Reasons why survival rates of extremely premature infants differ by hospital

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Extremely premature infants born at 22 to 25 weeks of gestation have low rates of survival, and many of those infants who live have severe or moderate neurodevelopmental impairments. Thus, clinicians and families face the extremely difficult decision to either provide active, potentially lifesaving treatment at birth, or just provide comfort care. Furthermore, a wide, unexplained between-hospital variation in survival

and impairment rates leaves it unclear whether treatment will be in the infant's interest.

A paper published today (Thursday, May 7) in the *New England Journal of Medicine* has found that much of that variation in outcomes for infants born at 22, 23 or 24 weeks of gestation is explained by differences in the hospital rates of active treatment.

"A baby born at 23 weeks gestation weighs about 1 pound and is about 12 inches long," said Wally Carlo, M.D., one of the study authors and director of the Division of Neonatology and Newborn Nurseries at the University of Alabama at Birmingham. "That baby usually will need to stay in the newborn intensive-care unit for four months, and for a portion of that time he or she will need to be on life-support."

The researchers analyzed data from nearly 5,000 premature infants born between April 2006 and March 2011 in 24 U.S. hospitals, including UAB Hospital. They found that hospital rates of active treatment varied substantially. For example, four hospitals never gave active treatment to infants born at 22 weeks gestation, and five always gave active treatment. For infants at 23 weeks gestation, the active intervention rates among hospitals ranged from 25 percent to 100 percent. The overall percentage of babies receiving active treatment increases with each added week of gestational age, and by 25 or 26 weeks of gestation, most hospitals gave active treatment to all the infants.

"Clearly there is little consensus about the appropriate policy for treating infants born at low gestational ages, and yet hospital practices regarding the initiation of active intervention have a dramatic influence on rates of survival and survival without impairment," wrote Neil Marlow, D.M., University College London, in an NEJM editorial that accompanied the research paper.

Today's *NEJM* study found that the hospital rates of active treatment accounted for a majority of the between-hospital variation in outcomes for the children born at 22 or 23 weeks gestation—specifically, 78 percent of the variation in survival, 75 percent of the variation in survival without severe impairment, and 41 percent of the variation in survival without moderate or severe impairment.

"Hospitals at which active treatment was more often initiated had higher rates of risk-adjusted survival both with and without impairment than did hospitals at which active treatment was less frequently initiated," the study authors wrote. This means that hospital-level statistics that include large numbers of infants who did not get active treatment may not be helpful when counseling families about the benefits or burdens of treatment.

"This article raises important questions about what information should be given to parents during counseling about risks after an extremely preterm birth," Marlow wrote in his editorial, titled The Elephant in the Delivery Room. "To give crude data on the survival rate among all such infants, regardless of whether treatment efforts were made, is misleading and helps to make poor survival a self-fulfilling prophecy."

"Decisions about initiation of active treatment in extremely premature babies are difficult and emotionally charged," Carlo said. "The parents usually want active treatment for their extremely premature babies. At UAB Hospital, we support the parents' decision and provide active treatment for their extremely premature babies."

Some details:

For premature births, four weeks makes a huge difference. Babies in the study who were born at 22 weeks gestational age had an overall survival rate of 5.1 percent and a survival without severe impairment rate of 3.4

percent. The study babies who were born at 26 weeks had an overall survival rate of 81.4 percent and a survival without severe impairment rate of 75.6 percent.

Active treatment for the extremely premature infants also makes a difference. The actively treated babies born at 22 weeks had a survival rate of 23.1 percent and a survival without severe impairment rate of 15.4 percent.

In the *NEJM* study, active treatment included surfactant therapy, tracheal intubation, ventilator support, parenteral nutrition, epinephrine and chest compressions. Severe impairment was measured in surviving children between 18 and 22 months of corrected age. The impairments included severe cognitive or motor impairment, severe cerebral palsy, bilateral blindness, and severe hearing impairment that cannot be corrected with bilateral amplification.

Provided by University of Alabama at Birmingham