Tests may predict cause of hospital readmissions in newborns and improve outcomes for asthma patients

April 28 2010

The results of two separate research studies taking place at Children's Mercy Hospitals and Clinics will help physicians use genetic testing to prevent complications, and ease the worry of new parents by predicting in advance which newborns may require readmission to the hospital shortly after birth. The studies also will help physicians identify which of their young patients are likely to respond well - or not - to steroid therapy for asthma.

Up to 85 percent of hospital readmissions during the first two weeks of life are due to hyperbilirubinemia, more commonly recognized as jaundice. The condition can be concerning for new parents, and potentially devastating for the infant if not recognized and promptly treated. New research being led by Susan Abdel-Rahman, PharmD, professor of pediatrics at Children's Mercy Hospitals and Clinics is identifying specific genetic markers that will enhance the ability to predict which newborns are at risk.

"This condition can be very harmful for newborn infants and scary for new parents," said Dr. Abdel-Rahman. "Knowing in advance which babies are likely to experience symptoms can provide reassurance for parents and guidance for clinicians in determining which babies may benefit from more careful monitoring."

The goal of the research is to develop an electronic tool that can be used

by clinicians in nurseries nationwide to dramatically improve prediction of risk for hyperbilirubinemia and prevent complications due to late detection. The study will be among the largest of its kind, aiming to enroll 3,500 newborns.

A separate study being conducted by researchers at Children's Mercy may lead to a method of predicting inhaled steroid sensitivity in patients with asthma. Inhaled steroids treat underlying inflammation in the lungs, a hallmark of asthma, and help keep the patient's asthma under control. The drugs can be effective to help ease asthma symptoms, but they carry a risk of side effects and may not work in up to 35 percent of patients with asthma.

The asthma research is being led by Bridgette L. Jones, MD, allergy, asthma and immunology and clinical pharmacology specialist, and Carrie A. Vyhlidal, PhD, research scientist, pediatric clinical pharmacology, at Children's Mercy Hospitals and Clinics. The study uses tissue samples obtained from inside patients' cheeks to identify genetic markers of steroid response among adult and pediatric patients. They are evaluating gene expression patterns between patients without asthma and those with asthma who may or may not be on inhaled corticosteroids. The research aims to identify ways to predict which patients will respond best to treatment.

"We anticipate this study will lay the groundwork for identifying subjects who will respond better to inhaled corticosteroids, and guide their treatment toward more useful therapies," said Dr. Jones. "While these drugs are beneficial for many children, it would save their families time, money and potential risk of side effects to know in advance how well therapy will work."

Personalized medicine continues to be an important area of focus for pediatric patients, as hospitals and clinics across the country seek ways to

tailor therapy for patients to improve outcomes and reduce costs. Many of the world's leading experts in pediatric pharmacogenomics and personalized medicine are gathering at Children's Mercy Hospitals and Clinics today for a first-of-its-kind conference focusing on this issue.

At the April 28-30 conference, experts from academia, government and the private sector in the US, Canada and Japan will exchange knowledge centering on clinical applications, bioethics and development of pediatric personalized medicine programs.

Provided by GolinHarris NY