A critical appraisal of positioning infants in the neonatal intensive care unit

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Authors' objectives
To investigate the effect of positioning prematurely born infants in the neonatal intensive care unit (NICU).

Searching
MEDLINE was searched from 1975 to 1993.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), non-randomised trials and case studies were included.

Specific interventions included in the review
Direct positioning (prone lying, sidelying, semisitting, hemitra and body tilting) and indirect positioning (waterbed, water pillow, air mattress and rocking bed).

Participants included in the review
Prematurely born infants (gestational age of less than 36 weeks and birth weight of less than 2.5 kg) were included.

Outcomes assessed in the review
Physiological outcomes including at least one cardiopulmonary or growth parameter, and developmental outcomes including either neurobehavioural or neuromotor parameters and head shape.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection. Studies had to include prematurely born infants who were on a positioning programme while in the neonatal intensive care unit.

Assessment of study quality
The studies were evaluated using Sackett's five levels of evidence and three grades of recommendations (e.g. level 1, large randomised trials; level 2, small randomised trials; level 3, non-randomised trials with concurrent cohort comparison; level 4, non-randomised trials with historical cohort comparison; level 5, case studies with no controls). The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined by a narrative review, with results presented according to direct or indirect positioning.

How were differences between studies investigated?
Findings were presented according to the level of evidence.
Results of the review

Thirty-one studies were included: 17 for direct positioning and 14 for indirect positioning.

The evidence was stronger for the use of indirect, rather than direct, positioning as a treatment strategy for infants born prematurely. Six studies were of level 1, three of level 2, two of level 3 and three of level 5 evidence in indirect positioning. The level 1 evidence indicated that the use of waterbeds, in combination with auditory stimulation, increased physical growth and that waterbeds also increased the number of mouth-to-hand movements. Waterbeds did not decrease the incidence of apnoea and bradycardia. Air mattresses did not affect growth, the incidence of apnoea or neurobehavioural development.

For direct positioning, 14 studies were of level 5 evidence, one was of level 2 and one was of level 1. The level 1 evidence indicated that prone lying, sidelying and supine position with towel rolls improved the lower extremity posture of infants born at 24 to 28 weeks gestational age. Hip adduction and neural rotation were promoted.

Authors' conclusions

This review indicates that the evidence is stronger for the use of indirect, rather than direct, positioning as a treatment strategy for infants born prematurely in the NICU. Physical and occupational therapists are able to critically evaluate their treatment strategies beyond their own clinical decision by utilizing Sackett's theoretical framework.

CRD commentary

The search appears limited and relevant studies may have been missed. Little information is given about the studies included in the review and the methods used.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.