Bronchopulmonary dysplasia: risk prediction models for very-low-birth-weight infants

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Abstract

Objective: Our objective is to develop risk prediction models for moderate/severe bronchopulmonary dysplasia (BPD) and BPD and/or death in very-low-birth-weight infants (VLBWI) at birth, 3, 7, and 14 postnatal days. Study design: It is a multicenter study including 16,407 infants weighing 500–1500 g (2001–2015) from the Neocosur Network. BPD was defined as oxygen dependency at 36 weeks. Variables were selected using forward logistic regression models. Predictive values were evaluated using the ROC curve. Results In total, 2580 (15.7%) presented BPD and 6121 (37.3%) BPD/death. The AUC values for the BPD models were 0.788, 0.818, 0.827, and 0.894 respectively. For BPD/death, the AUC values were 0.860, 0.869, 0.867, and 0.906. BW and gestational age had higher contribution at birth; at later ages, the length of oxygen therapy and ventilation had the highest contribution. All AUC values were statistically significant when compared with a neutral value of 0.5 (p-value < 0.001). Conclusions: We developed high predictive power models for moderate/severe BPD and BPD/death at four postnatal ages..