Low-birth-weight infants born at hospitals known for nursing excellence have better outcomes on some measures

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In a study that included more than 72,000 very low-birth-weight infants, among those born in hospitals with recognition for nursing excellence (RNE), compared with non-RNE hospitals, there was a significantly lower rate of hospital infection, death at 7-days and severe intraventricular hemorrhage but not lower rates of death at 28-days or hospital stay mortality, according to a study in the April 25 issue of *JAMA*.

"One in 4 very low-birth-weight (VLBW) infants (less than 1,500 grams [3.3 lbs.]) dies in the first year of life; nearly all deaths (87 percent) occur in the first month," according to background information in the article. "Infants born at VLBW require high levels of nursing intensity. The role of nursing in outcomes for these infants in the United States is not known."

Eileen T. Lake, Ph.D., R.N., of the University of Pennsylvania School of Nursing, Philadelphia, and colleagues conducted a study to examine the association of hospital RNE status with VLBW infant outcomes. The study included 72,235 VLBW infants weighing 501 to 1,500 grams born in 558 Vermont Oxford Network hospital neonatal intensive care units between January 2007 and December 2008. Hospital RNE was determined from the American Nurses Credentialing Center. The RNE designation is awarded when nursing care achieves exemplary practice or leadership in 5 areas. "Recognition for nursing excellence is uncommon.

Only 7 percent of U.S. hospitals achieve this," the authors write.

The primary outcomes measured for this study were 7-day, 28-day, and hospital stay mortality; nosocomial (hospital) infection, defined as an infection in blood or cerebrospinal fluid culture occurring more than 3 days after birth; and severe intraventricular hemorrhage (SIVH).

Analysis of the data indicated that overall, the percentage of eligible infants with each outcome was: 7-day mortality, 7.3 percent (n = 5,258/71,955); 28-day mortality, 10.4 percent (n = 7,450/71,953); hospital stay mortality, 12.9 percent (n = 9,278/71,936); SIVH 7.6 percent (4,842/63,525); and infection, 17.9 percent (11,915/66,496) . "The 7-day mortality was 7.0 percent in RNE hospitals vs. 7.4 percent in non-RNE hospitals; 28-day mortality was 10.0 percent in RNE hospitals vs. 10.5 percent in non-RNE hospitals; and hospital stay mortality was 12.4 percent in RNE hospitals vs. 13.1 percent in non-RNE hospitals. The incidence of SIVH was 7.2 percent in RNE hospitals and 7.8 percent in non-RNE hospitals. Infection occurred in 16.7 percent of VLBW infants in RNE hospitals and 18.3 percent in non-RNE hospitals," the authors write.

The researchers note that compared with RNE hospitals, the adjusted absolute decrease in risk of outcomes in RNE hospitals ranged from 0.9 percent to 2.1 percent. All 5 outcomes were jointly significant. In a subgroup of 68,253 infants with gestational age of 24 weeks or older, the odds ratio for RNE for all 3 mortality outcomes and infection were statistically significant.

The authors suggest that the better outcomes observed in VLBW infants in RNE hospitals may reflect higher-quality neonatal intensive care unit (NICU) and obstetric care. "Perhaps RNE hospitals have a broad, long-standing commitment to quality care that is reflected in other aspects of care, such as excellent physician care, respiratory care, or infection

control, that are not directly related to RNE but that may independently contribute to better outcomes for VLBW infants. Thus, RNE status may serve as a marker for an institution-wide commitment to optimizing outcomes."

The researchers add that the practical importance of their findings is influenced by the accessibility of existing RNE hospitals to mothers at high risk of preterm birth. "Currently, access is limited because only 1 in 5 hospitals with a NICU has RNE. This is a particular source of concern for racial and ethnic minorities because disproportionately few minority infants are born in hospitals with RNE."

In an accompanying editorial, Wanda D. Barfield, M.D., M.P.H., of the Centers for Disease Control and Prevention, Atlanta, writes that the authors of this study "appropriately conclude that the components of hospital RNE, including exemplary professional practice, structural empowerment, new knowledge, transformational leadership, and empirical outcomes, helped these hospitals to achieve high-quality care and decreased infant mortality and severe morbidity."

"These principles may not only make better nurses but also better physicians, respiratory therapists, laboratory technicians, social workers, and hospital executives. Recognition for nursing excellence status may serve as a proxy for the hospital's commitment to quality care and available resources because members must pay for the program, and RNE status ensures' a work environment to pursue quality improvement. It would be useful to understand which specific components of RNE status may have contributed to the reduction of VLBW mortality and morbidity because it may not be RNE status that is critical. In addition, general characteristics of the RNE facilities, such as teaching status, not-for-profit status, large size, and high NICU patient volumes may be related to improved outcomes. The challenge lies in disentangling the 'black box' of NICU care and the provision of timely and effective

interventions and care models in ways that can be efficiently replicated by others."

More information: *JAMA*. 2012;307[16]:1709-1716. *JAMA*. 2012;307[16]:1750-1751.

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