Positioning for acute respiratory distress in hospitalised infants and children

Authors' objectives
Background: Because of the association of prone positioning with sudden infant death syndrome (SIDS) it is recommended that young infants be placed on their backs (supine). However, the prone position may be a non-invasive way of increasing oxygenation in participants with acute respiratory distress. Because of substantial differences in respiratory mechanics between adults and children and the risk of SIDS in young infants, a specific review of positioning for infants and young children with acute respiratory distress is warranted.

Objectives: To compare the effects of different body positions in hospitalised infants and children with acute respiratory distress.

Search methods: We searched Cochrane Central Register of Controlled Trials (CENTRAL 2012, Issue 3), which contains the Acute Respiratory Infections Group's Specialised Register, MEDLINE (1966 to April week 1, 2012), EMBASE (2004 to April 2012) and CINAHL (2004 to April 2012). Selection criteria: Randomised controlled trials (RCTs) or pseudo-RCTs comparing two or more positions in the management of infants and children hospitalised with acute respiratory distress.

Data collection and analysis: Two review authors independently extracted data from each study. We resolved differences by consensus or referral to a third review author. We analysed bivariate outcomes using an odds ratio and 95% confidence interval (CI). We analysed continuous outcomes using a mean difference and 95% confidence interval (CI). We used a fixed-effect model unless heterogeneity was significant, in which case we used a random-effects model.

Main results: We extracted data from 53 studies. We included 24 studies with a total of 581 participants. Three studies used a parallel-group, randomised design which compared prone and supine positions only. The remaining 21 studies used a randomised cross-over design. These studies compared prone, supine, lateral, elevated and flat positions.

Prone positioning was significantly more beneficial than supine positioning in terms of oxygen saturation (mean difference (MD) 1.97%, 95% CI 1.18 to 2.77), arterial oxygen (MD 6.24 mm Hg, 95% confidence interval (CI) 2.20 to 10.28), episodes of hypoxaemia (MD -3.46, 95% CI -4.60 to -2.33) and thoracoabdominal synchrony (MD -30.76, 95% CI -41.39 to -20.14). No adverse effects were identified. There were no statistically significant differences between any other positions. As the majority of studies did not describe how possible biases were addressed, the potential for bias in these findings is unclear.

Authors' conclusions: The prone position was significantly superior to the supine position in terms of oxygenation. However, as most participants were ventilated preterm infants, the benefits of prone positioning may be most relevant to these infants. In addition, although placing infants and children in the prone position may improve respiratory function, the association of SIDS with prone positioning means that infants should only be placed in this position while under continuous cardiorespiratory monitoring.


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