECHO-wide Cohort of 50,000+ children and their families. Data from these diverse populations allows ECHO investigators and the wider community of scientists to address research questions about effects of a broad range of early environmental exposures on child health and development, questions that no single cohort, or even a few, can answer alone. In partnership with NIEHS, ECHO supports chemical exposure assays within the Human Health Exposure Analysis Resource (HHEAR).

ECHO cohort researchers are investigating the influences of exposure to air pollution, the built and natural environments, and multiple chemicals during pregnancy and early childhood on ECHO's five pediatric outcome areas: pre-/peri-/post-natal outcomes, upper and lower airway, obesity, neurodevelopment, and positive health.

The ECHO-wide Cohort is yielding a valuable nationwide data resource for evaluating influences of chemical mixtures, interactions of pollutants with social and behavioral factors, critical periods vs. cumulative exposures, and health disparities. ECHO researchers are addressing effects of ubiquitous, well-characterized, low detection, and emerging chemicals, as well as pursuing untargeted analyses to identify novel chemicals of concern. Through ECHO's Opportunities and Infrastructure Fund, junior researchers are innovating exposure assessment and modeling methods. ECHO's diversity supplements support pre- and post-docs who are examining several aspects of chemical exposures, and ECHO COVID-19 supplement awardees are addressing how rapid changes in exposures with the pandemic affect child health outcomes.