MedicalXpress

New criteria to project preemies' time in hospital, says researcher

December 14 2009, BY ERIN DIGITALE

(PhysOrg.com) -- Researchers have developed a new way to estimate when the tiniest preemies -- babies born months early -- will go home from the hospital.

The new mathematical model, built from data on 2,254 early preemies born at 16 U.S. sites in the Eunice Kennedy Shriver National Institute for Child Health and Human Development Neonatal Research Network, will enable doctors to better counsel infants' families, help hospitals manage resources and provide targets for improving preemies' medical care.

"The take-home message is that we can't predict time to discharge very accurately from day one of hospitalization," said Susan Hintz, MD, the lead author of the new study. Although length of hospital stay couldn't be projected at birth, the research team zeroed in on a few key predictors that develop in the first weeks and months of a preemie's life.

"Really important things happen during the course of hospitalization that affect when an extremely premature baby will be discharged," said Hintz, who is a neonatologist at Lucile Packard Children's Hospital and an associate professor of pediatrics at the Stanford University School of Medicine. The new research, by Hintz and a large team of collaborators affiliated with the NICHD Neonatal Research Network, published online Dec. 14 in *Pediatrics*.

The infants studied were born at less than 27 weeks' gestation and

survived until hospital discharge; pregnancy normally lasts 40 weeks. On average, the preemies stayed in the hospital until their original due dates, but some went home a month or more earlier, whereas others were still hospitalized months later.

The research team analyzed dozens of variables in the health of the preemies and their mothers to determine which factors separated the infants who were discharged first from those with the longest hospitalizations. A model with just five key factors or groups of factors effectively predicted later-than-usual hospital discharge: birth weight less than 750 grams, need for surgery during hospitalization, infections in the bloodstream or digestive system, and chronic lung problems and severe problems with retinal development of the eyes, both common to premature infants. The more key factors present, the longer the baby's hospital stay.

"It was encouraging that this very streamlined, five-factor model was as good as the much more complicated statistical model that we used to predict if a baby would be discharged early or late," Hintz said. The five-factor model has the potential for development into a useful clinical tool, she added, since counting risk factors is much more practical for a bedside physician than complex statistical analyses.

The five key factors provide important targets for improving preemies' care, Hintz added. For instance, the research gives additional support to efforts already in place to reduce severe infections among preemies. And, because earlier research has shown that several of the key factors are linked with long-term neurological impairment, preventing these problems could also have lifelong benefits for preemies.

Hintz expects the five-factor model may have other practical applications, such as helping hospitals predict when neonatal intensive care unit beds will open up and helping insurance companies understand

that precise time to discharge cannot be predicted early in the hospitalization. She cautioned, however, that it would be a bad idea for hospitals to interpret the work to prioritize early discharge over preemies' well-being. "That could lead to unsafe discharge practices," she said.

Provided by Stanford University Medical Center (news : web)