

Clinical Evidence Series

Oxygenation Instability during Bolus versus Continuous Feeding among Very Low Birth Weight Premature Infants, Supported by Noninvasive Ventilation: A Randomized Prospective Study



What's different

SpO₂ histogram monitoring provides a continuous, quantitative bedside assessment of oxygenation stability, allowing comparison of physiological responses to different feeding strategies beyond intermittent vital sign review.



Interpretation

Bolus and continuous feeding were associated with similar oxygenation stability, while histogram monitoring may help identify patient-specific response to feeding strategies.



Key takeaways

No differences in oxygenation instability, hypoxemia (SpO₂ ≤80%), or hyperoxia (>94%) were observed between bolus and continuous feeding methods.



Background

- Very low birth weight (VLBW) infants frequently experience oxygenation instability due to prematurity-related conditions
- Feeding methods may influence respiratory status, but objective methods to evaluate oxygenation during feeding have been limited
- SpO₂ histograms provide a bedside tool to quantify oxygenation stability and assess physiological response to care interventions



Study design and methods

- Randomized prospective crossover study of 24 VLBW infants on noninvasive ventilation with full enteral feeding in the NICU
- Infants received alternating bolus (30 min) and continuous (2-hr) feedings in a randomized sequence
- Oxygenation was continuously monitored using pulse oximetry, with stability assessed using SpO₂ histogram classification from Philips IntelliVue MX550 bedside monitors



Objectives

Evaluate the impact of feeding method on oxygenation stability in VLBW infants.



Results



Oxygenation stability:

No significant difference in stable versus unstable histogram distribution between bolus and continuous feeding.



Oxygenation metrics:

Time spent in hypoxemia (SpO₂ ≤80%), target range, and hyperoxia (>94%) was comparable between feeding methods.



Clinical events:

No differences observed in FiO₂ requirements or apnea events between feeding types.