Medical Xpress

High-frequency oscillatory ventilation no better or worse than conventional ventilation for preterm babies

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A study of ventilation strategies in high-income countries has shown that high-frequency oscillatory ventilation (HFOV) for preterm babies gives outcomes that are no better or worse than conventional ventilation (CV). The findings are reported in an Article Online First and in an upcoming *Lancet*, written by Dr Filip Cools, Neonatal Intensive Care Unit, Universitair Ziekenhuis Brussel, and Vrije Universiteit Brussel, Belgium, and colleagues from the PreVILIG collaboration.

With HFOV, the lungs are continuously inflated and "oscillate" at a very high rate (600 to 900 per minute) using very small volume changes. Conventional ventilation mimics spontaneous respiration with repeated inflation-deflation of the lungs at a physiological rate of 30 to 60 breaths per minute.

Differences in studied populations and study design has made meta-analyses of ventilation studies difficult, leading to uncertainty about effectiveness and safety of elective HFOV in preterm infants. In this study, authors of those trials gathered in the PreVILIG collaboration to re-assess the original data and make a new meta-analysis possible.

This new systematic review and meta-analysis looked at 3229 participants in ten randomised controlled trials, with the primary outcomes being death or bronchopulmonary dysplasia* at 36 weeks' postmenstrual age, death or severe adverse neurological event, or any of

these outcomes. The authors found no difference in any of these outcomes between the two ventilation techniques, even when infants were categorised by gestational age, birthweight for gestation, initial lung disease severity, or exposure to antenatal corticosteroid treatment. Nor did the ventilator type or strategy have any effect on treatment outcome.

The authors say: "Our meta-analysis of individual patient data suggests that elective HFOV in preterm infants, compared with conventional ventilation, is equally effective in prevention of bronchopulmonary dysplasia without being associated with increased mortality or brain damage."

They add that subsequent trials should investigate issues such as the optimum timing of surfactant administration** in infants on HFOV and other possible roles for HFOV in the treatment of respiratory distress syndrome—for example, in those infants who do not respond to initial non-invasive respiratory support.

In a linked Comment, Dr Richard B Parad, Department of Newborn Medicine, Harvard Medical School, says the study show that there is no clear benefit or harm of HFOV, based on this new method of statistical analysis (Individual Patient Data Meta-Analysis). He adds this allows clinicians to use HFOV at their discretion given that safety is better established, but that such use of HFOV cannot be said to offer a benefit based on this analysis.

Provided by Lancet