

Current therapies less effective than expected in preventing lung injuries in very premature babies

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A neonatologist at The Children's Hospital of Philadelphia is the senior author of a large new study that found that current non-invasive techniques for respiratory support are less effective than widely assumed, in reducing the incidence of severe lung injury in very premature infants. Neonatologists commonly use non-invasive nasal ventilation instead of mechanical ventilation via a breathing tube, in hopes of avoiding bronchopulmonary dysplasia (BPD).

Frequently a by-product of intubation, BPD—scarring and inflammation of the lungs—is a leading cause of death or neurological injury in extremely-low-birth-weight infants.

Haresh Kirpalani, M.D., of the Division of Neonatology at Children's Hospital, is the senior author of a study published Aug. 15 in the *New England Journal of Medicine*.

This multinational, [randomized trial](#) compared two common forms of non-invasive ventilation used in extremely-low-birth-weight premature infants. Both techniques make breathing easier for the infant by stopping the lungs from collapsing, which over time causes [lung inflammation](#) and injury.

The current standard of care, nasal continuous positive airway pressure (CPAP), delivers slightly pressurized air throughout the breathing cycle.

In contrast, nasal intermittent positive-pressure ventilation (IPPV), which has become widespread, provides an additional spike of positive pressure when the infant inhales. While more complicated, the hope had been that it was more effective than standard CPAP. Researchers tested the hypothesis that this extra pressure delivered in IPPV would be more beneficial than CPAP in preventing BPD.

The study team randomly assigned 1009 infants with a birth weight under 1000 grams (2.2 pounds) and gestational age under 30 weeks to either nasal CPAP or nasal IPPV. The infants were from 34 [neonatal intensive care](#) units in 10 countries. The researchers found no significant difference in the primary outcome of either death or survival with BPD at 36 weeks. They also found no significant difference in rates of other neonatal complications between the two treatment groups.

"Although somewhat discouraging, this research is significant as it refutes the common assumption that the non-invasive therapies being used are reducing severe lung injury in these tiny babies," said Kirpalani. "The study alerts us that we still need to develop new therapies for babies to avoid lung injury and BPD."

More information: "A Trial Comparing Noninvasive Ventilation Strategies in Preterm Infants," *New England Journal of Medicine*, Aug. 15, 2013. doi.org/10.1056/NEJMoa1214533

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