

Development of a Predictive Model for NICU Admission in Term and Near-Term Low Birth Weight Infants

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Background

Low birth weight (LBW) is associated with an increased risk of perinatal complications. As a result, many institutions will routinely admit clinically stable infants to the Neonatal.

Intensive Care Unit (NICU) based on an infant's birth weight alone.

Objective of the Study

Develop a predictive model for NICU admission in term and near-term LBW infants based on maternal, perinatal, and neonatal risk factors.

Study Design

This was a retrospective cohort study that included infants born at ≥ 35 weeks gestation and with a birth weight less than 2500 grams. Maternal, perinatal, and neonatal characteristics were collected from the electronic medical record. Multivariate logistic regression was used to create a predictive model with NICU admission as the independent outcome.

Results

Significant characteristics among infants requiring transfer from Newborn Nursery to NICU were male, prematurity, lower birth weights, small for gestational age, and lower glucose levels. Birth weight alone is a poor predictor of NICU admission with an area under the curve of 0.69. A model utilizing sex, birth weight, first glucose value, and maternal pre-eclampsia, has a better predictive performance with an area under the curve of 0.87.

Conclusion

Birth weight alone is not a reliable predictor of an infant's need for NICU admission. Male sex, birth weight, first glucose value, and maternal pre-eclampsia are important risk factors that when combined create a better predictive model for NICU admission among term or near-term LBW infants.

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