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- [Lancet. 2004 Oct 9-15;364\(9442\):1293-4.](#)
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Resuscitation of newborn infants with 100% oxygen or air: a systematic review and meta-analysis.

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BACKGROUND: International consensus statements for resuscitation of newborn infants recommend provision of 100% oxygen with positive pressure if assisted ventilation is required. However, 100% oxygen exacerbates reperfusion injury in animals and reduces cerebral perfusion in newborn babies. We aimed to establish whether resuscitation with air decreased mortality or neurological disability in newborn infants compared with 100% oxygen. **METHODS:** We did a systematic review and meta-analysis of trials that compared resuscitation with air versus 100% oxygen, using the methods of the Cochrane Collaboration. We combined data for similar outcomes in the analysis where appropriate, using a fixed-effects model. **FINDINGS:** Five trials (two masked and three unmasked), consisting of 1302 newborn infants, fulfilled the inclusion criteria. Most babies were born at or near term in developing countries. In the three unmasked studies, infants resuscitated with room air who remained cyanotic and bradycardic were switched to 100% oxygen at 90 s. The masked studies allowed crossover to the other gas during the first minutes of life. Although no individual trial showed a difference in mortality, the pooled analysis showed a significant benefit for infants resuscitated with air (relative risk 0.71 [95% CI 0.54 to 0.94], risk difference -0.05 [-0.08 to -0.01]). The effect on long-term development could not be reliably determined because of methodological limitations in the one study that followed up infants beyond 12 months of age. **INTERPRETATION:** For term and near-term infants, we can reasonably conclude that air should be used initially, with oxygen as backup if initial resuscitation fails. The effect of intermediate concentrations of oxygen at resuscitation needs to be investigated. Future trials should include and stratify for premature infants.

Publication Types:

- [Meta-Analysis](#)
- [Research Support, Non-U.S. Gov't](#)
- [Review](#)

MeSH Terms:

- [Air*](#)
- [Asphyxia Neonatorum/therapy](#)
- [Child Development](#)
- [Humans](#)
- [Infant Mortality](#)
- [Infant, Newborn*](#)
- [Oxygen Inhalation Therapy*/adverse effects](#)
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