

Breathing support improves lung function in near-term newborns

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A new pre-clinical study in rabbits finds breathing support with an end-expiratory pressure improves lung function in near-term newborns with elevated lung liquid volumes at birth. The study is published ahead of print in the *Journal of Applied Physiology*.

Babies born prematurely are often born with immature lungs and therefore have trouble breathing on their own after birth. However, a growing number of otherwise healthy babies born at or near **full term** (at least 37 weeks' gestation) experience respiratory distress, which often requires admission to intensive care shortly after birth.

Many babies born at or near-term are more likely to experience respiratory distress in the first few hours of life due to more liquid in their lungs at birth, rather than the immature respiratory system typically seen in preterm babies. This is particularly true of babies born via elective cesarean delivery because they do not experience the natural processes during labor and contractions that help clear some liquid from the lungs before the baby takes its first breaths.

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Providing respiratory support with an end-expiratory pressure (ventilation) helps prevent the airways from refilling with liquid between breaths. This intervention is commonly used to support breathing of newborns in the delivery room and intensive care unit. However, the effects of breathing support with an end-expiratory pressure on **lung** function in near-term newborns with respiratory distress due to elevated airway liquid volumes is not well understood.

A study led by researchers from the Hudson Institute of Medical Research and Monash University in Australia investigated the effects of using breathing support with an end-expiratory pressure in a pre-clinical rabbit model of near-term cesarean birth with elevated lung liquid levels. They found that providing breathing support with an end-expiratory pressure of 8cmH₂O (centimeters of water) improved the amount and distribution of air in the newborn lungs and prevented liquid from reentering the airways between breaths.

“Our study increases understanding of the fundamental physiology and identifies an end-expiratory **pressure** level that can support lung function in near-term newborns who are at risk of respiratory distress shortly after **birth**,” the research team wrote.

Understanding what causes **respiratory distress** in babies born at or near-term and how to support **lung function** during this period is an important step toward tackling the growing burden in perinatal medicine worldwide.

First detailed insight into newborn babies' lungs at birth

More information:

Erin Victoria McGillick et al, Increased end-expiratory pressures improve lung function in near-term newborn rabbits with elevated airway liquid volume at birth, *Journal of Applied Physiology* (2021). DOI: [10.1152/jappphysiol.00918.2020](https://doi.org/10.1152/jappphysiol.00918.2020)

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