

Small Infants Have Greater Survival Rate In High Level Intensive

Very low birth weight infants are significantly more likely to survive when delivered in hospitals with high-level neonatal intensive care units that care for more than 100 such newborns annually than are those delivered in comparable facilities that provide care to fewer than 100 such children every year.

The research that led to this finding was supported by the Agency for Healthcare Research and Quality and the National Institutes of Health, both agencies within the U.S. Department of Health and Human Services. Within NIH, support for the study was provided by the National Institute of Child Health and Human Development. The study appears in the May 24th issue of the New England Journal of Medicine.

Neonatal intensive care units (NICUs) are specialized hospital facilities offering medical care for newborn infants. NICUs are classified according to the level of services they provide. High-level neonatal intensive care units provide mechanical ventilation-the use of a device that assists with breathing. Depending on the level of care, some high-level NICUs provide major surgery.

Very low birth weight infants are those weighing less than 1500 grams, or about 3.3 pounds, at birth. Very low birth weight infants are highly vulnerable to medical complications. In 2000, these infants comprised just 1.4 percent of U.S. births but 51 percent of infant deaths. The latest research indicates some of these newborn deaths may be preventable.

Based on their analyses of California birth records, the researchers reported that less than a quarter of very low birth weight infants are born in hospitals with high-level, high-volume NICUs, and this percentage has been declining over time. The study examined differences in death rates across hospitals with different NICU levels and their volume (how many very low birth weight infants they care for in a year).

The researchers found that hospitals with lower-volume, lower-level NICUs had a significantly higher newborn death rate for very low birth weight infants when compared with the newborn death rate among this group in hospitals with high-level and high-volume NICUs.

"Previous studies have established a link between high volume and high quality among NICUs, and this study offers further evidence of that relationship," said Carolyn M. Clancy, M.D., AHRQ's Director. "It is becoming increasingly clear that some very low birth weight infants are not getting the care they need, and that we need to make sure that patients and clinicians know how important high-quality NICU care is."

The researchers were led by Ciaran Phibbs, Ph.D., Health Economist at the Health Economics Resource Center at the Veterans Affairs Palo Alto Health Care System and Associate Professor at the Department of Pediatrics at Stanford University.

The researchers analyzed data from more than 48,000 very low birth weight infants born in California hospitals from 1991 to 2000. They calculated newborn death rates by linking birth certificates, hospital discharge abstracts, and fetal and infant death certificates.

Despite the increased survival rate for very low birth weight infants in large, high-level NICUs, the researchers found that an increasing number of high-risk newborns are receiving care in low-volume, mid-level units.

In the past 20 years, a growing number of community hospitals have built NICUs, but most have been lower level facilities that see only a few very low birth weight infants.

"While lower-level NICUs are required to have formal relationships with high-level NICUs, the mere fact that they have such a relationship is no guarantee that the lower-level NICU's are going to get the same level of results as can be obtained at the large high volume NICUs," Dr. Phibbs said.

Dr. Phibbs and his colleagues determined that as much as 21 percent of very low birth weight infant deaths in California could have been avoided.

"The increasing number of NICUs in community hospitals does not serve all very low birth weight infants in all instances," said Dr. Phibbs. "These results indicate that increased regionalization-that is, ensuring that more very low birth weight infants are born at higher level NICUs-might reduce infant mortality."

The NICHD sponsors research on development, before and after birth; maternal, child, and family health; reproductive biology and population issues; and medical rehabilitation. For more information, visit the Institute's Web site at

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About the Author

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