New Funding Opportunity: Maximizing the Scientific Value of Data Generated by the Environmental influences on Child Health Outcomes (ECHO) Program

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Concept Clearance

Concept: Issue two companion FOAs for research training and analysis of ECHO data

Title: Maximizing the Scientific Value of Data Generated by the Environmental influences on Child Health Outcomes (ECHO) Program (R36/F32)

Objective/Purpose: Expand research and training in high-priority areas of maternal and child health by stimulating novel analyses of ECHO data by non-ECHO investigator trainees using two companion RFAs: - R36 Dissertation Grant

- F32 Individual Postdoctoral Fellowship Award

Funds Available & Number of Awards: ECHO plans to commit ~\$960,000 total costs over FYs 2024 and 2025 for up to 8 two-year awards

Award Project Period: 2 years

Council Action: Council motion and vote to provide concept clearance to issue these two RFAs



ECHO Overall Scientific Goal

Answer solution-oriented questions about effects of broad range of early environmental exposures on child health and development





ECHO-wide Cohort Weaving together data from 69 ongoing maternal-child cohort studies

ECHO-wide Cohort

Many people, many layers of data, many stages of the life course



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National Institutes of Health Environmental influences on Child Health Outcomes (ECHO)

ECHO-wide Cohort



National Institutes of Health Environmental influences on Child Health Outcomes (ECHO)

ECHO-wide Cohort



5 key pediatric outcomes with high public health impact

From birth through childhood and adolescence





Examples and Impact

Over 1000 ECHO publications; over 70 ECHO-wide Cohort

- Decrease in BMI After Implementation of Healthy, Hunger-Free Kids Act (HHFKA)
 - Children 12-18 years BMI decreased from year to year following start of HHFKA
 - Reversal of trends seen during the decade before the program
 - HHFKA had a positive effect on the health of children from lower-income families contributing to an annual decrease in BMI
 - Chandran et al, in press; Please do not cite or share prior to publication
- Prenatal cigarette smoking associated with autism spectrum disorder and less social responsiveness
 - 44% higher risk of autism spectrum disorder diagnosis in children born full term
 - Hertz-Picciotto et al. Autism Res. 2022;15(3):551-569



Examples and Impact (continued)

- Higher incidence of asthma in Black than White children, but only during early childhood
 - Suggests prenatal determinants of disparities in asthma risk—is air pollution one of them?
 - Johnson et al., JAMA Pediatr 2021: e210667
- Rates of asthma higher in children exposed to ultra-fine particles later in pregnancy
 - May help explain early childhood racial differences in asthma risk, lead to new regulations
 - Wright et al., Am J Respir Crit Care Med 2021; 204(7):788-796





Data Analysis Resource

Key part of ECHO's mission

• Share harmonized ECHO-wide Cohort data with broader scientific community to ensure their maximum utility and impact.

Harmonized, de-identified data from the ECHO Program are now available through the **NICHD Data and Specimen Hub** (DASH)

- Centralized resource that allows researchers to access data from ECHO and other studies via a controlled-access mechanism.
- Contains data on ECHO-wide Cohort's first 41,299 participants
 - 17,746 pregnancies and 23,553 children
- ECHO Data Analysis Center will post updated data every 6 months
- ECHO will add biospecimens in the future



Purpose

- This concept seeks to advance research in high-priority areas of child health outcomes by stimulating the use of ECHO data by the broad scientific community.
- The RFAs will provide opportunities for training new investigators in the analysis of large longitudinal data sets to investigate child health outcomes.
- The RFAs will support access to ECHO data within the NICHD DASH repository.



Examples of Potential Trainee Analyses

- Exposure-outcome associations
 - Influence of exposure to contaminants of emerging concern during pregnancy or early childhood on neurodevelopment
 - Associations of mother's diet and weight trajectory during pregnancy with childhood obesity
 - Relations between maternal experiences of racial discrimination and preterm birth
 - Associations of infant sleep health with development of asthma, obesity, neurocognitive, and positive health outcomes
- Development of new methodologies for etiology and prediction



Award Mechanisms and Funding Level

- Total anticipated funding ~\$960,000
- Up to 8 two-year awards funded by ECHO beginning in FY24
 - R36 award for \$60,000 per year direct costs for 2 years
 - F32 award for \$80,000 per year direct costs for 2 years



Council Action

• Council motion and vote to provide concept clearance to issue two RFAs (R36 and F32)

