Mortality in low birth weight infants according to level of neonatal care at hospital of birth.

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Abstract
OBJECTIVE: In 1976, the Committee on Perinatal Health recommended that hospitals with no neonatal intensive care unit (NICU) or intermediate NICUs transfer high-risk mothers and infants that weigh <2000 g to a regional NICU. This standard was based on expert opinion and has not been validated carefully. This study evaluated the effect of NICU level and patient volume at the hospital of birth on neonatal mortality of infants with a birth weight (BW) of <2000 g.

METHODS: Birth certificates of 16 732 singleton infants who had a BW of <2000 g and were born in nonfederal hospitals in California in 1992 and 1993 were linked to death certificates and to discharge abstracts. The hospitals were classified by the level of NICU: no NICU, no intensive care; intermediate NICU, intermediate intensive care; community NICU, expanded intermediate intensive care; and regional NICU, tertiary intensive care. A logistic regression model that controlled for demographic risks, diagnoses, transfer, average NICU census, and NICU level was estimated using death within the first 28 days or first year of life if continuously hospitalized as the main outcome measure.

RESULTS: Compared with birth in a hospital with a regional NICU, risk-adjusted mortality of infants with BW of <2000 g was higher when birth occurred in hospitals with no NICU (odds ratio [OR]: 2.38; 95% confidence interval [CI]: 1.81-3.13), an intermediate NICU (OR: 1.92; 95% CI: 1.44-2.54), or a small (average census <15)
community NICU (OR: 1.42; 95% CI: 1.14-1.76). Risk-adjusted mortality for infants who were born in hospitals with a large (average census ≥ 15) community NICU was not statistically different compared with those with a regional NICU (OR: 1.11; 95% CI: 0.87-1.43). Except for large community NICUs, all of these ORs are larger when the data are restricted to infants with BW of <1500 g or BW of <1250 g and smaller for BW between 1250 g and 1999 g and 1500 g and 1999 g. For large community NICUs, the results are similar for the smaller BW intervals and significant only for the larger BW interval.

CONCLUSIONS: These results support the recommendation that hospitals with no NICU or intermediate NICUs transfer high-risk mothers with estimated fetal weight of <2000 g to a regional NICU. For infants with BW of <2000 g, birth at a hospital with a regional NICU is associated with a lower risk-adjusted mortality than birth at a hospital with no NICU, intermediate NICU of any size, or small community NICU. Subsequent neonatal transfer to a regional NICU only marginally decreases the disadvantage of birth at these hospitals. The evidence for the few hospitals with large community NICUs is mixed. Although the data point to higher mortality in large community NICUs, they are not conclusive and additional study is needed on the mortality effects of large community NICUs. Greater efforts should be made to deliver infants with expected BW of <2000 g at hospitals with regional NICUs.

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