

## **Division of Neonatology Completes the Initial Phase of an ECRIP-Funded Study**

The Division of Neonatology has completed the first phase of a pilot study entitled “Noninvasive Respiratory Prophylaxis Toward Prevention of Transient Tachypnea of the Newborn.” The study has been funded in part by a \$150,000 grant from the Empire Clinical Research Investigators Program (ECRIP). The ECRIP grant underwrites the salary of a physician who serves as a clinical pediatrics research investigator while also being mentored in the research process.

### **Background**

As a fetus grows in the womb, its developing lungs make a special fluid that fills the lungs and helps them grow. When the baby is born at term, chemicals released during labor signal the lungs to stop making this fluid, and to start removing or reabsorbing it. The first few breaths a baby takes after delivery fill the lungs with air and help to clear most of the remaining lung fluid.

One of the biggest challenges a newborn faces at birth is to make the fast transition from fluid-filled lungs to lungs filled with air. If the lungs are not sufficiently cleared, leftover fluid causes the baby to breathe rapidly – a condition known as Transient Tachypnea of the Newborn – because it is hard for the baby to keep the small air sacs of the lungs open.

TTN affects an estimated 1% to 2% of all newborns or more than 80,000 U.S. babies each year.\* It is most likely to occur in full-term neonates (37 weeks or greater) delivered by elective C-section.

TTN begins at birth and lasts about three days. TTN infants require admission to a neonatal intensive care unit for clinical management that involves expensive resources, separation of mother and baby, usage of empiric antibiotics, and prolonged length of stay.

### **The Pilot Study**

In an effort to reduce the incidence of TTN, Pinchi Srinivasan, M.D., F.A.A.P., director of neonatology, hypothesized a novel preventive strategy. He proposed utilizing continuous positive airway pressure (CPAP), a mode of noninvasive ventilation, to be initiated at birth to help clear the retained lung fluid and facilitate the newborn’s breathing transition.

The Division of Neonatology initiated a pilot study in late 2009 to evaluate the prophylactic administration of CPAP in the delivery room and its potential to reduce newborn respiratory morbidity, improve newborn care, and decrease the need for NICU admission. Two groups are being studied: full-term births by elective C-section and late preterm births 34 to 36 weeks gestation.

The first part of the study – that of neonates delivered by C-section – was discontinued before reaching its full complement of infants. Dr. Srinivasan explains:

Theresa and Eugene M. Lang  
Center for Research and Education

“The greatest risk of TTN with elective C-sections occurs when the section is performed at 37 or 38 weeks,” says Dr. Srinivasan. “Elective C-section babies born at 37 or 38 weeks show two and three times the risk of developing respiratory distress compared with babies born at or after 39 weeks. Shortly after our study began, the OB/GYN department implemented a policy of performing elective C-sections only at or after 39 weeks gestation. We found the overall incidence of TTN to be very low among this group, with no difference noted between the neonates who received the CPAP intervention and those who did not. Therefore, it was not prudent to continue the study of this group.”

With the mentoring of Dr. Srinivasan, his ECRIP research investigator, Lincy Cherian, M.D., is currently studying the second high-risk group for TTN, late preterm neonates born vaginally or via C-section at 34 to 36 weeks gestation.

Dr. Srinivasan is principal investigator and mentor for this study. In addition to being Director of the Division of Neonatology at New York Hospital Queens, he is also Assistant Professor of Clinical Pediatrics at Weill Cornell College of Medicine. He has authored several chapters in neonatology and pediatrics textbooks, including multiple chapters on neonatal respiratory disorders. He also serves as a reviewer for neonatal and pediatrics peer-reviewed journals.

Dr. Srinivasan is mentoring Dr. Cherian in four broad areas of knowledge acquisition: biostatistics and study design; clinical experience in the technique of doing point-of-care testing of the brain-natriuretic peptide (BNP) assay from study patients; database management; and statistical analysis.

Dr. Cherian trained at Nassau University Medical Center, where she served as Chief Resident in the Department of Pediatrics prior to beginning her work with the NYHQ ECRIP project. On completion of this study, she plans to pursue a public health and preventive medicine residency.

\*CDC: 4,130,665 U.S. births in 2009

