

# Trends in Ventilation Modes in The Last Decade and Their Impact on The Incidence of Bronchopulmonary Dysplasia in Preterm Infants

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## Abstract

**Background:** Less invasive forms of ventilation have evolved aiming to decrease bronchopulmonary Dysplasia (BPD) morbidity. It is unclear whether changes in ventilation practices have been associated with improvements in respiratory outcomes. **Objective:** To examine trends of ventilation modes in preterm neonates over the last decade and their impact on BPD. **Methods:** A retrospective chart review of very low birth weight infants (VLBW) and those born at less than 32 weeks gestation hospitalized during two periods: the years 2012-2013 and 2018-2019. The primary outcome was the prevalence of BPD. Study variables included the mode and duration of ventilation, duration of oxygen need, and perinatal clinical parameters. **Results:** Four hundred eighty-one infants were enrolled. Between the two study periods, a significant increase was observed in invasive (33% to 47%,  $p=0.002$ ), and non-invasive ventilation rates (44% to 72%,  $p<0.001$ ). The average duration of non-invasive ventilation increased significantly (from 9.24 to 14.08 days,  $p=0.016$ ). The total duration of respiratory support remained unchanged. The overall prevalence of moderate and severe BPD at 36 weeks corrected age remained approximately 40% in preterm infants born at less than 28 weeks gestation. **Conclusion:** The increasing use of non-invasive ventilation was not accompanied by a reduction in the use of invasive ventilation, nor by a reduced prevalence of BPD. The high prevalence of BPD remains a significant problem in preterm infants born  $< 28$  weeks of age. Other interventions, in addition to less aggressive ventilation, need to be explored.

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