

## Drs. Viren D'Sa, Barry Lester awarded \$11.1M NIH grant to study environmental influences on child health

The National Institutes of Health (NIH) recently announced \$157 million in awards in fiscal year 2016 to launch a seven-year initiative called Environmental Influences on Child Health Outcomes (ECHO) – a program that will investigate how exposure to a range of environmental factors in early development influences the health of children and adolescents.

Two Care New England hospitals – Memorial Hospital and Women & Infants Hospital of Rhode Island – were among the 35 pediatric cohorts who will together enroll more than 50,000 children to study the early environmental origins of health outcomes. The initial award to Memorial is a two-year grant of \$6.2 million, and \$4.9 million over two years to Women & Infants. Pending successful completion of this “feasibility phase,” an additional five years of funding is expected to be available.

### Memorial

The principal investigator at Memorial is **VIREN D'SA, MD**, the hospital's pediatrician-in-chief, director of the New England Pediatric Institute of Neurodevelopment (NEPIN) and associate professor of pediatrics at The Warren Alpert Medical School of Brown University, who is working with **SEAN DEONI, PhD**, a neuroimaging physicist at the University of Colorado and adjunct professor at the School of Engineering at Brown University.

They will draw on information gleaned from about 1,100 children enrolled in two ongoing studies – one based at Memorial Hospital and Brown

University, which has followed children from as young as three months of age since 2010 under a previous NIH grant, and a second based in Colorado, which has enrolled pregnant mothers. Combined, these studies sought to examine pre and postnatal influences that shape pediatric development.

“We are looking to better understand how the various environmental, genetic and nutritional influences interact to shape early brain development from the prenatal stage through childhood and to puberty,” Dr. Deoni said. “We will investigate how factors such as the in utero environment, starting as early as 22 weeks gestation, breastfeeding and early nutrition, lead exposure, parent interaction, sleep and daytime activity, pollution, and specific genes influence brain structure and function.”

The research will track the children's performance in many functional domains including academic progress as well, according to Dr. D'Sa.

“By understanding how and when this diverse array of influences impact brain growth and ultimately affect childhood outcomes such as their performance in school or their chance of developing a medical, developmental or behavioral disorder, we hope to identify predictors of such outcomes and learn how interventions can be optimized for a particular child to maximize their individual potential,” he said.

### Women & Infants

Principal investigators at Women & Infants are **BARRY M. LESTER, PhD**, director of the hospital's Brown Center

for the Study of Children at Risk and professor of psychiatry and pediatrics at the Alpert Medical School, and **CARMEN MARSIT, PhD**, formerly of Women & Infants/Brown and now a professor at Emory University in Atlanta. The project is entitled “Environmental Influences of Neurodevelopmental Outcome in Infants Born Very Preterm.”

This grant will enable Dr. Lester and his colleagues to enhance the work they are doing through an existing study – the Neonatal Neurobehavior and Outcomes in Very Preterm Infants (NOVI) Study. Sponsored by the National Institute of Child Health and Human Development, the primary goal of the NOVI study is to learn about how early detection of neurobehavior can identify which individual infants are most likely to suffer later developmental impairment and advance interventions to combat those developmental deficits.

“ECHO will enable us to study the development of these infants in the broader environmental cohort in which they develop, including a range of exposures from air pollution and chemicals in our neighborhoods to societal factors such as stress and parenting,” Dr. Lester said. “At the same time, NOVI will contribute a unique population of very low birthweight infants to the pooled ECHO sample and study how the effects of the kind and timing of early exposures can be detected amongst these diverse populations. This is a win-win study, with children and their families as the ultimate winners.” ❖