Pumps and warmers during amnioinfusion: is either necessary?
Glantz J C, Letteney D L

Authors' objectives
To determine whether infusion pumps or solution warmers are associated with improved maternal or neonatal outcome during amnioinfusion.

Searching
MEDLINE was searched from 1983 (the earliest year in which trials of amnioinfusion in humans were reported) to 1994, and the references of published articles were examined.

Study selection
Study designs of evaluations included in the review
Prospective studies with a control group (randomised and non-randomised trials) were included.

Specific interventions included in the review
The use of infusion pumps or solution warmers during amnioinfusion.

Participants included in the review
Pregnant women were included.

Outcomes assessed in the review
Maternal and neonatal outcomes: Caesarean delivery, foetal distress, presence of meconium below the vocal cords at delivery, low 5-minute Apgar score and postpartum endometritis.

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 in which the primary purpose was other than to compare outcomes in patients who received, or did not receive amnioinfusion, were excluded.

Assessment of study quality
Studies with less than 40 patients were excluded. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
Numeric data were abstracted and recorded on a spreadsheet to allow the odds ratios (ORs) to be calculated for each outcome assessed.

Methods of synthesis
How were the studies combined?
The Mantel-Haenszel method of weighting the ORs by inverse variance was used to calculate cumulative ORs and 95% confidence intervals (CIs).

How were differences between studies investigated?
Homogeneity was assessed using the Mantel-Haenszel Q test. Analyses were also performed after separating the studies into those using warmers and those using room temperature solution, and those using infusion pumps and those using gravity infusion. Multiple regression was also performed using warm and pump as independent variables in each regression, with the dependent variables being the outcome measures.
Results of the review
Fourteen studies in total (n=1,543), of which 13 were randomised and one was non-randomised.

Ammioinfusion improved the ability of the foetus to tolerate labour (foetal distress OR 0.40, 95% CI: 0.21, 0.76), decreased the incidence of meconium below the cords (OR 0.16, 95% CI: 0.07, 0.36) and decreased the rate of Caesarean delivery (OR 0.56, 95% CI: 0.32, 0.99). There was a significant lack of homogeneity between the studies (p=0.05).

No benefits associated with the use of warmers or pumps were demonstrated. In multiple regression analysis, infusion pumps were associated with a significantly increased risk of foetal distress (R=0.83, p=0.01)

Authors' conclusions
The use of amnioinfusion is associated with a decreased risk of foetal distress, meconium below the cords, and Caesarean delivery. To date, there is no demonstrable benefit using infusion pumps or solution warmers during amnioinfusion.

CRD commentary
No information is given on the quality of individual studies included in the meta-analysis. The use of warmers or pumps was not the primary focus of any study included in the analysis, thus randomisation applied to whether amnioinfusion was performed and not the use of warmers or pumps. Amnioinfusion was used for different indications in different studies, which may have accounted for some of the heterogeneity found.

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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.